

THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
ACTION AGENDA SUMMARY

DEPT: Environmental Resources

BOARD AGENDA # *B-6

Urgent Routine

AGENDA DATE April 30, 2013

CEO Concurs with Recommendation YES NO
(Information Attached)

4/5 Vote Required YES NO

SUBJECT:

Approval to Ratify and Amend the Contract for Professional Design Services with Shaw Environmental, Inc., for Landfill 2, Cell 5, at the Fink Road Landfill

STAFF RECOMMENDATIONS:

1. Ratify and approve an Amendment to the Professional Design Services Agreement with Shaw Environmental, Inc., to increase the not to exceed contract amount to \$55,127 for construction quality assurance engineering support during an Electronic Leak Location Survey at the Fink Road Landfill 2, Cell 5.
2. Authorize the Director of the Department of Environmental Resources, or designee, to sign the Amendment.

FISCAL IMPACT:

The original contract with Shaw Environmental, Inc., for construction quality assurance engineering support was for \$19,853, dated April 5, 2012. Amendment 1 to the contract for additional construction quality assurance engineering support was for \$3,717, dated August, 21, 2012. Amendment 2 to the contract for additional construction quality assurance engineering support was for \$12,884, dated October 22, 2012, for a total not to exceed limit of \$36,454.

(Continued on next page)

BOARD ACTION AS FOLLOWS:

No. 2013-201

On motion of Supervisor Withrow, Seconded by Supervisor Monteith

and approved by the following vote,

Ayes: Supervisors: Withrow, Monteith, De Martini and Chairman Chiesa

Noes: Supervisors: O'Brien

Excused or Absent: Supervisors: None

Abstaining: Supervisor: None

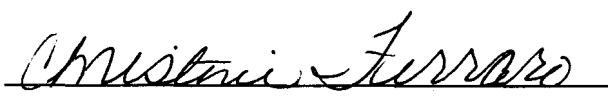
1) Approved as recommended

2) Denied

3) Approved as amended

4) Other:

MOTION: This Item was removed from the consent calendar for discussion and consideration.



ATTEST: CHRISTINE FERRARO TALLMAN, Clerk

File No.

FISCAL IMPACT (Continued):

To complete the construction quality assurance engineering support services, an additional \$18,673 is necessary at this time. If this contract is ratified and amended, the maximum amount to be paid for services provided by Shaw Environmental, Inc., under this Agreement will not exceed \$55,127.

The Fink Road Landfill is an Enterprise Fund that is fully funded through the collection of tipping fees. Capital improvement costs are incorporated into the tipping fee calculations and funds for this purpose are accounted for in the Department of Environmental Resources Fink Road Landfill Fiscal Year budget for 2012-2013.

DISCUSSION:

The Department of Environmental Resources (DER), Landfill Division, maintains and operates the Fink Road Landfill. This facility is located at 4000 Fink Road, Crows Landing, in western Stanislaus County. The Fink Road Landfill provides landfill services for Class III municipal solid waste (MSW) for all of Stanislaus County as well as Class II disposal of the combustion ash that results from the incineration of MSW at the adjacent Waste-to-Energy facility.

On March 18, 2008, the Board of Supervisors awarded a contract to Shaw Environmental, Inc. (Shaw), to provide professional engineering services and related work necessary to conceptualize, design, and permit the construction of a base liner system for Landfill (LF) 2, Cell 5, including ancillary components, and to administer its construction. Construction management/administration is commonly referred to in the industry as construction quality assurance (CQA) and is required by the Regional Water Quality Control Board for all construction activities at landfills. The role of CQA personnel is that of an independent third party who observes, verifies, and documents that the general contractor builds the project according to state-mandated specifications.

On October 21, 2008, the Board of Supervisors approved and adopted the plans and specifications for this project and directed the Clerk of the Board to publish the notice inviting bids for the construction of LF-2, Cell No. 5, with a closing date of November 26, 2008. Under the advisement of County Counsel, the Board rejected the initial bids for this project on February 10, 2009, and put it back out to bid with a closing date of April 1, 2009. Eleven sealed bids were received and the construction contract was awarded to DeSilva Gates Construction (DSG), LP, on April 28, 2009.

Construction began in late June 2009, the project was accepted on November 15, 2010, and a Notice of Completion was prepared on November 22, 2010. Since this time, Cell 5 had not been used for waste disposal because the Regional Water Quality Control

Approval to Ratify and Amend the Contract for Professional Design Services with Shaw Environmental, Inc., for Landfill 2, Cell 5, at the Fink Road Landfill

Page 3

Board (RWQCB) had not yet granted approval for waste placement. This was due to their belief that a leak existed in the bottom-most plastic liner of the Cell.

Shaw Environmental, Inc., is the engineer-of-record for the containment system design for Cell 5, however, the development of the plans and specifications for this project was sub-contracted out to Golder Associates. The original construction included completion of an electronic leak location survey (ELLS) performed by a DSG subcontractor. The results of the initial ELLS (conducted with a sensitivity of about ½ inch which is the industry standard) did not locate any leaks.

In the winter and spring of 2010/2011, it was noted by DER that water collected in the pan lysimeter below the Cell. Subsequently, DER solicited bids for an independent third party ELLS provider and selected Applied Soil Water Technologies, LLC, who conducted an additional survey with a greater sensitivity of approximately ¼ inch. The results of the second survey did not locate any leaks ¼ inch or larger. Following this, DER sought approval from RWQCB to begin waste placement in Cell 5, but approval was withheld pending the winter rains to further rule out the possibility of a leak.

During the winter of 2011/2012, the lined Cell was again partially filled with accumulated stormwater from storm events on or about January 23, 2012. Shortly after the rains, water was again determined to be present in the pan lysimeter. DER indicated that pumping the lysimeter resulted in roughly 60 gallons of water per day. At this time, DER measured approximately 55 inches of water on the leachate depth gauge for the primary liner sump. After detecting water in the pan lysimeter during pumping, DER introduced red food dye into the primary liner sump to determine if water was leaking from the primary liner into the pan lysimeter. DER observed red dye in water pumped from the pan lysimeter which suggests at least one leak existed in the primary liner.

DER sought additional advice from Shaw Environmental, Inc., on steps DER could take to identify the exact location of the leak and repair it. As Shaw Environmental, Inc., is the engineer-of-record for the containment system design for Cell 5, DER entered into a Professional Design Service Agreement, dated April 5, 2012, with Shaw Environmental, Inc., for CQA engineering support services during the ELLS to be performed by a third party leak location firm, Applied Soil Water Technologies, LLC. The ELLS conducted on July 10th and 11th, 2012, was again unsuccessful in locating the leak.

Additional CQA engineering support to devise an alternate plan, continued efforts to locate the leak, and inclusion of the results of the liner exposure and flooding of the lysimeter in the final report to DER were authorized under Amendment 1, dated August 21, 2012. The Agreement was later increased by \$3,717 for a total not to exceed amount of \$23,570.

In August 2012, water was identified beneath the primary liner. Due to this unforeseen field circumstance, additional CQA engineering support to oversee repairs to the sump

and pan lysimeter, and additional field work were necessary until all leaks were located and/or the primary liner and pan lysimeter were fully repaired. Amendment 2, dated October 22, 2012, was issued to authorize the additional CQA engineering support, and increased the Agreement by \$12,884, for a total not to exceed amount of \$36,454.

The work authorized under Amendment 2 was for repairs to the liner components and not the entire replacement and reconstruction of the double liner system within the trough area which ultimately became necessary. For the leaks to be sealed completely, it required the entire double liner system within the bottom-most trough area to be replaced and reconstructed. Because of the timing and nature of the work being performed, it was not feasible to have the DSG construction crew, as well as Shaw Environmental, Inc., demobilized and then re-mobilized. Shaw Environmental, Inc., proceeded with the CQA which necessitates this one final request to increase the Agreement by \$18,673 for work already completed. The increase to the Agreement results in a total not to exceed amount of \$55,127.

On February 12, 2013, Amendment 3 was brought before the Board for ratification and approval. At that time, the Board voiced concerns regarding Shaw's request for additional payment for CQA work and elected not to approve the request until more information could be gathered or the cost could be further negotiated. Subsequent to the February Board meeting, an additional question was raised. Specifically, whether DSG could be held responsible for Shaw's charges to oversee the reconstruction efforts in Cell 5. In response to the Board's concerns, the Department took the following actions: 1) Shaw was requested to provide justification of how the additional CQA work was not an overlap of the CQA work that was Shaw's responsibility to perform under the initial Agreement; 2) a review of how the CQA Plan for the construction project was called out; 3) research was conducted regarding leak detection procedures to determine the standards for the industry; and 4) County Counsel's opinion was sought regarding the question about holding DSG responsible for Shaw's charges.

The CQA Plan (Plan) for this construction project established duties of the involved parties, the necessary qualifications, the required inspection activities, sampling strategies, document control measures, methods for assuring compliance with the design, and documentation of construction and testing activities. The specific liner installation duties of the on-site CQA Monitor consisted of the following:

1. Reviewing and verifying that the manufacturer's quality documentation of liner sheeting and welding extrudate met specifications.
2. Observing off-loading and inspecting product tags against specified materials.
3. Observing that deployment was done in accord with the installer's submitted liner panel layouts, that a panel numbering system for future seam marking and data recording existed, that proper overlap for seams was provided, and that panels were not damaged during installation.

4. Observing trial (start-up) seaming (welding) performed by the installer, using both wedge and extrusion welding machines, at the beginning of each day and at extended shut-down intervals, and that each trial seam was tested by the installer for strength requirements, and the date, time, temperature, machine number, installer's initials, and test results were recorded.
5. Observing seam overlaps, proper surface cleaning, grinding procedures for extrusion weld preparation, welds being performed, and verifying that seaming data conformed with specifications and was being recorded.

Two types of seams are used in liner construction: fusion (wedge) welding for seaming panels together, and extrusion welding for patches and repairs, and both types of seams were used in the Cell 5 project. The installer is required to perform non-destructive seam conformity testing on all completed seams. For wedge welds, each seam is tested by applying 25 pounds of air pressure per square inch which must hold for a duration of five minutes for seam acceptance. For extrusion welds, each seam is tested for air leakage by applying a soap solution and observing each one-to-two foot segment of seam for soap bubbles under a fiberglass window box in a vacuum test apparatus for a 10 second duration.

In addition to the above seam conformance testing, the CQA Monitor selects and marks locations on both types of seams at random locations for the installer to cut out seam samples for destructive testing for seam strength. Specifically, a minimum of one sample for every 500 feet of seaming is required. Should a seam fail a test, additional samples are taken on each side of the failure location until passing tests are obtained and the failed seam length is repaired. Shaw attests in their final CQA Report that seaming and testing procedures were performed consistent with specification requirements and standard liner installation practices, however, Shaw also noted that because the placement of the gravel layer over the liner was taking place during June 2010, that wrinkling of the liner began occurring when exposed to direct sun. Due to difficulty in "walking out" the wrinkles, the general contractor switched the gravel installation to the nightshift hours to reduce the occurrence of wrinkles. Nonetheless, this was less than ideal timing for this portion of the construction project.

In researching available liner installation information, staff noted that CQA protocol typically includes observing/verifying/recording that specifications are being met, observing testing, and selecting random seam samples for destructive testing. Another well-established type of third party CQA is the use of ELLS testing. The ELLS method is a very sensitive, accurate, and valid method for locating leaks in geomembrane liners. ELLS has the ability to locate leaks in liners that had been rigorously tested using one or more of the conventional methods for testing geomembrane liners. In the case of the Cell 5 project, both the standard CQA methods and the ELLS testing were used. The literature also pointed out, however, that a soil cover over the liner can decrease the effectiveness of an electronic leak survey which certainly occurred in this case as three prior leak tests were inconclusive. In addition, throughout the literature that staff

researched, the most common cause of liner leaks was stated to be construction-related damage caused after the liner has been installed; a condition that may be exacerbated by wrinkling.

One article in particular included leak statistics in which 61 sites with an approximate total area of 4,368,785 feet of liner material were surveyed. A total of 1,409 leaks were located at the 61 sites surveyed which equates to an average of 3.2 leaks per 10,000 feet of liner material inspected. Some of the leaks surveyed were found in seams which previously had been repaired and tested. Seams were also found to fail once placed under a load after having previously passed testing successfully. In fact, Shaw noted that the defective seam that was identified by County staff during the reconstruction process was documented to have passed the vacuum box testing process during construction.

As destructive testing is only required to be conducted on one section every 500 feet, even the best efforts of the CQA monitor will not guarantee that all panels and seams are without defects. It is for this reason that the general contractor and liner installer are required to warranty the work, and is why the reconstruction work was completed at no additional cost to the County. Shaw was contracted with as a third party to assist the County in diagnosing the problem, and ultimately, to verify that the reconstruction work continued to be performed in accordance with the CQA Plan.

On November 13, 2012 the County entered into a Settlement Agreement with DeSilva Gates (DSG) releasing them from any further claims against them. The terms of the agreement required DSG to complete the work necessary to repair the leak at its cost in exchange for the County's release for additional warranty responsibility. Because of this release, the County will not be able to recover from DSG the additional consultant costs incurred by the County during the repair.

The Department's actions to: 1) request Shaw to provide justification of how the additional CQA work was not an overlap of the CQA work that was Shaw's responsibility to perform under the initial Agreement; 2) review the CQA Plan for how the construction project was conducted; 3) conduct research on industry standards for leak detection procedures on geomembrane liners; and 4) seek an opinion from Counsel regarding the possibility of holding DSG responsible for Shaw's charges resulted in findings that the County is responsible for Shaw's charges and that Shaw's performance of the work in the initial Agreement was in accordance with the industry standards for CQA monitoring as well as the standards prescribed by the CQA Plan. The Department's findings also concluded that even the best efforts of CQA monitoring will not guarantee that all panels and seams are without defects and that a test result of "passed" does not guarantee there are no leaks in the geomembrane liner.

Therefore, Shaw's performance of work in the second Agreement was not a continuation of work performed in the first Agreement but was new work associated with

Approval to Ratify and Amend the Contract for Professional Design Services with Shaw Environmental, Inc., for Landfill 2, Cell 5, at the Fink Road Landfill

Page 7

the identification of newly discovered leaks due to a defect in the liner. In light of these findings, staff recommends ratification and approval of this contract Amendment.

POLICY ISSUES:

The recommended action is consistent with the Board's priorities of providing A Safe Community, A Healthy Community, A Well-planned Infrastructure System, and the Efficient Delivery of Public Services by providing long-term disposal capacity for the residents of Stanislaus County. Landfill services are critical to supporting the Department's mission to promote a safe and healthy environment and improve the quality of life in the community through a balance of science, education, partnerships and environmental regulation.

STAFFING IMPACTS:

There are no staffing impacts associated with this item.

CONTACT PERSON:

Jami Aggers, Director of Environmental Resources Telephone: 209-525-6770



DEPARTMENT OF ENVIRONMENTAL RESOURCES
3800 Cornucopia Way, Suite C,
Modesto, Ca 95358-9492
Phone: (209) 525-6700
Fax: (209) 525-6774

AMENDMENT 3
TO
PROFESSIONAL DESIGN SERVICES AGREEMENT
SHAW ENVIRONMENTAL INC.

This Amendment No. 3 to the Agreement for Professional Design Service (Amendment No. 3) by and between the County of Stanislaus ("County") and Shaw Environmental, Inc., (Consultant) is made and entered into on April 30, 2013.

Whereas, the County and Contractor entered into an Agreement for Professional Design Service dated May 7, 2012, (the Agreement); and

Whereas, Paragraph 7.1 of the Professional Design Services Agreement provides for the Agreement to be modified only in writing and signed by the parties in interest at the time of such modification ; and

Whereas, Amendment 1, dated August 21, 2012, increased the "not to exceed" Agreement amount to \$23,570.00 for additional Scope of Work added to the Agreement; and

Whereas, Amendment 2, dated October 22, 2012, increased the "not to exceed" Agreement amount to \$36,454.00 to address unforeseen field circumstances related to investigating the water beneath the primary liner; and

Whereas the County has need to ratify Consultant's additional, necessary work performed and completed at the site prior to receiving written authorization from the County. County verbally authorized Consultant to perform the necessary, additional engineering assistance and field work related to oversight, guidance and reporting for the exposure and replacement of the primary and secondary liner systems within the trough of Cell 5 followed by the oversight of the replacement of geotextiles, pan lysimeter rock, drainage rock, and operations layer. The work authorized in Amendment 2 was for oversight and reporting of the repair of the primary liner and site conditions required the primary and secondary liner systems to be entirely replaced and reconstructed instead of repaired; and

Whereas, the County has a need to increase the Compensation to the Consultant by \$18,673.00, for the necessary additional engineering assistance and field work performed; and

Whereas, this amendment is for the mutual benefit of County and Consultant;

Now, therefore, the County and Consultant agree as follows:

1. Paragraph 2.1 "Compensation" is amended to add the following:

"The maximum amount to be paid by the County for the additional services provided for in Amendment 3, shall not exceed **Eighteen Thousand, Six-Hundred and Seventy-Three Dollars (\$18,673.00)**, including, without limitation, the cost of any subcontractors, consultants, experts or investigators retained by the Consultant to perform or to assist in the performance of its work under this Agreement.

Consultant's total compensation for work under this Agreement shall not exceed **Fifty-Five Thousand, One-Hundred and Twenty-Seven Dollars (\$55,127.00)**"

2. The following is added to Exhibit A—Section B, Scope of Work/Specifications:

"Additional CQA Services to Oversee, Guide and Report on Double Liner System Replacement and Reconstruction Related to Water Found Beneath Primary Liner

Consultant shall provide all the labor and supervision to provide oversight and guidance, and reporting to the Regional Water Quality Control Board (RWQCB) for the exposure and replacement of the primary and secondary liner systems within the trough of Cell 5 Followed by the oversight of the replacement of geotextiles, pan lysimeter rock, drainage rock, and operations layer.”

3. Exhibit B- Fee Schedule, Section A – Price Schedule, Item 1 - Fee, is amended to add the following:

“Additional CQA Services to Oversee, Guide and Report on Double Liner System Replacement and Reconstruction Related to Water Found Beneath Primary Liner

TASK NO.	DESCRIPTION	TOTAL NOT TO EXCEED AMOUNT PER TASK
1	Field Observation Services Labor	\$14,345.00
2	Field Observation Reimbursable Items	\$1,000.00
3	Letter Report and Recertification	\$3,328.00
	ADDITIONAL SERVICE TOTAL	\$18,673.00

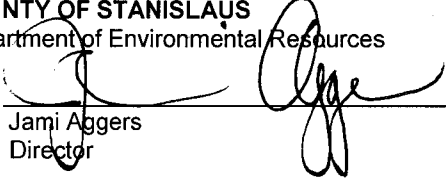
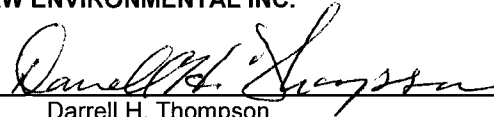
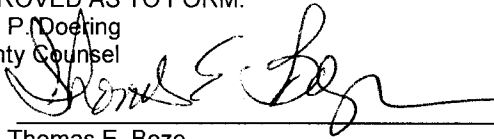
4. Exhibit B- Fee Schedule, Section A – Price Schedule, Item 3 – Detailed Project Price is amended to add the following:

“Additional CQA Services to Oversee, Guide and Report on Double Liner System Replacement and Reconstruction Related to Water Found Beneath Primary Liner

TASK	TITLE	QUANTITY	UNIT	RATE	EXTENDED TOTAL NOT TO EXCEED PRICE
1	<i>Field Observation Services</i>				
	Thompson	0	Hour	\$147.00	\$0.00
	Cope	95	Hour	\$151.00	\$14,345.00
	Flores	0	Hour	\$70.00	\$0.00
	Task 1 Total				\$14,345.00
	<i>Reimbursable</i>				
	Mileage, meals, incidentals and lodging				\$1,000.00
	Task 1 Total Reimbursable				\$1,000.00
2	<i>Letter Report and Recertification</i>				
	Thompson	4	Hour	\$147.00	\$588.00
	Cope	12	Hour	\$151.00	\$1,812.00
	Flores	0	Hour	\$70.00	\$0.00
	King	16	Hour	\$58.00	\$928.00
	Task 2 Total				\$3,328.00
	Amendment 3 - Additional CQA Total				\$18,673.00
	CUMULATIVE NOT TO EXCEED PROJECT TOTAL \$55,127.00				

5. Except as stated herein, all other terms and conditions of the Agreement remain unchanged.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by and through their respective authorized officers:

<p>COUNTY OF STANISLAUS Department of Environmental Resources</p> <p>By:  Jami Aggers Director</p> <p>"County"</p>	<p>SHAW ENVIRONMENTAL INC.</p> <p>By:  Darrell H. Thompson Client Program Manager</p> <p>"Consultant"</p>
<p>APPROVED AS TO FORM: John P. Doering County Counsel</p> <p>By:  Thomas E. Boze Deputy County Counsel</p>	

**Ratify and Amend: Contract
for Professional Design
Services with Shaw
Environmental for Fink Road
Landfill, LF 2-Cell 5**

Jami Aggers, Director
Dept. of Environmental Resources
April 30, 2013

Background

- Dept. of Environmental Resources, Landfill Division, maintains and operates the Fink Road LF
- This facility provides the Class III disposal for municipal solid waste for all of Stanislaus County as well as Class II combustion ash from the WTE facility

Background Cont'd.

- In March 2008, the Board awarded a contract to Shaw Environmental to provide professional engineering services for the following:
 - Design and permit the construction of the base liner system for LF 2, Cell 5
 - Administer/oversee construction (CQA)

Background Cont'd.

- Perspective: 833,000 sq feet of liner material placed over a 19 acre Cell
- Rolls of liner material are 23 feet wide = a lot of seams and welds

Background Cont'd.

- CQA services are required by the Regional Water Quality Control Board
- Necessary to ensure that the General Contractor builds the project to State-mandated specifications

Background Cont'd.

- General Contractor: DeSilva Gates - construction began in June 2009
- Project was accepted as complete in November 2010, however, RWQCB had not yet granted approval for waste placement
- Why? Possibility of leak in the plastic liner

Background Cont'd.

- Shaw advised the County over the next several months on a series of leak survey efforts which were inconclusive until August 2012 when we confirmed breakthrough (a leak) by using food coloring to dye the water added to the holding area of the liner trough

Background Cont'd.

- At that point, we hoped to be able to pinpoint the leak and have the contractor do spot repair work
- Shaw's contract was amended on Oct. 22, 2012 to oversee this limited repair work
- Spot repairs were not possible as one of the leaks was elusive and could not be pinpointed

Background Cont'd.

- Complete deconstruction and reconstruction of the trough area liner became necessary
- Because Shaw's services were needed for this additional oversight, the contract amount was exceeded

Background Cont'd.

- Shaw's additional charges were \$18,673 bringing the total not to exceed amount to \$55,127
- This item was first considered in Feb 2013 and was referred back to staff

Background Cont'd.

- Since that time, staff performed the following:
 - Shaw was asked to provide a justification
 - Reviewed the CQA Plan for the project
 - Researched industry standards for leak detection
 - Counsel's opinion was sought to determine whether DeSilva Gates could be held responsible for Shaw's charges

Background Cont'd.

- Research: CQA duties commonly include:
 - Review/verify manufacturer's documentation of liner and welding materials
 - Observing off-loading, product tags, deployment, proper seam overlap, materials are free from damage, start-up weld testing each day, welds being performed, and verifying that seaming meets specs
 - Call out random locations for seam strength testing once/500 feet

Background Cont'd.

- Research:
 - Also common: Electronic Leak Location Surveys = ½ inch detection (Ind. Standard)
 - This technique was used and the duties required of Shaw in the CQA Plan were consistent with Industry Standards

Background Cont'd.

- Research:
 - Electronic Leak Location Surveys can be compromised if a soil cover is in place
 - The most common causes of liner leaks are construction-related damage caused after the liner has been placed
 - Leaks are very common and the best CQA efforts cannot guarantee the final product will be defect free

Background Cont'd.

- Staff did seek Counsel's opinion as to DSG's potential responsibility for Shaw's charges
- Not possible because of the Settlement Agreement that was entered into: Complete the work at their cost in exchange for a release from additional warranty responsibility

Conclusion

- Shaw's oversight was required by RWQCB
- Shaw's work conformed to industry standards and the standards identified in the CQA Plan
- Presence of a CQA Monitor does not guarantee the final product will be defect free

Lessons Learned

1. ELLS survey, 1/4" sensitivity, done during construction on top of the gravel vs. ops layer
2. Require the Contractor's performance bond to remain in place until RWQCB sign-off is obtained
3. Always start early

Staff Recommendation

1. Ratify and approve an Amendment to Shaw's contract to not exceed \$55,127 for engineering support for the Cell 5 oversight work
2. Authorize the Director of DER to sign the Amendment

Questions?