

| | | | | |
|--|---------------------------------|--|--------------------------------|--|
| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | 1. CONTRACT ID CODE | PAGE OF PAGES 1 2 | |
| 2. AMENDMENT/MODIFICATION NO. 354 | 3. EFFECTIVE DATE 04/29/2013 | 4. REQUISITION/PURCHASE REQ. NO. 13EM001660 | 5. PROJECT NO. (If applicable) | |
| 6. ISSUED BY Savannah River Operations U.S. Department of Energy Savannah River Operations P.O. Box A Aiken SC 29802 | CODE 00901 | 7. ADMINISTERED BY (If other than Item 6) Savannah River Operations U.S. Department of Energy Savannah River Operations P.O. Box A Aiken SC 29802 | CODE 00901 | |
| 8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) SAVANNAH RIVER NUCLEAR SOLUTIONS, LLC Attn: LLOYD CLEVINGER 203 LAURENS ST SW AIKEN SC 298012421 | | (x) 9A. AMENDMENT OF SOLICITATION NO. | | |
| | | 9B. DATED (SEE ITEM 11) | | |
| | | X 10A. MODIFICATION OF CONTRACT/ORDER NO. DE-AC09-08SR22470 | | |
| | | 10B. DATED (SEE ITEM 13) 01/10/2008 | | |
| CODE 798861048 | FACILITY CODE | 11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS | | |

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
No change to accounting data

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

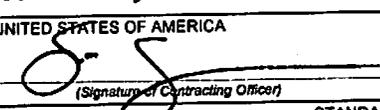
| | |
|-----------|---|
| CHECK ONE | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A. |
| | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b). |
| | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: |
| X | D. OTHER (Specify type of modification and authority) Section I, DEAR 970.5211-1 Work Authorization (May 2007) |

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ 0 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
A. The purpose of this modification is to incorporate Contract Work Authorization numbers:
1) HQTD1000, Rev 4, for Technical Planning, Integration and Risk Management; 2) EM30 ARI-4-13, for Asset Revitalization Initiative: DOE Site Impact on Local Economy and Natural Capital Asset Mangement DOE Complex system design; and 3) SR071801-4-13, Rev 3, for Attenuation-Based Remedies for the Subsurface Applied Field Research Initiative at Savannah River (See attachments 1 through 3).

B. This modification formally incorporates the above referenced contract work authorization as part of the contract. Funds were allocated previously under FINPLAN 11 and and 12, Fiscal Year 2013. As stated under DEAR 970.5211-1 Work Authorization (May 2007), paragraph (b), the work authorization, whether issued bilaterally or unilaterally
Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

| | |
|---|---|
| 15A. NAME AND TITLE OF SIGNER (Type or print) | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Scott D. Langston |
| 15B. CONTRACTOR/OFFEROR | 15C. DATE SIGNED |
| (Signature of person authorized to sign) | 16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer) |
| | 16C. DATE SIGNED 04/29/2013 |

NAME OF OFFEROR OR CONTRACTOR
SAVANNAH RIVER NUCLEAR SOLUTIONS, LLC

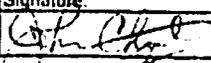
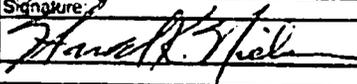
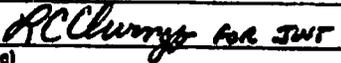
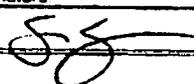
| ITEM NO. (A) | SUPPLIES/SERVICES (B) | QUANTITY (C) | UNIT (D) | UNIT PRICE (E) | AMOUNT (F) |
|-----------------|---|-----------------|-------------|-------------------|---------------|
| | <p>shall become a part of the contract.</p> <p>C. The contract estimated value and all other terms and conditions remain unchanged.</p> | | | | |

Attachment 3

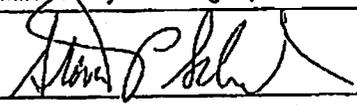
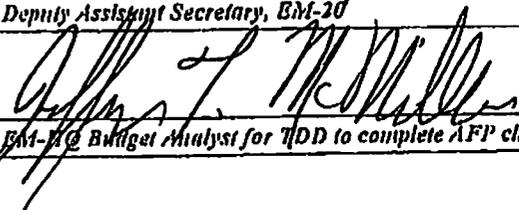
Contract Work Authorization No. HQTD1000, Rev 4

Project Title: Technical Planning, Integration and Risk
Management

**Note: Ten (10) pages, inclusive of Cost and Obligation Report
Year-To-Date values and supporting documentation**

| U. S. DEPARTMENT OF ENERGY CONTRACT WORK AUTHORIZATION | | | | |
|---|----------------------|---|--|-------------------------|
| 1a. Project Title Technical Planning, Integration and Risk Management | | 1b. Work Proposal Number HOTD1000 | | |
| 2. Headquarters Program Point of Contact | | | | |
| Name: Steven P. Schneider | | Organization Code: EM-21 | | Telephone: 301-903-4307 |
| 3. Headquarters Budget Point of Contact | | | | |
| Name: Connie Flohr | | Organization Code: EM-61 | | Telephone: 301-903-0393 |
| 4. Responsible Program Office of Environmental Management | | | 5. Responsible Secretarial Officer Tracy P. Mustin Phone: 202-586-7709 Routing: EM-1 | |
| 6. Responsible Field Organization U.S. Department of Energy, Savannah River Operations | | | | |
| 7a. Site and Facility Management Contractor Savannah River Nuclear Solutions, LLC | | | 7b. Contractor Point of Contact | |
| | | | Name: John W. Temple Telephone No. (803) 952-7210 | |
| 8. Work Authorization Number HOTD1000 | | | 9. Revision Number 4 | |
| 10. Funds Authorized (Pending resolution of CR) This is a Net \$0 distribution by the Program Office of prior year uncosted funds to continue funding Statement of Work | | | | |
| Budget & Reporting Code: | Project Code: | Previous: | Change: | Current: |
| EY4049110 | RV140901 | \$26,000.23 | (\$26,000.23) | \$0.00 |
| EY4049110 | HOTD1000 | \$682,608.13 | \$26,000.23 | \$708,608.36 |
| | | | | |
| Total: | | \$708,608.36 | \$0.00 | \$708,608.36 |
| 11. Performance Period Covered by Funds | | 12. Work Start | 13. Expected Completion Date | |
| 10/1/2012 | | 9/30/2013 | 10/1/2012 | |
| | | | 9/30/2013 | |
| 14. Statement of Work (Includes attachments) SRNL will assist EM-30 in FY2013 with development and deployment of technological solutions to EM cleanup problems to include: 1. Support five Technical Project areas a. WP-1 Waste Retrieval and Closure Technologies b. WP-2 Alternative Waste Pretreatment c. WP-3 Advanced Unit Operations and Scaling d. WP-4 Improved Ventilation Capacity e. WP-5 Increased Waste Loadings 2. Technical Integration - Provide rapid response to emergent HO requests 3. HO Requested Studies and Reports - Issuance of reports and technical reviews as needed 4. Systems Engineering - Provide systems engineering solutions to complicated issues, to include assisting EM in the risk management of its technical portfolio, develop and maintain program execution documents, and facilitate implementation of complex-wide clean-up strategies | | | | |
| 15. DOE-SR Program Point of Contact | | | | |
| Name (printed): John Christian | | Signature:  | | Date: 4/25/13 |
| 16. DOE Budget Official | | | | |
| Name (typed): Harold K. Nielsen | | Signature:  | | Date: 4/25/13 |
| 17. Contractor's Authorized Representative | | | | |
| Name (typed): John Temple | | Signature:  | | Date: 4/29/13 |
| 18. DOE Contracting Officer (or delegated representative) | | | | |
| Name (typed): Scott Langston | | Signature:  | | Date: 4/25/13 |

| OFFICE OF TANK WASTE & NUCLEAR MATERIALS (EM-20) WORK AUTHORIZATION /TASK CHANGE REQUEST (TCR) | | | | | | | | | |
|---|---|---|--|--|--------------|---------|---------|--------|--|
| Project Number : | HQTD1000 | Date: | March 2013 | AFP Change Month: | April 2013 | | | | |
| Project Title: | Technical Planning, Integration and Risk Management | | | | | | | | |
| Site /Contractor: | SRNL | Waste Processing Area:WP-0 | | | | | | | |
| Contract Number if other than National Laboratory or DOE site contractor: | | | | | | | | | |
| Name of Principal Investigator: Jeff Griffin, Savannah River National Laboratory, (803) 725-1343, jeff.griffin@srnl.doe.gov Bill Wilmarth, Savannah River National Lab, 803-725-1727, bill.wilmarth@srnl.doe.gov | | | | | | | | | |
| Name of Budget Analyst at site: Leza Roberson, SRS, (803)952-9196 , leza.roberson@srs.gov | | | | | | | | | |
| New BA (\$K) Requested | Prior Funding (\$K) in this FY | Total Uncosted (\$K) as of Beginning of this FY | Total Available Funding (\$K) including this request (add first three columns) | | | | | | |
| Net \$ 0 K distributed as follows: a. (\$26 K) from SRNL project RV091401 (FY09); and b. \$26K to SRNL project HQTD1000 | 569.852 | 112.756 | \$708.608 K | | | | | | |
| Spend Plan for Total Annual Funding (use actual costed funds for previous quarters) | | | | | | | | | |
| 1 st Quarter of FY | 2 nd Qtr of FY | 3 rd Quarter of FY | 4 th Quarter of FY | Projected uncosted at the end of this FY | | | | | |
| \$177 K | \$ 177 K | \$177 K | \$177 K | \$ 0.608 K | | | | | |
| Funding Codes (To be Completed by Budget Office) | | | | | | | | | |
| Fund | Year | Allottee | Reporting Entity | SGL | Object Class | Program | Project | Amount | |
| <i>See attached</i> | | | | | | | | | |
| Short Description of Work Scope Authorized /Changed for Input in AFP: | <p>To accomplish its mission, DOE-EM Office of Tank Waste Management (EM-21) relies on support from the various national laboratories such as INL and ORNL. These labs assist EM-30 in the development and deployment of technological solutions to EM cleanup problems to include:</p> <ol style="list-style-type: none"> 1. Support of the five Technical Project areas: <ol style="list-style-type: none"> a. WP-1 Waste Retrieval and Closure Technologies b. WP-2 Alternative Waste Pretreatment c. WP3 Advanced Unit Operations and Scaling d. WP-4 Improved Vitrification Capacity e. WP-5 Increased Waste Loadings 2. Technical Integration – Provides a rapid response to emergent HQ requests. 3. HQ Requested Studies and Reports – Issuance of reports and technical reviews as needed. 4. Systems Engineering – Provide systems engineering solutions to complicated issues, to include assisting EM in the risk management of its technical portfolio; develop and maintain program execution documents, and facilitate implementation of complex-wide clean-up strategies. <p>Net 0 sum TCR. Transfer \$ 0 K as follows: (\$26K) from SRNL project RV091401 (FY09) to SRNL project HQTD1000.</p> | | | | | | | | |

| | | |
|--|--|-----------------|
| Submitted by: | Gary R. Peters | Date: 8 Mar 13 |
| Headquarters Project Manager (Please Print & Sign) | | |
| Approved by: |  | Date: 3/11/13 |
| Office Director (Please Print & Sign) | | |
| Approved by: | Tom P. ... | Date: 3/12/13 |
| Deputy Assistant Secretary, BM-20 | | |
| Submitted to: |  | Date: 3/13/2013 |
| BM-20 Budget Analyst for TDD to complete AFP change. | | |

Technical Task Plan – Technical Planning, Integration and Risk Management (WP-0)

NEEDS STATEMENT:

The EM Office of Tank Waste Management manages the EM Tank Waste Technology Development and Deployment (TDD) Program that conducts applied research and technology development, demonstration and deployment. This office is chartered to remediate the radioactive tank waste that is stored at the three major EM sites (Hanford, SRS, and Idaho). The objective of the program is to reduce the technical risk and uncertainty in the Department's tank waste disposition projects. To reduce those risks and uncertainties, the program will provide technical solutions where none exist, improved solutions that enhance safety and operating efficiency, or technical alternatives that reduce programmatic risks (cost, schedule, or effectiveness).

BACKGROUND AND PURPOSE:

DOE-EM will be assisted in carrying out these activities by the Savannah River National Laboratory (SRNL), which will provide programmatic support to DOE-EM and assist in mitigating technical and programmatic risks.

TECHNICAL APPROACH:

Summary of the Approach

Programmatic tasks in support of the Office of Waste Processing include support of the Tank Waste Technical Development and Deployment (TDD) Program. This support includes coordinating teams of National Lab, DOE staff and staff of selected directed institutions to assist the development of the technical scope to be accomplished in each research area, recommending the performing organizations and recommending appropriate funding levels. Assess progress of the performing organizations and make recommendations to EM-21 for project direction. This also includes assuring that the international program is aligned with each Technical Project Area. Furthermore this supports reporting on project costs and schedules, as well as the annual reports and highlights, technical reviews and other reports as needed, e.g. the Report to Congress.

SCHEDULE / MILESTONES:

| Activity | Date |
|-----------------|-------------|
| TBD | TBD |
| | |
| | |
| | |
| | |

SPENDING PLAN

Monthly Spending Plan for FY2013 (\$K)

Prior Year \$4.732K

Carry Over: \$149K

| Oct 12 | Nov 12 | Dec 12 | Jan 13 | Feb 13 | Mar 13 | Apr 13 | May 13 | Jun 13 | Jul 13 | Aug 13 | Sept 13 | Carryover | Total |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-----------|---------|
| 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 0.608 | 708.608 |

Signature and Approvals

HQ Program Manager: Cam R. Peters

Office Director: [Signature]

BUDGET:

| Task | Budget FY13 (\$K) |
|--|-------------------|
| Support the EM-21 Tank Waste TDD Program | \$ 708 K |
| | |
| | |
| | |
| | |
| | |

Financial Plan Report - Detail

SR22470 - Savannah River Nuclear Solutions (SRNS)

| Rpt Entity | Fund Code | Leg FT | Program | Legacy B&R | Obj. Class | Local Use | Project | WFO | Legacy Order Number | Beginning Uncosted Obs | BA | | | Total Available | |
|--|-----------|--------|---------|------------|------------|-----------|---------|---------|---------------------|------------------------|---------------|-------------|--------------|-----------------|--|
| | | | | | | | | | | | Previous | Change | Revised | | |
| 410003 | 01055 | 3F | 1720352 | 400470000 | 25400 | 0000000 | 0000000 | 0411152 | 11152 | 0.00 | 0.00 | 47,204.75 | 47,204.75 | 47,204.75 | |
| 410003 | 01055 | 3F | 1720352 | 400470000 | 25400 | 0000000 | 0000000 | 0410858 | DOD-J4 | 343,763.18 | 500,000.00 | 250,000.00 | 750,000.00 | 1,093,763.18 | |
| AY 2013 - WFO# SRDOD-J4 LR-809844 | | | | | | | | | | | | | | | |
| 410003 | 01055 | 3F | 1720352 | 400470000 | 25400 | 0000000 | 0000000 | 0410956 | FBI-O4 | 1,000.27 | 0.00 | -1,000.27 | -1,000.27 | 0.00 | |
| AY 2009 - WFO SRFBI-O4 A9I902900 | | | | | | | | | | | | | | | |
| 410003 | 01055 | 3F | 1720352 | 400470000 | 25400 | 0000000 | 0000000 | 0411028 | FBI-S8 | 45,950.96 | 0.00 | -45,950.96 | -45,950.96 | 0.00 | |
| AY 2010 - WFO: SRFBI-S8 A0I004842 de-obligate per email from Terry Meeks dated 3-04-2013 | | | | | | | | | | | | | | | |
| Total for Program Parent/Control Point: 400000000 | | | | | | | | | | 390,714.41 | 500,000.00 | 250,253.52 | 750,253.52 | 1,140,967.93 | |
| Total for Fund: 01055 | | | | | | | | | | 390,714.41 | 500,000.00 | 250,253.52 | 750,253.52 | 1,140,967.93 | |
| 410003 | 01090 | | 1714217 | GD3009000 | 25400 | 0000000 | 0000000 | | | 0.00 | 0.00 | 60,000.00 | 60,000.00 | 60,000.00 | |
| Total for Program Parent/Control Point: GD3001000 | | | | | | | | | | 0.00 | 0.00 | 60,000.00 | 60,000.00 | 60,000.00 | |
| Total for Fund: 01090 | | | | | | | | | | 0.00 | 0.00 | 60,000.00 | 60,000.00 | 60,000.00 | |
| 410003 | 01091 | | 3184701 | HQ1001000 | 25400 | 0000000 | 0000000 | | | 0.00 | 225,000.00 | 65,000.00 | 290,000.00 | 290,000.00 | |
| Total for Program Parent/Control Point: HQ1001000 | | | | | | | | | | 0.00 | 225,000.00 | 65,000.00 | 290,000.00 | 290,000.00 | |
| Total for Fund: 01091 | | | | | | | | | | 0.00 | 225,000.00 | 65,000.00 | 290,000.00 | 290,000.00 | |
| 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0003925 | | | 15,138.97 | 253,061.49 | -117,999.88 | 135,061.61 | 150,200.58 | |
| 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0003958 | | | 19,768.12 | -17,768.00 | -2,000.12 | -19,768.12 | 0.00 | |
| 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0004026 | | | 48,059.23 | -22,059.00 | -26,000.23 | -48,059.23 | 0.00 | |
| 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0004030 | | | 383,020.52 | 175,000.00 | -25,000.00 | 150,000.00 | 533,020.52 | |
| 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0004261 | | | 112,756.20 | 569,851.93 | 26,000.23 | 595,852.16 | 708,608.36 | |
| Total for Program Parent/Control Point: EY4000000 | | | | | | | | | | 578,743.04 | 958,086.42 | -145,000.00 | 813,086.42 | 1,391,829.46 | |
| 410003 | 01250 | TP | 1110925 | EY804910K | 25400 | 0000000 | 0004074 | | | 0.00 | 100,000.00 | 24,194.85 | 124,194.85 | 124,194.85 | |
| Total for Program Parent/Control Point: EY804910A | | | | | | | | | | 0.00 | 100,000.00 | 24,194.85 | 124,194.85 | 124,194.85 | |
| 410003 | 01250 | TP | 1110947 | EY8648110 | 25400 | 0000000 | 0001761 | | | 500,000.00 | 0.00 | -500,000.00 | -500,000.00 | 0.00 | |
| AY 2010 - Transfer \$500,000 from FY10 EY8648110 to FY10 EY864811F per Lynn Horney email 031313.MG031413 | | | | | | | | | | | | | | | |
| 410003 | 01250 | TP | 1111499 | EY864811F | 25400 | 0000000 | 0004366 | | | 110,373.09 | 9,006,985.00 | 500,000.00 | 9,506,985.00 | 9,617,358.09 | |
| AY 2010 - Transfer \$500,000 from FY10 EY864811D to EY864811F per Lynn Horney email 031313.MG031413 | | | | | | | | | | | | | | | |
| Total for Program Parent/Control Point: EY8648020 | | | | | | | | | | 610,373.09 | 9,006,985.00 | 0.00 | 9,006,985.00 | 9,617,358.09 | |
| Total for Fund: 01250 | | | | | | | | | | 1,189,116.13 | 10,065,071.42 | -120,805.15 | 9,944,266.27 | 11,133,382.40 | |
| 410003 | 01296 | | 1110462 | EW1001206 | 25400 | 0000000 | 0000712 | | | 0.00 | 500,000.00 | -210,000.00 | 290,000.00 | 290,000.00 | |
| AY 2013 - 3.12.2013 - Reduced by \$210K moved to salaries/benefits - mat | | | | | | | | | | | | | | | |
| Total for Program Parent/Control Point: EW1000000 | | | | | | | | | | 0.00 | 500,000.00 | -210,000.00 | 290,000.00 | 290,000.00 | |
| Total for Fund: 01296 | | | | | | | | | | 0.00 | 500,000.00 | -210,000.00 | 290,000.00 | 290,000.00 | |

Execution - Analyst Run

Sic SR

| XID | Appr Year | Rpt Ent | Allot-fee | Fund | Program | Program Parent | Rpt Entity | Project | WFO | Obj Class | Purchase Order | Local Use | BITO | BITO Deob | Committed BA | Obligated BA |
|----------------|-----------|---------|-----------|-------|---------|----------------|------------|---------|---------|-----------|----------------|-----------|------------|-----------|--------------|--------------|
| 49999 | 2007 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0004261 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 4,733.00 | 4,733.00 |
| 49958 | 2009 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0004261 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 34,119.16 | 34,119.16 |
| 45434 | 2012 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0004261 | 0000000 | 25400 | SR22470 | 0000000 | 112,756.20 | 0.00 | 0.00 | 0.00 |
| 47658 | 2013 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0004261 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 557,000.00 | 557,000.00 |
| 49908 | 2013 | SR | 36 | 01250 | 1110676 | C000977 | 410225 | 0004261 | 0000000 | 25102 | 9999999 | 0000000 | 0.00 | 0.00 | 0.00 | 0.00 |
| Report Totals: | | | | | | | | | | | | | 112,756.20 | 0.00 | 595,852.16 | 595,852.16 |

H QTD 1000

Execution - Analyst Run

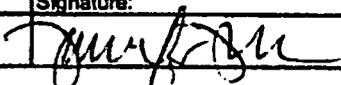
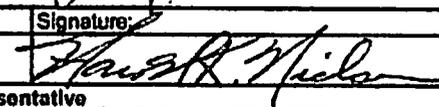
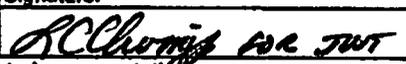
| NID | Appr Year | Rpt Ent Parent | Allot-tee | Fund | Program | Program Parent | Rpt Entity | Project | WFO | Obj Class | Purchase Order | Local Use | BUO | BUO Deob | Committed BA | Obligated BA |
|-----------------------|-----------|----------------|-----------|-------|---------|----------------|------------|---------|---------|-----------|----------------|-----------|------------------|-------------------|--------------|--------------|
| 48458 | 2009 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0004026 | 0000000 | 25400 | SR22470 | 0000000 | 48,059.23 | -48,059.23 | 0.00 | 0.00 |
| Report Totals: | | | | | | | | | | | | | 48,059.23 | -48,059.23 | 0.00 | 0.00 |

Contract Work Authorization No. EM30 ARI-4-13

Project Title: Asset Revitalization initiative: DOE Site Impact on
Local Economy and Natural Capital Asset Management DOE
Complex system design

**Note: Seven (7) pages, inclusive of Cost and Obligation Report
Year-To-Date values and supporting documentation**

2013-56

| U. S. DEPARTMENT OF ENERGY CONTRACT WORK AUTHORIZATION | | | |
|---|---|--|-------------------------------------|
| 1a. Project Title | | 1b. Work Proposal Number | |
| Asset Revitalization Initiative: DOE Site Impact on Local Economy and Natural Capital Asset Management DOE Complex system design | | See attached plan | |
| 2. Headquarters Program Point of Contact | | | |
| Name: | Organization: | Telephone: | |
| Name: Frank Marcinowski | Organization Code: EM-30, Office of Waste Management | Phone: 202-586-0370 | |
| 3. Headquarters Budget Point of Contact | | | |
| Name: | Organization: | Telephone: | |
| Name: Tania Smith | Organization Code: EM-54, Asset Revitalization | Telephone: 202-586-5008 | |
| 4. Responsible Program | | 5. Responsible Secretarial Officer | |
| Office of Environmental Management | | Tracy P. Mustin Phone: 202-586-7709 Routing: EM-1 E-mail: tracy.mustin@em.doe.gov | |
| 6. Responsible Field Organization | | | |
| U.S. Department of Energy, Savannah River Operations | | | |
| 7a. Site and Facility Management Contractor | | 7b. Contractor Point of Contact | |
| Savannah River Nuclear Solutions, LLC | | Name: John W. Temple Telephone No. (803) 952- 7210 | |
| 8. Work Authorization Number | | 9. Revision Number | |
| EM30 ARI-4-13 | | 0 | |
| 10. Funds Authorized (See NOTE below) | | | |
| NOTE: Work subject to funds availability and an approved "Full Year FY 2013 Continuing Resolution Act." | | | |
| Budget and Reporting Code: | Previous: | Change: | Current: |
| EY804910M# | \$208,441 | \$0 | \$208,441 |
| 11. Performance Period Covered by Funds (See NOTE in Block 10) | | 12. Work Start Date | 13. Expected Completion Date |
| 1-Apr-13 | 30-Sep-13 | 1-Apr-13 | 30-Sep-13 |
| 14. Statement of Work (Includes attachments) | | | |
| This Action Plan breaks out the economic study into three (3) phases and adds scope to address development of natural assets management system to ensure valuation of the total assets attributable to the DOE Complex. See attached action plan and NCAM scope description. This TCR anticipates the requested additional funds of 41K would not be available until the fourth quarter and that the period of performance would carry into FY14 based on accessibility of funds. | | | |
| 15. DOE-SR Program Point of Contact | | | |
| Name (printed): | Signature: | Date: | |
| Helen Belencan Jennifer J. Nelson |  | 4-19-13 | |
| 16. DOE Budget Official | | | |
| Name (typed): | Signature: | Date: | |
| Harold K. Nielsen |  | 4/24/13 | |
| 17. Contractor's Authorized Representative | | | |
| Name (typed): | Signature: | Date: | |
| John Temple |  | 4/29/13 | |
| 18. DOE Contracting Officer (or delegated representative) | | | |
| Name (typed): | Signature: | Date: | |
| Scott Langston |  | 4/19/13 | |

**OFFICE OF TECHNOLOGY INNOVATION & DEVELOPMENT (EM-30)
WORK AUTHORIZATION /TASK CHANGE REQUEST (TCR)**

| | | | | | |
|-------------------|--|----------------------------|------------|-------------------------------|------------|
| Project Number : | <u>TBD</u> | Date: | 2 Apr 2013 | AFP Change Month: | April 2013 |
| Project Title: | Asset Revitalization Initiative: DOE Site Impact on Local Economy and Natural Capital Asset Management DOE Complex system design | | | | |
| Site /Contractor: | SRNL | Project Area from Roadmap: | n/a | Technical Task Plan Attached: | yes |

Contract Number if other than National Laboratory or DOE site contractor:
 Name of Principal Investigator: Andrew Fellingner / Ron Schroder
 Name of Budget Analyst at the site where the contract is held: SRS: Leza Roberson (803) 952-9196, leza.roberson@srs.gov

| New BA (\$K) Requested | Prior Funding (\$K) in this FY | Total Uncosted (\$K) as of Beginning of this FY | Total Available Funding (\$K) including this request (add first three columns) |
|---|--------------------------------|---|--|
| \$41,000 (for added scope in 2 nd 1/2 of FY) | 0 | \$206,441.10 | 247,441.10 |

Spend Plan for Total Available Funding (use actual costed funds for previous quarters)

| 1 st Quarter of FY | 2 nd Qtr of FY | 3 rd Quarter of FY | 4 th Quarter of FY | Projected uncosted at the end of this FY |
|-------------------------------|---------------------------|-------------------------------|-------------------------------|--|
| 88586.39 | 4759.01 | 98461.54 | 55634.10 | \$0K |

Funding Codes (To be Completed by Budget Office)

| Fund | Year | Allottee | Reporting Entity | SGL | Object Class | Program | Project | Amount |
|-------|------|----------|------------------|-----|--------------|---------|---------|--------|
| 01250 | | 36 | 410003 | | 25400 | 1110927 | 0000700 | |

Short Description of Work Scope Authorized /Changed for input in AFP:
 This Action Plan breaks out the economic study into three (3) phases and adds scope to address development of natural assets management system to ensure valuation of the total assets attributable to the DOE Complex. See attached action plan and NCAM scope description. This TCR anticipates the requested additional funds of 41K would not be available until the fourth quarter and that the period of performance would carry into FY14 based on accessibility of funds.

Submitted by: Tania Smith, Tania Smith Date: Apr 4, 2013
 Headquarters Project Manager (Please Print & Sign)

Field: _____ Date: _____

Field DOE Representative (Please Print & Sign)

Approved by: _____ Date: _____
 Office Director (Please Print & Sign)

Approved by: _____ Date: _____
 DAS Site Restoration Mission Unit

Submitted to: _____

EM-HQ Budget Analyst for TDD to complete AFP change Date: _____

Modification to contract SOW # 0000059882

3.1.3 Task 3

(Adds scope to existing contract based on HQ request within available funds at SRNL except where noted)

A) Compile Natural Capital capacity and capability data for targeted communication among DOE Site stakeholders to support asset revitalization and programming decisions, using work done previously at the SRS and in this task to generate a demonstration case for Natural Capital Asset Management for the DOE Complex.

--Asset Definition and Scope (regenerative assets, banked assets, natural infrastructure, restored assets)

--Research and analysis (EIS, Permit analysis, banking records, other)

--Interviews, stakeholder inputs

--Select and prioritize asset categories for inventory compilation

--Develop direct or derived quantified data inputs that reflect capacity availability

Completion Date: 90 days from Task Award

B) Develop an 'inventory' of current usable natural infrastructure supplies using the existing data and the results of tasks 1 and 2 above. This would need to be done on a site- by-site basis. The SRS will be used to demonstrate the mechanism and benefit of developing the 'inventory'.

--Review inventory framework developed in Task 1 of this subcontract and revise as needed

--Scope asset categories and review data

--Input data from element A (above) into Inventory Framework

Completion Date: 120 days from Task Award

C) Recommend a process to perform the capacity and capability evaluations of the DOE Sites natural infrastructure for mission support and expansion (as needed) based on units of natural infrastructure available and in conjunction with the built and human capital capacity. The SRS will be used as the pilot site to demonstrate the process to perform the capacity and capability evaluations mechanism. This will serve as a guide as each Site will be different.

--Scope performance, output, expansion, or mission goals and actions by natural capital use levels

--Test alignment indexes that relate quantified units natural capital assets used to achieve the intended performance goal or output

--Develop estimating tool for units of mission capability and output per unit of natural asset capacity

Completion Date: 150 days from Task Award

(Not included in 4/2/2013 estimate)

D) Participate in the implementation of the process above to assign values to the various natural capital assets whether in use or held in reserve for various purposes. This would be done on a Site by Site basis and would be funded incrementally as Sites are evaluated.

--Develop calculation for capacity and capability rates of underutilized assets

--Craft recording process for 'use' assignment and utilization rates

--Develop valuation protocols for mission use, banking, and regional access to underutilized asset capacity and capability

Completion Date: 180 days from Task Award (For implementation only at SRS based on pilot demonstration)

Action Plan for ARI DOE Site Impact on Local Economy

This Action Plan breaks out the economic study into three (3) phases.

Phase 1, Overview of the local economy within the region of influence (ROI) of DOE-Sites

Actions for Phase 1 are:

- Consider renaming Phase 1 report to better describe the content of the report –for example, “Overview of DOE Site’s Regional Economies” or “Local Economy of DOE-Sites”
- Revise *Introduction* to reflect the purpose of Phase 1
 - Identify information/data are contained in the Phase 1 report
 - Caveats and general limitations of Phase 1 report
- Update and verify existing data
- Add references as to the origin/source of the data
- Add a bibliography for referenced sources and other documents relevant to the report
- Improve consistency in how data and information is presented for each DOE site
 - Figures for “Workforce versus Industrial Sector” —make the legends for each industrial sector consistent between DOE sites
- Include matrix comparing key parameters/attributes of each site to one another
- Summarize findings
- Make recommendations, including those for future phases
- Submit Phase 1 report to DOE ARI Leadership

Phase 2, Economic report on the most impacted sites

Actions for Phase 2 are:

- Identify most impacted sites for additional economic study
 - DOE ARI Leadership
 - DOE Program Office Leadership
 - DOE Site Leadership
- Identify the credible existing sources information/data
 - Publicly available and open source data
 - Existing economic studies in ROI
 - DOE Program Offices
 - DOE Sites
 - Community Reuse Organizations
 - State and local government economic development offices
- Identify the economic information/data/parameters required and/or desired
 - Delineate and finalize what information/data are required and determine with the desired information/data that will be included, for example:
 - A description of the inter-relationship between the National Laboratories and the different program offices at each site
 - Number of subcontractors at the site

Action Plan for ARI DOE Site Impact on Local Economy

- Effects of trends in work for Others – consideration might need to be included regarding DOE’s true investment/share to support this
- Effects of trends in user sites
- Trends in non-DOE diversity
- Effects of trends to share sites with other agencies
- Tax-base generated from transfers and other endeavors
- Payments in lieu of taxes (PILT) and its % of county revenues in ROI
- Good & Services purchased within ROI
- If requested, redefine each ROI based on the % of site employees in each county and input from the site
- Obtain the required and desired information/data from
 - Open sources
 - Site’s sources (e.g. Human Resource, Financial, and Procurement)
 - CROs, and state and local governments
- Document/reference source of information of information/data
- Present the information/data in appropriate formats (e.g. charts, graphs, tables)
- Analyze the information and data
- Summarize findings of each site
- Compare data (key parameters/attributes) of each DOE-Site analyzed to one another
- Summarize the collective findings for all the DOE-Sites analyzed
- Make recommendations to
 - DOE ARI Leadership
 - DOE Program Offices with site landlord responsibilities
 - DOE-Sites
 - Community Reuse Organizations
- Submit Phase 2 report to DOE ARI Leadership
- Determine if ARI Leadership wants the economic analysis released formally to DOE leadership, Program Office and the Sites.
 - Determine whether or not to release the economic analysis report, if yes, then
 - Create an Executive Summary
 - Develop communication plan
 - Develop press releases tailored to targeted audience
 - Release Phase 2 report as directed by DOE ARI Leadership

Phase 3, Further Economic Analysis (Not included in Estimate)

- Based on the recommendations in Phase 2 and approval by ARI and DOE Leadership
 - Examine selected DOE sites in-depth, including an analysis what the implications will be on co-located program offices when the host program office completes their mission and leaves the site

Action Plan for ARI DOE Site Impact on Local Economy

- What will be the implications for the community when large portions of the site are cleaned up, the missions are accomplished, and DOE staff and contractors no longer work at the site

DRAFT

DEPARTMENT OF ENERGY
 STATUS OF OBLIGATIONAL AUTHORITY - CURRENT YEAR DATA
 REPORT

| APP | Beginning Uncosted | Allocation | Expired | FYA- Unexpended | Recast Adjustments | Obs Less FYA/Rcat | FYA-Expended | Recast-Costs | Costs Less FYA/Rcat | Ending Uncosted | Unobligated/ Uncommitted |
|---|-----------------------|------------|---------|--------------------|-----------------------|----------------------|--------------|--------------|------------------------|--------------------|-----------------------------|
| ----- | | | | | | | | | | | |
| CID | H520706 | | | | | | | | | | |
| 01250.2009.36.410225.25300.1110927.0000700.0000000.0 000000.000000 | 1,809 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | 1,813 | 0 |
| 01250.2010.36.410225.25300.1110927.0000700.0000000.0 000000.000000 | 50,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50,000 | 0 |
| Totals for: H520706 | 51,809 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | 51,813 | 0 |
| CID | H520734 | | | | | | | | | | |
| 01250.2010.36.410225.25300.1110927.0000700.0000000.0 000000.000000 | 24,031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,118 | 21,913 | 0 |
| Totals for: H520734 | 24,031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,118 | 21,913 | 0 |
| CID | SR22470 | | | | | | | | | | |
| 01250.2010.36.410003.25400.1110927.0000700.0000000.0 000000.000000 | 280,722 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 223,337 | 57,385 | 0 |
| 01250.2011.36.410003.25400.1110927.0000700.0000000.0 000000.000000 | 346,959 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 346,959 | 0 |
| 01250.2012.36.410003.25400.1110927.0000700.0000000.0 000000.000000 | 282,750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 282,750 | 0 |
| Totals for: SR22470 | 910,431 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 223,337 | 687,094 | 0 |
| | 986,271 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 225,452 | 760,820 | 0 |

Project #

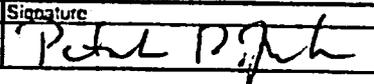
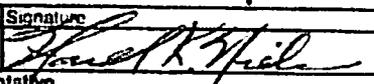
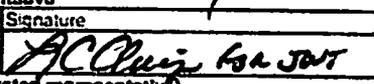
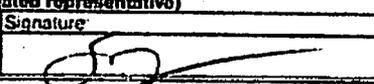
Attachment 1

Contract Work Authorization No. SR071801-4-13, Rev 3

Project Title: Attenuation-Based Remedies for the Subsurface
Applied Field Research initiative at Savannah River

**Note: Ten (10) pages, inclusive of Cost and Obligation Report
Year-To-Date Values and supporting documentation**

2013-58

| U. S. DEPARTMENT OF ENERGY CONTRACT WORK AUTHORIZATION | | | |
|---|---|---|-------------------------------------|
| 1a. Project Title | | 1b. Work Proposal Number | |
| Attenuation-Based Remedies for the Subsurface Applied Field Research Initiative at Savannah River | | SR071801-4-13 | |
| 2. Headquarters Program Point of Contact | | | |
| Name | Organizational Code | Telephone | |
| Grover Chamberlain | EM-12 | 301.903.7249 | |
| 3. Headquarters Budget Point of Contact | | | |
| Name | Organizational Code | Telephone | |
| Jeffrey McMillan | EM-61 | 301.903.7701 | |
| 4. Responsible Program | | 5. Responsible Secretarial Officer | |
| Environmental Management | | M. Gilbertson | |
| 6. Responsible Field Organization | | | |
| U.S. Department of Energy, Savannah River Operations | | | |
| 7a. Site and Facility Management Contractor | | 7b. Contractor Point of Contact | |
| Savannah River Nuclear Solutions, LLC | | Name: John W. Temple | |
| | | Telephone No. (803) 952-7210 | |
| 8. Work Authorization Number | | 9. Revision Number | |
| SR071801-4-13 | | 3 | |
| 10. Funds Authorized (See NOTE below) | | | |
| NOTE: Work subject to funds availability and an approved "Full Year FY 2013 Continuing Resolution Act" | | | |
| Budget and Reporting Code: | Previous: | Change: | Current: |
| EY4049110 | \$255,061.61 | \$ 200,000.00 | \$455,061.61 |
| 11. Performance Period Covered by Funds | | 12. Work Start Date | 13. Expected Completion Date |
| 10/1/2012 - 9/30/2013 | | 10/1/2012 | 9/30/2013 |
| 14. Statement of Work (Includes attachments) | | | |
| <p>Task 1: Enhanced Attenuation of Uranium and 129I by Humic Acid Pilot field-scale tests and optimization of this technology to move this technical approach from basic science to actual field deployment and regulatory acceptance</p> <p>Task 2: Develop Strategy from SOMERS w/PNNL SRNL participation on the Scientific Opportunities for Monitoring Environmental Remediation Sites (SOMERS) team to develop improved strategies for monitoring subsurface groundwater contamination</p> <p>Task 3: Road map for End Points w/PNNL SRNL participation on the DOE-EM Roadmap team that is tasked with defining technically defensible end states, systems based remediation approaches and systems-based monitoring strategies that include closure solutions that are cost-effective, sustainable, and protective of public health and natural resources at DOE sites</p> <p>Task 4: Management of the Technical Assistance Program Management of the technical assistance program including helping site problem holders to develop technical needs statements, selection of the technical experts, contracting of non-SRNL participants, management of the team meeting, and preparation of the technical assistance team report</p> <p>Note: Period of performance for this work scope ends September 30, 2013. **\$60,000 to PNWL & \$60,000 to LBNL</p> | | | |
| 15. DOE-SR Program Point of Contact | | | |
| Name (printed): | Signature | Date: | |
| Patrick Jackson |  | 4/18/13 | |
| 16. DOE-SR Field Budget Official | | | |
| Name (typed): | Signature | Date: | |
| Harold K. Nielsen |  | 4/25/13 | |
| 17. Contractor's Authorized Representative | | | |
| Name (typed): | Signature | Date: | |
| John Temple |  | 4/29/13 | |
| 18. DOE Contracting Officer (or delegated representative) | | | |
| Name (typed): | Signature | Date: | |
| Scott Langston |  | 4/16/13 | |

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|---|--|
| OFFICE OF TECHNOLOGY INNOVATION & DEVELOPMENT (EM-30) | | WORK AUTHORIZATION/TASK CHANGE REQUEST (TCR) | | SR071801 | | Date: March 13, 2013 | | APP Change Month: April 2013 | |
| Project Number: | | Project Title: | | SRNL | | Project Area from Roadmap: | | Technical Task Plan Attached: Yes | |
| Contract Number if other than National Laboratory or DOE site contractor: | | Name of Principal Investigator: Miles Donham | | Name of Budget Analyst at the site where the contract is held: | | Total Available Funding (\$K) including this request (add first three columns) | | Total Uncosted (\$K) as of Beginning of this FY | |
| New BA (\$K) | | Prior Funding (\$K) in this FY | | 120K | | 100K | | 420K | |
| 620K | | 200K | | 200 | | 140 | | 120 | |
| 1 st Quarter of FY | | 2 nd Qtr of FY | | 3 rd Quarter of FY | | 4 th Quarter of FY | | Projected uncosted at the end of this FY | |
| 200 | | 140 | | 120 | | 120 | | 0 | |
| Spending Plan for Total Available Funding (use actual costed funds for previous quarters) | | | | | | | | | |
| Fund | | Year | | Allotment | | Reporting Entity | | SGL | |
| 0150 | | 2013 | | 36 | | 41003 | | 61000x | |
| Amount | | Project | | Program | | Class | | Object | |
| 200,000 | | 0003925 | | 110676 | | 0003925 | | 25400 | |
| Description of Short Work Scope Authorized/Changed for Input in APP: | | | | | | | | | |
| 1. Continue human testing to sequester topline 129 | | | | | | | | | |
| 2. Develop characterization and remediation tools for mercury at ORO | | | | | | | | | |
| 3. Optimize sampling a monitoring tools in conjunction with the SOMARS Strategic Plan | | | | | | | | | |
| 4. Develop underpinnings for use of alternative based remedies to facilitate risk informed end points. | | | | | | | | | |
| Submitted by: | | Grover H Chamberlain | | Date: 8/13/13 | | Headquarters Project Manager (Please Print & Sign) | | | |
| Field: | | Karen Adams | | Date: 08.13.13 | | Field DOE Representative (Please Print & Sign) | | | |
| Approved by: | | Kurt Gortles | | Date: 3/13/13 | | Office Director (Please Print & Sign) | | | |
| Approved by: | | M. Chamberlain | | Date: | | DAG Site Restoration Mission Mgr | | | |
| Submitted to: | | M. Chamberlain | | Date: 4/3/2013 | | Eggs-HO Budget Analyst for TCR to complete APP change | | | |

FY2013 Technical Task Plan

NEEDS STATEMENT:

Remediation of subsurface contamination is a significant challenge facing the U.S. Department of Energy Office of Environmental Management (EM). EM manages one of the largest and most complex soil and groundwater cleanup programs in the world. Although EM has completed cleanup activities at many of their sites, many of the remaining sites are technically challenging, either due to the nature of the contaminants or to the nature of the subsurface environment. Although traditional standards-based closure goals have been successful at many sites, these approaches may not be technically or economically feasible at many of the remaining complex sites. EM has recently proposed the use of alternate endpoints to establish a path for cleanup that may include intermediate remedial milestones and transition points and/or regulatory alternatives at complex sites. Development and implementation of an alternate endpoint-based approach for remediation and waste site closure presents a number of challenges and opportunities. These challenges include scientific and technical, regulatory, institutional, and budget and resource allocation issues. Opportunities exist to develop and implement systems for remedial characterization, monitoring, and remediation that in many cases will combine both innovative and baseline approaches to reach the desired endpoint. Without these approaches and tools, many contaminated sites in the DOE complex will be unable to achieve acceptable end-states in a reasonable timeframe.

The objective of the Attenuation-Based Remedies for the Subsurface Applied Field Research Initiative (ABRS AFRI) at the Savannah River Site is to develop and deploy science-based approaches and tools to monitor and remediate difficult sites contaminated with combinations of metals, radionuclides, and recalcitrant organic compounds. Of particular importance is the development of strategies and tools that can be used to transition active/aggressive technologies that are reaching diminishing effectiveness to strategies that emphasize natural attenuation processes with an ultimate end state goal of monitored natural attenuation (MNA). There is a wealth of basic science information on attenuation mechanisms, yet the science and protocols for determining or demonstrating whether contaminants left in the subsurface pose an acceptable risk are immature. There is a major need for applied science that incorporates the basic science into a holistic understanding of how waste sites, especially the nature of the attenuated contaminants, evolve over time. These studies are critical in order to evaluate sites for applicability and selection of attenuation-based remedies, as well as demonstrate to regulators and stakeholders that attenuated contaminants will not remobilize as the site evolves. Additionally, there is an important need to expand the toolbox of enhanced attenuation remedies. Addressing these needs will lead to development of approaches and tools that facilitate the use of attenuation-based remedies.

BACKGROUND AND PURPOSE:

Complex groundwater contamination plumes with toxic metals and/or radionuclides are present at the majority of DOE facilities. These plumes have reached up to a mile in length at some sites and discharge to surface water exposure points (e.g., Hanford, Savannah River Site and Oak Ridge). To meet the needs stated above the Attenuation-Based Remedies for the Subsurface Applied Field Research Initiative (ABRS AFRI) was established by EM-12 with the Savannah River National Laboratory as the lead. The F-Area groundwater contaminant plume at the Savannah River Site is the primary field research site of the ABRS AFRI and is a plume that has been remediated to an alternative end-point. A innovative passive remedial system is being monitored and evaluated over the long term prior to traditional regulatory closure. Contaminants being addressed at this site are uranium, strontium-90, iodine-129, and tritium. SRNL and SRS are designated as the lead for the EM-12 funded ABRS AFRI because:

- SRNL and the Savannah River Nuclear Solutions Area Completion Projects have a decades long history of working together to develop and deploy innovative technical approaches to achieving desired end-states at contaminated sites
- SRNL was a key collaborator in development of the in situ remediation at the F-Area plume that

allowed the abandonment of the pump-and-treat system, moving the site closer to end-state goals in a more cost effective and efficient way

- The desired end-state at F-Area will be met in phases that are specified in the SRS RCRA Permit (2009) that also encourages continued development and deployment of innovative technologies to achieve the end-state
- Successful applied research conducted at this AFRI will provide the means of achieving the end-state specified in the RCRA permit, as well as being widely applicable across the DOE complex

The objective of (ABRS AFRI) is to develop and bring to maturity science-based approaches and associated tools that facilitate transition of sites with groundwater and soil contamination from active to more passive attenuation-based remedies including MNA. This includes development of enhanced attenuation remedies, as well as site characterization, site evaluation, monitoring, and decision making approaches and tools necessary for successful use of attenuation-based remedies. These activities facilitate the use of attenuation-based remedies by providing the information necessary to prove their effectiveness, and hence allowing negotiation of appropriate and reasonable end-states with regulatory agencies.

Advancements achieved at the ABRS AFRI work in conjunction with those achievements realized at the Hanford and Oak Ridge AFRI as well as the Advanced Simulation Capability for Environmental Management (ASCEM) Initiative to make up the applied science portfolio established within the EM-12 Soil and Groundwater Remediation Program. Specifically, the data-rich and mature nature of the SRS F-Area site provides a great opportunity for testing ASCEM developed concepts.

ABRS AFRI GOALS

As stated in the ABRS AFRI Strategic Plan, the initiatives goals are:

- Develop tools and approaches for attenuation-based remedies and integrate them into the regulatory framework established by the US EPA and ITRC.
- Develop characterization and monitoring tools that focus on the geochemical properties that control contaminant fate and transport, facilitate evaluation on the field-scale, and are inexpensive and easy to use.
- Develop approaches that will optimize the number of locations and the number of samples and measurements required to achieve an acceptable level of uncertainty in decision making.
- Develop remediation technologies that will effectively and efficiently attenuate contaminants and result in their long-term stabilization.
- Through a collaboration of applied and basic research provide the technically defensible underpinnings for approaches, tools and technologies to implement attenuation-based remedies leading to completion of remediation activities for contamination of groundwater by metals and radionuclides.
- Transfer the ABRS AFRI products to site owners, regulators and other members of the communities of practice to foster usage by the DOE community, as well as the national community.

AFRI COLLABORATORS

DOE Office of Science funded Sustainable Systems Scientific Focus Area at LBNL is the main collaborator providing funding independent of this AFRI. Other collaborators include:

Interstate Technology and Regulatory Council

North Carolina State University

GSI Environmental, LLC

Oregon State

University Sandia

National Laboratory

Pacific Northwest National Laboratory

Technical Assistance Collaborators TBD

2013 TECHNICAL APPROACH

The five tasks listed here cover the various focus areas of the AFRI ABRs.

Task 1: Attenuation Remedies In Support of Alternative End-States

One important pathway to alternate endpoints is development of effective long-lived attenuation-based remedies. For such remedies to gain regulatory approval, they must demonstrably reduce contaminant flux to compliance points for long periods of time. One of the primary goals of the AFRI ABRs is to mature promising attenuation-based technologies from concept to field-scale pilot tests. Bench-scale studies done at Lawrence Berkeley National Laboratory showed that humates sorbed on aquifer minerals strongly bind uranium at mildly acidic pH and potentially bind ^{129}I . Their research suggests that humates would be an ideal enhanced attenuation amendment to use for hot-spot treatment at the F-Area Applied Field Research site where both contaminants are present in acidic groundwater. Use of humate could also be applicable for contaminant stabilization at a wide variety of other DOE sites. Pilot field-scale tests and optimization of this technology will be required to move this technical approach from basic science to actual field deployment and regulatory acceptance. This task also involves collaboration with the Deep Vadose Zone AFRI at Pacific Northwest National Laboratory (PNNL). PNNL is interested in exploring microbiological aspects of the redox chemistry of ^{129}I and potential interaction with humates. The task will take two approaches. The first will be a one well test injection test similar to a push-pull test in which humate will be injected into a well that will be subsequently monitored for uranium and ^{129}I . The second approach will use humate loaded sediments in diffusion samplers. These are similar to bio-traps that PNNL will deploy in a Hanford ^{129}I plume. SRNL and PNNL will collaborate on microbial (PNNL) and iodine speciation analyses (SRNL) of these samplers.

Sub-tasks

- 1.1 Field test of humate technology for uranium and ^{129}I remediation at the F-Area Field Research Site using single well push-pull type tests using existing wells
- 1.2 Diffusion sampler study of sorption and microbial interactions of U and ^{129}I on humate treated and untreated F-Area sediments
- 1.3 Send samples from diffusion samplers (sediments) and push-pull test (water) to PNNL for microbial analysis and perform uranium and ^{129}I speciation analysis on diffusion samplers and PNNL bio-traps

Deliverables

| | |
|--|-----------|
| Sub-task 1.1 Progress report on field injection test | 9/16/2013 |
| Sub-task 1.2 Report on diffusion sampler study | 9/08/2013 |

Task 2: Develop Innovative Characterization and Monitoring Strategies to Support Implementation of Alternative End Points

Implementation of long-lived attenuation-based remedies will require significant levels of monitoring to ensure that the remedies continue to be effective over long periods of time. This will be required to demonstrate to regulators and stakeholders that attenuated contaminants are behaving as predicted by site conceptual model and will not remobilize as the site evolves. Additionally, there is an important need to expand the toolbox of enhanced attenuation remedies. Addressing these needs will lead to development of approaches and tools that facilitate the use of attenuation-based remedies.

Sub-tasks

2.1 SRNL Participation on the SOMERS team

This task supports SRNL participation on the Scientific Opportunities for Monitoring Environmental Remediation Sites (SOMERS) team to develop improved strategies for monitoring subsurface

groundwater contamination that will be used by DOE-EM to develop their three-year Strategic Plan by the end of FY2013. The SOMERS team will be organized by the PNNL and the task will support attendance at team meetings and preparation of a contribution to the technical strategy document. Meeting dates and description of deliverables are TBD.

Subtask 2.2 Implementation of Innovative Paradigm for Long Term Monitoring at Metals and Rad sites

This task will support a pilot field implementation of an alternative paradigm for long term monitoring that should simultaneously improve performance monitoring systems and lower costs. Traditional long-term monitoring relies predominantly on point source measurement of contaminant concentrations at monitoring wells. Concentration measurements for all types of contaminants in groundwater are a lagging indicator plume movement – significant changes indicate that contamination has already migrated. The new paradigm is focused on measurement of the controlling variables that are leading indications for changes in the stability of the plume. This would be supplemented by a substantially reduced number of concentration measurements at wells. The controlling variables include boundary conditions, master variables, and plume/contaminant variables. Boundary conditions are the overall driving forces that control plume movement and therefore provide leading indication to changes in plume stability. Master variables are the key variables that control the chemistry of the groundwater system, and include redox variables (ORP, DO, chemicals), pH, specific conductivity, biological community (breakdown/decay products), and temperature. A robust suite of tools is commercially available to measure these variables.

Currently, at F-area, monitoring/sampling analyses locations (~100 locations) can be divided into the following categories: Background Wells, Point of Compliance wells associated with the F-area basin closure, Plume Definition Wells, Gate Monitoring Wells, Wetland Piezometers, and Stream Surface Water Sampling points. We propose implementation of the pilot monitoring system in two phases. Phase 1 activities will consist of replacing contaminant sampling and analysis at selected Gate Monitoring Wells and Wetland Piezometers with a sensor system that measures master variables and boundary conditions (pH, ORP, water level). Phase 2 activities will consist of reducing the number of Plume Definition wells by fifty percent. The specifics of these activities will be developed and coordinated with the appropriate regulatory agencies and stakeholder groups.

The proposed system should improve the performance of F-area monitoring systems while significantly lowering monitoring costs. In addition, monitoring of leading indicators (boundary conditions and geochemical conditions) will identify deviations from expected plume behavior more effectively than baseline contaminant monitoring systems. This will allow for early identification of changes in physical and chemical controls that will enable remedial response before contamination has migrated in an unacceptable manner. This approach can be used at other waste sites at SRS as well throughout the DOE and federal complex.

Deliverable 2.1 Deployment of sensor system at F-Area (8/5/2013)

Deliverable 2.2 Submit journal article describing innovative paradigm (9/20/2013)

Task 3: Participation in the Development of the End Points Roadmap

This task will support SRNL participation on the DOE-EM Roadmap team that is tasked with defining technically defensible end states, systems-based remediation approaches and systems-based monitoring strategies that include closure solutions that are cost-effective, sustainable, and protective of public health and natural resources at DOE sites. The team will be organized by the PNNL and the task will support attendance at team meetings and assistance in the preparation of a contribution to a technical whitepaper. Meeting dates and description of deliverables are TBD.

Task 4: Management of the Technical Assistance Program

For over two decades, SRNL has managed a dynamic and efficient national program sponsored by DOE Office of Environmental Management that provides teams of technical experts with a broad experience base to

recommend strategies to address DOE's challenging environmental problems when standard approaches haven't worked. The Technical Assistance program organizes and manages small teams of nationally recognized experts in support of both DOE's smaller sites, such as Paducah, Portsmouth, Pinellas, Ashtabula, Fernald, Mound, and Kansas City Plant, and larger sites such as Oak Ridge, Los Alamos, Lawrence Livermore and Savannah River. Typically these teams work with site problem holders to develop efficient and effective solutions to address their complex/difficult technical issues. FY2013 funding will administration of the technical assistance program including helping site problem holders to develop technical needs statements, selection of the technical experts, contracting of non-SRNL participants, management of the team meeting, and preparation of the technical assistance team reports. Task 2 will support identification and implementation of 'Quick Win' ideas for mercury characterization and remediation at Oak Ridge's Y-12 facility. This funding will to leverage funding provided by the OR DOE office. Potential Task 2 projects include:

- **Innovative Strategies for Characterization of Mercury in Support of D&D activities**
 - Develop strategy/sampling protocols to support D&D slab removal/soil remediation/closure activities similar to Site Excavation Plans developed by TA teams for Fernald and Mound
 - Develop innovative approaches and field detectors to support timely and cost-effective decision-making (Field mercury detectors, Field XRF, Flute liners, optical/neutron probes)
 - Develop final closure verification sampling requirements and strategies
- **Innovative Methods for Remediation/Mitigation of Source Zone Hg**
 - Thermal Remediation and Gas-phase Sequestration
 - Explore blending or injection of sequestration materials (e.g., biochar/carbon, alumina, etc.)
 - Explore beneficial use of current building sumps as long-term passive mercury reduction systems (e.g., fill with amendment and connect to stream)
- Explore and extend the portfolio of low cost field screening methods to "bln" soils (e.g., contaminated, potentially contaminated, clean), constraining the magnitude of source material to be treated/excavated

Deliverables

- 4.1 Identify specific opportunities for Quick Wins at OR and develop work scope (5/1/2013)
- 4.2 Support Implementation of Quick project at OR (9/30/2013)

Task 5: Phase II of Understanding Aquifer Heterogeneity with the Reactive Facies Approach

Aquifer heterogeneity is a challenge to acceptance of alternate endpoints because it complicates prediction of contaminant fate and transport and can interfere with effective remediation. Hence, understanding aquifer heterogeneity at a site is important to demonstrating that alternate endpoints can achieve the risk reduction required by regulators and stakeholders. The reactive facies concept developed jointly by SRNL and LBNL relates the complexity of aquifer heterogeneity to the original geologic environment of deposition of the aquifer. It exploits the fact that heterogeneity in aquifers is not random, but occurs in patterns defined by the environment of deposition. Phase I of Understanding Heterogeneity with the Reactive Facies Approach focused on the upper aquifer at the F-Area Applied Field Research Site. Reactive facies proved to be a valuable construct for understanding geochemical heterogeneity in this relatively simple system. The lower aquifer is more complex and the degree of heterogeneity more representative of aquifers across the DOE complex. Phase I was completed in collaboration with the Science Focus Area (SFA) Plume Challenge at LBNL. Phase II began in FY11 but was interrupted by a funding hiatus in FY12. The activities of Phase II will be resumed in collaboration with LBNL to develop the concept of reactive facies into a more general approach to aquifer heterogeneity that can be applied across the DOE complex. The concept of reactive facies will be extended to include the distribution and role of granular iron and phosphate minerals in natural attenuation. The lower aquifer zone at the F-Area Field Research Site contains abundant phosphate minerals that can potentially sequester uranium, as well as iron minerals that can potentially pose redox conditions to be favorable for natural attenuation of some contaminants. The general approach to aquifer heterogeneity, based on reactive facies, will ultimately transfer to ASCM allowing inclusion of a powerful means of accounting for subsurface heterogeneity in modeling.

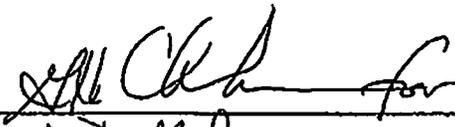
Sub-tasks.

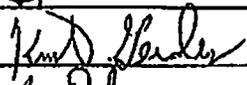
- 3.1 Sampling and analysis of existing lower aquifer cores by high vertical resolution x-ray fluorescence and acid-base titrations to delineate reactive facies and correlate to depositional environments
- 3.2 Continued analysis of sample textures by optical microscopic image analysis
- 3.3 Analysis of the spatial distribution and reactivity of the "heavy mineral" suite in the lower aquifer zone

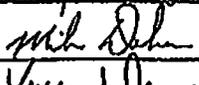
SPENDING PLAN:**Monthly Spending Plan for FY13 (\$K)**

| Oct 2012 | Nov 2012 | Dec 2012 | Jan 2013 | Feb 2013 | Mar 2013 | Apr 2013 | May 2013 | Jun 2013 | Jul 2013 | Aug 2013 | Sep 2013 | Total |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|
| 0 | 5 | 20 | 24 | 25 | 66 | 80 | 80 | 90 | 90 | 80 | 60 | 620 |

Signatures and Approvals:

HQ Program Manager: Lairncy Bates 

Office Director: Kurt Gerdes 

Principal Investigator: Miles Denham  3/12/2013

Site Representative: Karen Adams  03.12.13

BUDGET:

| Task | Budget FY13 \$K |
|---|--------------------|
| Task 1: Attenuation Remedies in Support of Alternative End Points | 230 ^a |
| Task 2: : Develop Innovative Characterization and Monitoring Strategies to Support Implementation of Alternative End Points | 140 ^b |
| Task 3: Participation in the Development of the End Points Roadmap | 30 ^b |
| Task 4: Management of Technical Assistance Program | 75 ^b |
| Task 5: Phase II of Understanding Aquifer Heterogeneity: Reactive Facies Approach | 145 |
| Total | \$620 |

a- \$140K FY13 funding received previously

b- \$120K FY12 Carryover identified in Zero Sum TCR dated 12/2012 distributed across these tasks

SR22470 - Savannah River Nuclear Solutions (SRNS)

Financial Plan Report - Detail

She: SR

| Rpt | Entity | Fund | Leg | Program | B&R | Obj. | Local | Project | WFO | Order Number | Legacy | Beginning | Uncostrd Obs | Previous | Change | BA | Revised | Total |
|--|--------|-------|-----|---------|-----------|-------|---------|---------|---------|---------------|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 410003 | 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0003925 | 0000000 | 15,138.97 | | 135,061.61 | 135,061.61 | 200,000.00 | 335,061.61 | 350,200.58 | 350,200.58 | 350,200.58 |
| 410003 | 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0004017 | 0000000 | 26,037.10 | | 59,000.00 | 59,000.00 | 40,000.00 | 99,000.00 | 125,037.10 | 125,037.10 | 125,037.10 |
| 410003 | 410003 | 01250 | TP | 1110676 | EY4049110 | 25400 | 0000000 | 0004266 | 0000000 | 76,614.28 | | 147,098.00 | 147,098.00 | 15,000.00 | 162,098.00 | 238,712.28 | 238,712.28 | 238,712.28 |
| Total for Program Parent/Control Point: EY4000000 | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 111525 | EY8648111 | 25400 | 0000000 | 0001761 | 0000000 | 119,672.95 | | 341,159.61 | 341,159.61 | 255,000.00 | 596,159.61 | 713,949.96 | 713,949.96 | 713,949.96 |
| AY 2013 - Transfer to SRNS per MGPP. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1111461 | EY8648118 | 25400 | 0000000 | 0004363 | 0000000 | 1,312,929.09 | | -918,475.00 | -918,475.00 | 500,000.00 | -418,475.00 | 894,454.09 | 894,454.09 | 894,454.09 |
| AY 2013 - \$500K of funds are specifically to support the FAY project activities per H. Gunter. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1111497 | EY8648110 | 25400 | 0000000 | 0004364 | 0000000 | 2,676,304.39 | | 60,235,629.92 | 60,235,629.92 | 16,286,919.00 | 76,522,548.92 | 79,198,853.31 | 79,198,853.31 | 79,198,853.31 |
| AY 2013 - Transfer to SRNS per MGPP. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1111498 | EY864811E | 25400 | 0000000 | 0004365 | 0000000 | 1,184,520.19 | | 22,878,741.00 | 22,878,741.00 | 5,416,399.00 | 28,295,140.00 | 29,479,660.19 | 29,479,660.19 | 29,479,660.19 |
| AY 2013 - \$1.2M specifically for: "\$700K these funds are specifically to support: (\$400K for SRNS efforts for a pre-conceptual for vulnerability assessment for the Waste Isolation Pilot Plant and \$300K for SRNS efforts to develop an application package for submittal to the Nuclear Regulatory Commission for the 2013 9975 shipping package); \$500K for DSA 10 & 11 preparations and Operations support to FAY per H. Gunter. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1111499 | EY864811F | 25400 | 0000000 | 0004366 | 0000000 | 110,373.09 | | 9,506,985.00 | 9,506,985.00 | 2,902,431.00 | 12,409,416.00 | 12,519,789.09 | 12,519,789.09 | 12,519,789.09 |
| AY 2013 - Transfer to SRNS per MGPP. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1111526 | EY8648121 | 25400 | 0000000 | 0001762 | 0000000 | 344,221.52 | | 18,164,250.00 | 18,164,250.00 | 5,874,896.00 | 24,039,146.00 | 24,383,367.52 | 24,383,367.52 | 24,383,367.52 |
| AY 2013 - Transfer to SRNS per MGPP. rz | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1110949 | EY8648130 | 25400 | 0000000 | 0001763 | 0000000 | 11,288,054.07 | | 7,392,562.00 | 7,392,562.00 | 3,778,782.00 | 11,171,344.00 | 22,459,398.07 | 22,459,398.07 | 22,459,398.07 |
| AY 2013 - 4.9.2012 - increased by \$3,778,782 per RMO P. Petty - mail | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 1110950 | EY8648300 | 25400 | 0000000 | 0001766 | 0000000 | 868,926.39 | | 22,278,064.00 | 22,278,064.00 | 8,187,882.00 | 30,465,946.00 | 31,334,872.39 | 31,334,872.39 | 31,334,872.39 |
| AY 2013 - 4.9.2013 - increased by \$8,187,882 - Per RMO email P. Petty - mail | | | | | | | | | | | | | | | | | | |
| Total for Program Parent/Control Point: EY8648020 | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 111528 | EY8748141 | 25400 | 0000000 | 0001764 | 0000000 | 1,358,284.88 | | 41,016,000.00 | 41,016,000.00 | 7,000,000.00 | 48,016,000.00 | 49,374,284.88 | 49,374,284.88 | 49,374,284.88 |
| 410003 | 410003 | 01250 | TP | 111528 | EY8748141 | 25400 | 0000000 | 0001764 | 0000000 | 18,062,500.00 | | 4,000,000.00 | 4,000,000.00 | 2,000,000.00 | 22,062,500.00 | 22,062,500.00 | 22,062,500.00 | 22,062,500.00 |
| 410003 | 410003 | 01250 | TP | 111528 | EY8748141 | 25400 | 0411108 | 0001764 | 0000000 | 121,214.20 | | 7,741,000.00 | 7,741,000.00 | 2,000,000.00 | 9,741,000.00 | 9,862,214.20 | 9,862,214.20 | 9,862,214.20 |
| 410003 | 410003 | 01250 | TP | 111528 | EY8748141 | 25400 | 0411130 | 0001764 | 0000000 | 0.00 | | 7,606,000.00 | 7,606,000.00 | 2,000,000.00 | 9,606,000.00 | 9,606,000.00 | 9,606,000.00 | 9,606,000.00 |
| Total for Program Parent/Control Point: EY8748140 | | | | | | | | | | | | | | | | | | |
| 410003 | 410003 | 01250 | TP | 111166 | FS5048010 | 25400 | 0000000 | 0001765 | 0000000 | 185,186.65 | | 1,950,000.00 | 1,950,000.00 | 200,000.00 | 2,150,000.00 | 2,335,186.65 | 2,335,186.65 | 2,335,186.65 |
| 410003 | 410003 | 01250 | TP | 111167 | FS5048020 | 25400 | 0000000 | 0001765 | 0000000 | 191,501.97 | | 5,407,000.00 | 5,407,000.00 | 2,000,000.00 | 7,407,000.00 | 7,598,501.97 | 7,598,501.97 | 7,598,501.97 |
| 410003 | 410003 | 01250 | TP | 111172 | FS5048070 | 25400 | 0000000 | 0001765 | 0000000 | 820,190.84 | | 565,000.00 | 565,000.00 | 300,000.00 | 865,000.00 | 1,685,190.84 | 1,685,190.84 | 1,685,190.84 |
| Total for Fund: 01250 | | | | | | | | | | | | | | | | | | |
| Total for Program Parent/Control Point: FS5010010 | | | | | | | | | | | | | | | | | | |
| 20699,170.58 | | | | | | | | | | 1,196,879.46 | | 7,922,000.00 | 7,922,000.00 | 2,500,000.00 | 10,422,000.00 | 11,618,879.46 | 11,618,879.46 | 11,618,879.46 |
| 241,204,216.53 | | | | | | | | | | 74,425,500.00 | | 15,000,000.00 | 15,000,000.00 | 89,425,500.00 | 90,904,999.08 | 90,904,999.08 | 90,904,999.08 | 90,904,999.08 |
| 67,709,726.00 | | | | | | | | | | 2,000,000.00 | | 2,000,000.00 | 2,000,000.00 | 9,606,000.00 | 9,606,000.00 | 9,606,000.00 | 9,606,000.00 | 9,606,000.00 |
| 241,204,216.53 | | | | | | | | | | 1,196,879.46 | | 7,922,000.00 | 7,922,000.00 | 2,500,000.00 | 10,422,000.00 | 11,618,879.46 | 11,618,879.46 | 11,618,879.46 |
| 308,913,942.53 | | | | | | | | | | 20,699,170.58 | | 308,913,942.53 | 308,913,942.53 | 329,613,113.11 | 329,613,113.11 | 329,613,113.11 | 329,613,113.11 | 329,613,113.11 |

Execution - Analyst Run

| XID | Appr Year | Rpt Ent Parent | Allot-tee | Fund | Program | Program Parent | Rpt Entity | Project | WFO | Obj Class | Purchase Order | Local Use | BUO | BUO Deob | Committed BA | Obligated BA |
|-----------------------|-----------|----------------|-----------|-------|---------|----------------|------------|---------|---------|-----------|----------------|-----------|------------------|-------------|-------------------|-------------------|
| 50238 | 2006 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0003925 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 2,984.79 | 2,984.79 |
| 50239 | 2007 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0003925 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 2,871.00 | 2,871.00 |
| 50240 | 2009 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0003925 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 29,437.70 | 29,437.70 |
| 50414 | 2009 | SR | 36 | 01250 | 1110676 | C000977 | 410225 | 0003925 | 0000000 | 25300 | M520825 | 0000000 | 0.00 | 0.00 | 60,000.00 | 0.00 |
| 49084 | 2011 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0003925 | 0000000 | 25400 | SR22470 | 0000000 | 15,138.97 | 0.00 | 19,768.12 | 19,768.12 |
| 49788 | 2013 | SR | 36 | 01250 | 1110676 | C000977 | 410003 | 0003925 | 0000000 | 25400 | SR22470 | 0000000 | 0.00 | 0.00 | 280,000.00 | 280,000.00 |
| 50413 | 2013 | SR | 36 | 01250 | 1110676 | C000977 | 410225 | 0003925 | 0000000 | 25300 | M520826 | 0000000 | 0.00 | 0.00 | 60,000.00 | 0.00 |
| Report Totals: | | | | | | | | | | | | | 15,138.97 | 0.00 | 455,061.61 | 335,061.61 |