



WESTAR QUARTERLY REPORT

Reporting Period: 4th quarter 2017

Report Date: January 31, 2018

EPA Grants No. XA-99T15201-4

XA-99T67301-0

NPS Agreement No. Task 3:

P15AC01632

Task 4: P16AC01109

BLM Agreement No. L14AC00077

BLM Agreement No. L16AP00004

API Contract No. 2016-110934

Regardless of funding source, all of the projects and activities conducted by WESTAR are consistent with and intended to achieve the purposes of the organization spelled out in Article 2 of WESTAR's Articles of Association, including promoting the exchange of information related to air quality management, developing procedures to meet air quality objectives and to protect environmental resources, to establish workgroups to investigate specific topics, and to develop recommendations for the consideration of the membership. This report summarizes activities and outcomes for this reporting period.

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1. EPA CORE GRANT 2017-2019

Note: Work on activities and spending against this grant began December 2017. Because this grant had only minimal expenditure at the end of this quarter, activities will be reported in the 1st quarter of 2018 for the 2017-2019 EPA Core grant.

a. Budget Summary and Status

The following tables summarize the status of WESTAR's Core Grant budget, comparing cumulative grant awards since the inception of the current grant (October 1, 2017) through the end of the most recent quarter.

EPA Core Grant 2017-19 Expenses by Object Class through 12/31/2017

| Object Class | Budget | Cumulative | | |
|----------------------|------------------|---------------------|-----------------|-------------------|
| | | This Quarter | Expenses | Percentage |
| 1. Personnel | 837,060 | 11,363 | 11,363 | 1% |
| 2. Fringe Benefits | 252,117 | 2,880 | 2,880 | 1% |
| 3. Travel | 762,400 | 21,741 | 21,741 | 3% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 1,040,851 | 0 | 0 | 0% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 397,561 | 33,063 | 33,063 | 8% |
| 9. Indirect Expenses | 1,138,717 | 14,118 | 14,118 | 1% |
| Totals | 4,428,706 | 83,164 | 83,164 | 2% |

2. EPA CORE GRANT 2014-16

Note: Work on activities and spending against this grant began October 2014.

a. Activity Summary: Operations Project

The purpose of the Operations project is to develop, implement, and support the policy and technical activities at WESTAR that benefit member states. Funding for this project comes entirely from member state contributions. In addition, personnel from member states and federal land management agencies contribute their time and expertise to many of the tasks performed under this project.

1) Status of work plan activities – Operations Project

| <i>Expected Result for Project Period</i> | <i>Results/Outcomes</i> | |
|--|-------------------------|-----------------------------|
| | <i>2017 Q4</i> | <i>Project Period Total</i> |
| 27 Air director conference calls, documented with minutes posted on WESTAR’s website | 2 | 33 |
| 6 Business meetings, documented with minutes and presentations posted on WESTAR’s website | 1 | 7 |
| 120 Committee and ad hoc workgroup conference calls | 5 | 151 |
| 12 Trips by committee chairs to brief air directors on committee activities | 3 | 14 |
| 3 Specialty conference on a high priority topic | 1 | 2 |
| 3 Meetings held to address emerging topics | 0 | 1 |
| 9 Trips by committee representatives to attend national meetings and report back to WESTAR membership | 0 | 8 |

2) Other Activities this Quarter – Operations Project

* WESTAR, NESCAUM, EPA and the hearth products industry continued to discuss improvements to the wood heater certification method.

*WESTAR staff represented western state agencies at the annual IMPROVE Steering Committee meeting.

b. Activity Summary: Training Project

The purpose of the Training Project is to: (1) deliver high quality training courses/workshops that meet the needs and expectations of state and local air agency staff within the fifteen-state WESTAR region; (2) develop needed, cost-effective, responsive, and western-states-focused training opportunities; and (3) act as the main point of contact for information and educational training opportunities related to air quality training.

1) Status of work plan activities – Training Project

| <i>Expected Result for Project Period</i> | <i>Results/Outcomes</i> | |
|--|-------------------------|-----------------------------|
| | <i>2017 Q4</i> | <i>Project Period Total</i> |
| 69 Educational opportunities developed and delivered: | 9 | 80 |
| * Enforcement of NSR/PSD Requirements (NACT 325) | | |
| * Inspection Procedures & Safety (APTI 446) | | |
| * Inspection of Particle Control Devices (APTI 445) | | |
| * Industrial Boilers (NACT 273) | | |
| * Stationary Reciprocating Engines (NACT 271) | | |
| * Stationary Gas Turbines (NACT 272) | | |
| * Compliance Assurance Monitoring (NACT 220) | | |
| * Intermediate NSR/PSD | | |
| * Advanced Inspector Training (NACT 355) | | |
| 1800 Students trained | 217 | 1834 |
| 3450 Student training days | 403 | 3634 |
| 1 Training course developed/updated | 0 | 0 |

2) Other Activities this Quarter – Training Project

* WESTAR staff works with state, local and tribal air quality government agencies in the Western United States to identify each agency's most important training need for calendar year 2018. WESTAR's upcoming year's training schedule is developed based on these needs.

* WESTAR is involved with the APTI 470 Technical Review Committee which is working with EPA staff to bring up-to-date the topics and material in the Quality Assurance for Air Quality Measurement Systems training course.

* WESTAR staff participates on bi-monthly conference calls with the APTI-Learn.net Maintenance, Operation and Enhancement Team to identify improvement and enhancement opportunities, and provide recommendations to enhance the user's experience with APTI-Learn website.

* WESTAR staff serves as a member on the National Training Strategy Committee. The NTS Committee established the following goals: to understand the priority training needs of air quality agency professionals; to provide training opportunities that meet the priority needs of air quality agency professionals; to utilize course materials that are up-to-date, accurate, complete, and easy to use; to conduct all training using recognized subject matter experts and effective teachers; and to deliver effective and cost-efficient training through the use of existing, new and emerging technologies where appropriate

* WESTAR staff is an active member on two work groups under the work of the JTC. Work Group #2 is responsible for updating & developing course content by: 1) reviewing current approaches for updating existing course content and identifying potential improvements, 2) recommend approaches for developing new courses, and 3) examining how courses may be better delivered. Work Group #3 is responsible for reviewing the current process used for instructor evaluations and recommending improvements, and the review the processes used to hire new instructors, and identify new mechanism to consistently find future instructors.

* WESTAR staff is a current member of EPA's ad hoc Access Database team charged with identifying the structure, process and methodology of creating a comprehensive database to be populated with training information such as but not limited to title, course descriptions, course instructor contact information, date of last update, and course materials.

* WESTAR is involved with the training committees at AAPCA, NACAA, and EPA’s Joint Training Committee (JTC). The JTC developed a Training Strategy Action Plan which includes efforts in: course update priorities; prioritize and initiate a plan to develop training offerings to fill gaps, based on curriculum project; develop and implement a process to determine the highest priority training needs on an on-going basis; develop and implement a plan for further enhancement and on-going maintenance of APTI-Learn; and re-launch an improved Learning Management System (APTI-Learn).

c. Activity Summary: Regional Technical Support Project

The purpose of the Regional Technical Support project is to provide technical support to member agencies related to analysis of monitoring data, analysis and preparation of emissions inventories, regional modeling analyses, and operation and maintenance of web databases – all for member agencies to use in their air quality management and planning activities.

1) Status of work plan activities – Regional Technical Support Project

| <i>Expected Result for Project Period</i> | <i>Results/Outcomes</i> | |
|---|-------------------------|-----------------------------|
| | <i>2017 Q4</i> | <i>Project Period Total</i> |
| 15 Regional technical analysis/planning conference calls | 12 | 120 |
| 12 Technical Steering Committee conference calls | 3 | 36 |
| 6 Face-to-face WRAP Board meetings | 1 | 5 |
| 30 Travel support provided to local agency and tribal WRAP Board members | 3 | 16 |

2) Other Activities this Quarter – Regional Technical Support Project

- Staff continued the development of the WRAP Regional Technical Center through discussions with state and federal agencies.
- Staff continued to work with state and federal agencies, including regional EPA offices, to discuss and collect input on regional technical analysis needs in the western U.S.
- Dissemination of reports, data, and summary results were conducted via the [WRAP](#), [IWDW-WAQS](#), and [WRAP Fire Tools](#) websites

- The WRAP Technical Steering Committee and 5 Work Groups (Fire & Smoke, Oil & Gas, Regional Technical Operations, Tribal Data, and Regional Haze Planning) under their direction met regularly.
- Significant progress continued on implementing the 2017 Annual WRAP Workplan, after adoption by the WRAP Board on August 14, 2017.
- The Western and National Regional Haze Planning Workshop was held Dec. 5-7, 2017 in Denver, CO. More than 100 state, tribal, local air agency, EPA, and Federal Land Manager staff attended the workshop in-person and another 30 attended remotely. Materials from the workshop are [here](#).

d. Budget Summary and Status

The following tables summarize the status of WESTAR’s Core Grant budget, comparing cumulative grant awards since the inception of the current grant (September 1, 2014) through the end of the most recent quarter.

**EPA Core Grant 2014-16
Expenses by Object Class through 12/31/2017**

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|------------------|---------------------|--------------------------------|-------------------|
| 1. Personnel | 719,106 | 56,422 | 771,310 | 107% |
| 2. Fringe Benefits | 178,098 | 15,564 | 188,743 | 106% |
| 3. Travel | 731,738 | 64,049 | 540,934 | 74% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 105,000 | 13,737 | 72,766 | 69% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 360,635 | 59,367 | 416,669 | 116% |
| 9. Indirect Expenses | 772,106 | 55,735 | 876,260 | 113% |
| Totals | 2,866,683 | 264,875 | 2,866,683 | 100% |

3. NPS COOPERATIVE AGREEMENT

Under this agreement, WESTAR/WRAP has agreed to cooperate with the National Park Service in furthering the understanding of air quality formation, transport and effects in the western U.S., which includes but is not limited to ambient monitoring and data reporting, creation and operation of databases, development of emission inventories, performance of air quality modeling to understand the effects of pollution and to facilitate discussion of possible mitigation,

and the development of outreach and education products toward bettering the understanding of Western air quality by the public and stakeholders.

Projects and activities under this Agreement will be individually authorized by separate task agreements, with each project or activity having a separate work plan and budget developed cooperatively between the NPS and WESTAR/WRAP.

TASK 1: 3-State Study Coordination and Data Warehouse (P14AC00133)

This Task was completed on 9/30/2014.

TASK 2: Three State Air Quality Study (P14AC01122)

This Task was completed on 6/30/2016.

TASK 3: Intermountain West Data Warehouse – Western Air Quality Study (IWDW-WAQS) (P14AC01122)

Under this Task Agreement, WESTAR/WRAP provides collaboration and coordination services for states, tribes, local air agencies, and federal agencies across the Western U.S. under the leadership of the agencies sponsoring the IWDW-WAQS for the federal and state agencies cooperating through the IWDW memorandum of understanding. The IWDW project builds upon and expands the Three-State Data Warehouse supported in Task 2. Task 3 continued seamlessly from the end of Task 2. The IWDW and associated Western Air Quality Study (WAQS) modeling effort have the following shared objectives:

- Provide storage and access to consistent, sufficient, comparable and high-quality technical data.
- Provide consistent protocols for technical data and its analysis for air quality impacts to be performed by the IWDW-WAQS partner agencies.
- Initiate and support collaborative work by the federal and state partners on National Environmental Policy Act (NEPA) air quality analyses relative to energy development and for a broad range of air quality planning activities, including emissions, meteorological and air quality modeling.
- Develop technical capacity and improved data sets for the cooperating agencies using standardized reproducible data collection, quality assessment, analysis and storage protocols.
- Identify, document and apply criteria for base year and future year projections.
- Assist NPS and the IWDW–WAQS Governing Board in identifying ways and means of ongoing funding to support the data warehouse when operational
- Identify the mechanisms to be used by the technical work groups to report to the Oversight Committee and Governing Board for the IWDW–WAQS.

WESTAR/WRAP staff serve as project coordinator for the IWDW-WAQS.

a. Activity Summary

Work during this quarter focuses on the Monitoring Network Assessment effort for the NM-UT-CO-WY-MT-ND-SD region, with the Monitoring Network Assessment for the 7-state region was released to state and federal IWDW-WAQS cooperators for final review. Support for the Oversight Committee and Governing Board was provided, as well as for the NPS and EPA agencies individually, to plan IWDW-WAQS budget and work over the next few years.

Summary of Work Plan Activities

| <i>Expected Results for Project Period</i> | <u>Results/Outcomes</u> | |
|---|-------------------------|------------------------|
| | <i>2017 Q4</i> | <i>Project-to-date</i> |
| 6 Conference calls or meetings with Governing Board or Oversight Committee | 2 | 22 |
| 5 Face-to-face meetings | 1 | 19 |
| 4 Technical milestones requiring special communication effort | 1 | 28 |

b. Budget Summary and Status

**NPS Cooperative Agreement
Task 3 – Three State Air Quality Study # P15AC01632
Expenses by Object Class through 12/31/2017**

| Object Class | Budget¹ | This Quarter | Cumulative Expenses | Percentage |
|----------------------|---------------------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 8,070 | 0 | 7,728 | 96% |
| 2. Fringe Benefits | 1,769 | 0 | 1,302 | 74% |
| 3. Travel | 4,002 | 0 | 1,292 | 32% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 482,381 | 6,169 | 96,510 | 20% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 0 | 0 | 55 | |
| 9. Indirect Expenses | 9,279 | 0 | 9,819 | 106% |
| Totals | 505,501 | 6,169 | 116,707 | 23% |

¹ WESTAR has drawn the total amount of the agreement as an advance.

TASK 4: Intermountain West Data Warehouse-Western Air Quality Study (IWDW-WAQS) (P16AC011099)

Under this Task Agreement, WESTAR/WRAP serves as the project coordinator for the IWDW-WAQS effort and performs technical tasks through contractors to include:

- Emission inventory development for oil and gas sources and applications of best available data for all other source categories;
- Air quality modeling for base year 2014 including development of model evaluation and model runs for 2014 base year and future years;
- Support and coordination of IWDW operations and maintenance;
- Assistance in education and outreach to stakeholders and the public.

a. Activity Summary

The 2014 base year emissions inventory for Oil & Gas in the 7-state region of NM-CO-UT-WY-MT-ND-SD was completed. The data and final report for the project were reviewed on a Dec. 21, 2017 conference call with the state and federal agencies' cooperators in the 7-state region.

| <i>Expected Results for Project Period</i> | <u>Results/Outcomes</u> | |
|--|-------------------------|------------------------|
| | <i>2017 Q4</i> | <i>Project-to-date</i> |
| 1 Contract for emission inventory development and 2014 modeling | 0 | 2 |
| 6 Quarterly support and coordination for IWDW | 2 | 10 |
| 1 Outreach assistance | 2 | 10 |

b. Budget Summary and Status

**NPS Cooperative Agreement
Task 4 – Three State Air Quality Study # P1601109
Expenses by Object Class through 12/31/2017**

| Object Class | Budget¹ | This Quarter | Cumulative Expenses | Percentage |
|----------------------|---------------------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 44,959 | 7,812 | 32,140 | 71% |
| 2. Fringe Benefits | 12,664 | 1,534 | 6,282 | 50% |
| 3. Travel | 4,400 | 0 | 25 | 1% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 117,292 | 0 | 99,937 | 85% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 1,000 | 0 | 460 | 46% |
| 9. Indirect Expenses | 54,571 | 8,138 | 33,500 | 61% |
| Totals | 234,886 | 17,483 | 172,344 | 73% |

¹ WESTAR has drawn \$182,886 of the agreement as an advance.

4. BLM AIR QUALITY MODELING WESTERN STATES PROJECT

There are currently 2 activity areas under this project:

- 3.1 a Drill Rig NO₂ Monitoring Study, and
- 3.2 an Oil & Gas Emission Inventory Update Study for the Greater San Juan and Permian Basins.

3.1 Drill Rig NO₂ Monitoring Study

WESTAR received initial funding from the American Petroleum Institute (API) in late 2013 to organize a workgroup and develop a work plan and schedule to execute a Study to collect ambient measurements adjacent to drilling rigs to evaluate actual 1-hour NO₂ impacts from drilling operations. In addition, sufficient data would be collected regarding drilling operations that could be used to verify NO₂ air quality models. The Study will focus on short term episodes.

In May 2014, WESTAR/WRAP responded to a funding opportunity notice from the Bureau of Land Management (BLM) for this Study. A funding proposal was prepared and submitted by WESTAR/WRAP and was then awarded by the BLM as Task 1 under the BLM-WESTAR Cooperative Agreement. The BLM funding is allocated for travel and communications for WESTAR/WRAP staff to support the Study. The BLM funding is also allocated to pay the salary of a 50% full-time equivalent WESTAR contract employee. In August 2014, API transferred funding resources to WESTAR for the bulk of the Colorado field sampling contract. In December 2014, BLM provided additional grant funding to cover the remainder of the Colorado field sampling expenses, WESTAR/WRAP staff support, and a separate data formatting and analysis contracted effort. In November 2015, API provided additional funding resources for contractor analysis of the Alaska field sampling data. In mid-Sept. 2016, an additional \$60,000 was awarded to be able to complete additional analyses of the field sampling data specifically from the Colorado study sites and to support facilitation of continued evaluation by volunteer technical workgroups of both the Alaska and Colorado field study data.

a. Activity Summary

Activities through calendar year 2017 include:

- The WESTAR/WRAP contract employee organized 4 volunteer Model Evaluation Workgroup Teams and prepared a Study Summary Report as of May 2016.
- The [Drill Rig 1-hour NO₂ Collaborative Monitoring Study](#) project webpage was updated 3 times.
- A technical proposal was prepared in early August 2016 as requested by the BLM for the \$60,000 that was then awarded in September. Contact was initiated with EPA and API to schedule a conference call in July 2017 of the Study Mgmt. Team to discuss how to use the BLM funds to work with and support the Workgroup Teams and their analyses.

- The conference call with the Study Mgmt. Team was held Oct. 6th. A budget for the available funds was discussed and direction was provided to award some of the funds for additional technical analysis and project mgmt. activities.
- Additional project mgmt. activities were executed, including regular calls of the Study Mgmt. Team and routine coordination of the 2 EPA-organized data review teams.

b. Budget Summary and Status

The BLM initial and supplemental funding received in 2014 enabled the 2014-15 Study work and provides staff support to the entire Study. Funding for WESTAR personnel and field sampling data analysis contract support by BLM and the field sampling and data analysis contract support from API are the combined funding for this project. WESTAR-WRAP are using the funds received in Sept. 2016 to complete the field sampling data analysis phase of the project.

**BLM Air Quality Modeling Western States
Including Continuing Work on Drill Rig NO2 Monitoring Study
BLM Cooperative Agreement # L14AC00077
Expenses by Object Class through 12/31/2017**

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|----------------|---------------------|--------------------------------|-------------------|
| 1. Personnel | 16,800 | 0 | 22,818 | 136% |
| 2. Fringe Benefits | 6,222 | 0 | 3,721 | 60% |
| 3. Travel | 9,832 | 0 | 2,205 | 22% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 246,838 | 1,990 | 183,514 | 74% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 1,463 | 0 | 5,101 | 349% |
| 9. Indirect Expenses | 18,845 | 0 | 25,102 | 133% |
| Totals | 300,000 | 1,990 | 242,461 | 81% |

**BLM Air Quality Modeling Western States
Including Continuing Work on Drill Rig NO2 Monitoring Study
American Petroleum Institute (API) Funding
Expenses by Object Class through 12/31/2017**

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|----------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 3,444 | 0 | 3,444 | 100% |
| 2. Fringe Benefits | 469 | 0 | 469 | 100% |
| 3. Travel | 0 | 0 | 0 | |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 266,759 | 0 | 261,549 | 98% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 0 | 0 | 0 | |
| 9. Indirect Expenses | 4,328 | 0 | 4,328 | 100% |
| Totals | 275,000 | 0 | 269,790 | 98% |

3.2 Oil and Gas Emissions Inventory Updates for the San Juan and Permian Basins

The BLM New Mexico State Office (NMSO) and the State of New Mexico Environmental Department (NMED) Air Quality Bureau need up-to-date and accurate oil and gas emission inventories in the near future to address the potential air quality and AQRV impacts associated with oil and gas development in the region. They need a comprehensive O&G emissions inventory that can be used for air quality modeling and planning. The objective of this project is to develop the input data that will be used to develop a detailed and comprehensive O&G emissions inventory for the 2014 baseline year and a projection 5-7 years in the future using the WRAP Phase III methodology and procedures. This work will allow the BLM to obtain more accurate air quality and AQRV impact assessments due to current and future O&G development activities in New Mexico.

a. Activity Summary

This project will focus on surveys of producers to update and gather data used to calculate emissions of the criteria pollutants (NOx, CO, VOCs, PM and SOx) and greenhouse gases (CO2, CH4, and N2O). Ramboll-Environ is working for WESTAR and WRAP to prepare and analyze the surveys. Airstar Consulting is working for Ramboll-Environ as the project survey coordinator and primary industry contact. WRAP’s contractors will coordinate participation and data collection from producers in the Basin. The survey data will be confidential and presented only in the aggregate for each basin. In parallel, for each basin, the contractors will work with the air regulatory agencies (New Mexico Environment Department - Air Quality Bureau, Colorado Department of Public Health and Environment - Air Pollution Control Division, and EPA Region 6, 8, and 9), and the tribes in the San Juan Basin (Navajo, Ute Mountain Ute, Southern Ute, and

Jicarilla Apache) to verify and update emissions for permitted O&G point sources in the 2014 base year.

Producers will provide detailed area source data via surveys to supplement these point source data. Reviewing permitted point source data and applying the area source survey results will provide inputs that will allow the estimation of a comprehensive inventory of air pollutants covering most major O&G activities in the basin by mineral estate ownership: 1) federal, 2) trust (Indian allotted and tribal) 3) state, and 4) private (fee). The federal mineral estate will also include two (2) subparts, one associated with the decision space for National Forest System Lands, and the other with the decision space for lands under the jurisdiction of the BLM.

Work products consisting of a technical memoranda and spreadsheets for each basin will reside on the WRAP website.

Project Schedule for Greater San Juan O&G Emissions Inventory Inputs Project – Phase 1 of 2

- Begin Survey preparation, Ranked List of Companies, Query for State/Federal Agencies, Access IHS database at BLM, identify Contacts from Ranked List of Operators from Production Statistics, Contacts from Agencies
 ○ Schedule and Hold Outreach Calls/Meetings June 2015
- Distribute Survey Instruments and Agency Queries September 2015
 ○ Hold additional outreach calls
- Agencies & Companies Complete/Submit Query Response November 2015
- Complete Draft and Final Memoranda/Spreadsheets of Phase 1 emission inventory input data October 2016
- Project results update Sept. 2017
 - Greater San Juan and Permian Basin Future Year Emission Inventory Forecast methodologies (Sept. 13, 2017) [PDF](#)
 - Progress report presentation - Second Four Corners Public Science Forum on Methane, Durango, CO – Sept. 12, 2017 [PDF](#)

Due to lack of operator response to the surveys by early 2016, WESTAR-WRAP requested additional funding to develop the remaining needed Phase 1 emissions inventory inputs from the EPA 2014 Subpart W Greenhouse Gas reporting database. The BLM awarded \$90,000 in Sept. and WESTAR-WRAP's contractor completed the Phase I inputs work with a review call and final report at the end of Oct. and early Nov., respectively. The remaining project resources will be applied to the preparation of the 2014 inventory and the future projection year analysis for the 2 basins. That "Phase 2" of the project work began in February with the award of a contract for the technical work. Due to health issues for a member of the Ramboll Environ contractor team, completion of the work products is now slated for late 2017.

Project Schedule for Greater San Juan O&G Emissions Inventory Inputs Project – Phase 1 of 2

- Begin Emission Inventory preparation January 2017
-
- Finalize memo and post remaining work products 1st quarter 2018
- Apply base case and sensitivity test inventories in IWDW-WAQS modeling platform When modeling platform is ready

The project website is found at: <http://www.wrapair2.org/SanJuanPermian.aspx>, updates were made in the 4th quarter 2017.

b. Budget Summary and Status

**BLM Oil and Gas Emissions Inventory Updates for the San Juan and Permian Basins
BLM Cooperative Agreement # L14AC00077
Expenses by Object Class through 12/31/2017**

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|----------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 15,355 | 2,232 | 17,145 | 112% |
| 2. Fringe Benefits | 4,346 | 438 | 3,207 | 74% |
| 3. Travel | 1,497 | 0 | 1,025 | 68% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 159,950 | 12,694 | 160,593 | 100% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 0 | 0 | 0 | |
| 9. Indirect Expenses | 18,852 | 1,341 | 18,030 | 96% |
| Totals | 200,000 | 16,705 | 200,000 | 100% |

5. BLM-NM AIR QUALITY MODELING

Activity Summary

WESTAR and WRAP and the New Mexico Environment Department (NMED) have worked together to develop this proposal to fund ozone modeling and visibility analysis for the Four Corners area. NMED has been working with WESTAR, WRAP, and the BLM for several years on characterizing air quality in the Four Corners region and will partner with WESTAR and WRAP on this study to obtain more recent analyses of ozone and visibility in the region.

Oil and Gas (O&G) development in the inter-mountain western United States has undergone rapid increases over the last decade. The San Juan Basin in New Mexico and Colorado is a major natural gas production basin and has over 20,000 wells; while O&G production in the San Juan Basin has declined in recent years, the future development of the Mancos Shale formation represents a source of potential growth of O&G production in the basin. O&G development releases emissions of oxides of nitrogen (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur dioxide (SO₂), hazardous air pollutants (HAPs) and greenhouse gases (GHG). These emissions can lead to elevated air pollution levels that may threaten National Ambient Air Quality Standards (NAAQS), cause HAPs levels that may cause health effects, and have potential adverse effects on air quality related values (AQRVs), which include visibility and acid deposition. To address these potential air quality and AQRV impacts requires accurate and comprehensive emissions inventory of O&G sources followed by air quality modeling and planning.

In response to these challenges, the affected states, tribes and federal land managers in the region came together and formed the Four Corners Air Quality Task Force to develop control strategies for future air quality impacts from development. In addition to Colorado and New Mexico, other participating agencies include the Navajo Nation Environmental Protection Agency; the Southern Ute Indian Tribe Air Quality Program; the U.S. Environmental Protection Agency (EPA); the U.S. Department of Interior - Bureau of Land Management (BLM) and National Park Service; the U.S. Department of Agriculture - Forest Service (USFS); the U.S. Department of Energy; and the State of Utah. The Task Force included more than 100 members and 150 interested parties. Members included private citizens, representatives from public interest groups, universities, and industry, and federal, state, tribal and local governments. The O&G industry was a major participant in the Task Force with over 50 representatives.

In this Study, the NMED now needs projected emissions modeling and analysis on future year scenarios for ozone and AQRV impacts associated with O&G development in the region. WESTAR and WRAP is leading an effort to develop a new base and projection years' modeling platform for the Western United States. The platforms developed by WESTAR and WRAP for the IWDW-WAQS cooperating agencies including the 2014 baseline inventory can be used as a starting point to do a future year 2023 modeling analysis for ozone and AQRV for the Four Corners area. 2023 is a significant date for air quality planning in the West since it is the first attainment date under the 2015 Ozone standard for all nonattainment areas (to be designated by October 2018) across the country. The objective of this work is to develop several 2023 modeling runs and a 4-factor analysis for AQRV's for that year and for 2028 as an optional task. This work will allow the NMED and other cooperating agencies within the IWDW-WAQS to obtain more accurate air quality and AQRV impact assessments due to current and future O&G development activities in New Mexico and will be an essential resource for NMED's air quality planning efforts.

WESTAR and WRAP will leverage the next modeling platform from the IWDW-WAQS and utilize contractor support to conduct the 4-factor analyses. Resources for this study in the amount of \$40,000 were awarded in late Sept. 2016. As the work in this leveraged against the next generation of the IWDW-WAQS base and projection years' modeling platform and the

contract for that work has not yet been awarded, a more detailed report of the progress in modeling and analysis, and a schedule for this study will be included in the 4th quarter 2017 WESTAR and WRAP progress report.

- Apply base case and sensitivity test inventories in IWDW-WAQS modeling platform When modeling platform is ready

a. Budget Summary and Status

**BLM-NM Air Quality Modeling - Four Corners
BLM Cooperative Agreement # L16AP00004
Expenses by Object Class through 12/31/2017**

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|---------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 0 | 0 | 0 | |
| 2. Fringe Benefits | 0 | 0 | 0 | |
| 3. Travel | 0 | 0 | 0 | |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 40,000 | 0 | 0 | 0% |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 0 | 0 | 0 | |
| 9. Indirect Expenses | 0 | 0 | 0 | |
| Totals | 40,000 | 0 | 0 | 0% |

6. AMERICAN PETROLEUM INSTITUTE - BACKGROUND OZONE SCIENTIFIC ASSESSMENT PROJECT

A grant was awarded by the American Petroleum Institute to WESTAR for work related to a Background Ozone Scientific Assessment project, to include conducting a workshop and publishing in a peer-reviewed journal. The WESTAR and WRAP workshop and scientific journal article will identify current scientific and technical knowledge, and list and prioritize additional analysis needs to support air quality management and planning activities. The workshop was held March 28-29, 2017 in Denver, CO.

Goals for this Assessment

- Summarize key spatial and temporal patterns of baseline O₃.
- Review published work on U.S. Background Ozone (USBO) for the continental U.S. and summarize consistent and robust patterns.
- Identify discrepancies between estimates of USBO and, if possible, the causes for these discrepancies.
- Examine different approaches used to get USBO and evaluate strengths/weaknesses of these approaches.
- Examine evidence for Non-Controllable Ozone Sources (NCOS) and their role in daily and seasonal O₃ concentrations.
- Review methods to quantify NCOS and evaluate strengths/weaknesses of each approach.
- Develop a set of recommendations for future research in this area.
- Emphasize new research since 2011, since the National Academy of Sciences report and University of Texas-Austin assessment.

Accomplishments of the Denver March 28-29 Workshop

- Provided a forum for broader input to the assessment from all knowledgeable experts;
- Provided a forum for discussion of key uncertainties;
- Identified new methods and tools that the core group might not be aware of;
- Identified specific scientific publications that were previously missed;
- Made specific recommendations for future research that the committee should consider.
- Involved approximately 150 participants (~50% in-person/~50% online);
- Included 18 oral presentations plus a handful of posters; and
- Provided extensive time for discussion.

The next goal for the assessment is submission of a critical review paper to Environmental Science and Technology, or other journal, in early 2018.

API Background Ozone Scientific Assessment Project
API Contract #2016-110934
Expenses by Object Class through 12/31/2017

| Object Class | Budget | This Quarter | Cumulative Expenses | Percentage |
|----------------------|---------------|---------------------|----------------------------|-------------------|
| 1. Personnel | 6,800 | 0 | 6,773 | 100% |
| 2. Fringe Benefits | 1,350 | 0 | 1,347 | 100% |
| 3. Travel | 6,000 | 0 | 7,861 | 131% |
| 4. Equipment | 0 | 0 | 0 | |
| 5. Supplies | 0 | 0 | 0 | |
| 6. Contractual | 0 | 0 | 0 | |
| 7. Construction | 0 | 0 | 0 | |
| 8. Other | 20,500 | 0 | 17,450 | 85% |
| 9. Indirect Expenses | 5,350 | 0 | 6,568 | 123% |
| Totals | 40,000 | 0 | 40,000 | 100% |

7. OTHER SIGNIFICANT ACTIVITIES

WESTAR co-chairs the Federal/State Technical Work Collaboration Group and organizes monthly and quarterly conference calls to share information about EPA and MJO technical work. WESTAR is working with NASA to bring a TEMPO Early Adopters workshop to the western US in early April. The workshop will provide western state, tribal and local air agencies with information about the new TEMPO satellite launching in 2019 and the air pollution data that the satellite will provide.

8. CONSOLIDATED EXPENSE SUMMARY

Cumulative Expenses by Object Class and Funding Source through 12/31/2017

All Active Accounts

| Object Class | EPA | EPA | NPS | NPS | BLM | BLM | BLM | API | Totals |
|----------------------------|--------------------|--------------------|----------------|----------------|----------------------|-----------------|---------------|---------------------------|------------------|
| | Core Grant 2014-16 | Core Grant 2017-19 | Task 3 3-State | Task 4 3-State | Air Quality Modeling | NM Oil & Gas EI | 4 Corners AQM | Background Ozone Workshop | |
| 1. Personnel | 771,310 | 11,363 | 7,728 | 32,140 | 22,818 | 17,145 | 0 | 6,773 | 869,276 |
| 2. Fringe | 188,743 | 2,880 | 1,302 | 6,282 | 3,721 | 3,207 | 0 | 1,347 | 207,484 |
| 3. Travel | 540,934 | 21,741 | 1,292 | 25 | 2,205 | 1,025 | 0 | 7,861 | 575,082 |
| 4. Equipment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5. Supplies | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6. Contractual | 72,766 | 0 | 96,510 | 99,937 | 183,514 | 160,593 | 0 | 0 | 613,321 |
| 7. Construction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8. Other | 416,669 | 33,063 | 55 | 460 | 5,101 | 0 | 0 | 17,450 | 472,799 |
| 9. Indirect | 876,260 | 14,118 | 9,819 | 33,500 | 25,102 | 18,030 | 0 | 6,568 | 983,397 |
| Cumulative Expenses | 2,866,683 | 83,164 | 116,707 | 172,344 | 242,461 | 200,000 | 0 | 40,000 | 3,721,359 |
| Budget | 2,866,683 | 4,428,706 | 505,501 | 234,886 | 300,000 | 200,000 | 40,000 | 40,000 | 8,615,776 |
| Balance Avail | 0 | 4,345,542 | 388,794 | 62,542 | 57,539 | 0 | 40,000 | 0 | 4,894,417 |

¹ Cumulative total of \$688,387 drawn from advance for contractor expenses; advance balance = \$399,336

Current Quarter Expenses by Object Class and Funding Source – All Active Accounts

| | EPA | EPA | NPS | NPS | BLM | BLM | BLM | API | |
|-----------------------|----------------------|----------------------|----------------|----------------|----------------------|-----------------|---------------|---------------------------|----------------|
| Object Class | Core Grant 2014-2016 | Core Grant 2017-2019 | Task 3 3-State | Task 4 3-State | Air Quality Modeling | NM Oil & Gas EI | 4 Corners AQM | Background Ozone Workshop | Totals |
| 1. Personnel | 56,422 | 11,363 | 0 | 7,812 | 0 | 2,232 | 0 | 0 | 77,828 |
| 2. Fringe Benefits | 15,564 | 2,880 | 0 | 1,534 | 0 | 438 | 0 | 0 | 20,416 |
| 3. Travel | 64,049 | 21,741 | 0 | 0 | 0 | 0 | 0 | 0 | 85,790 |
| 4. Equipment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5. Supplies | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6. Contractual | 13,737 | 0 | 6,169 | 0 | 1,990 | 12,694 | 0 | 0 | 34,590 |
| 7. Construction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8. Other | 59,367 | 33,063 | 0 | 0 | 0 | 0 | 0 | 0 | 92,430 |
| 9. Indirect | 55,735 | 14,118 | 0 | 8,138 | 0 | 1,341 | 0 | 0 | 79,332 |
| Total Expenses | 264,875 | 83,164 | 6,169 | 17,483 | 1,990 | 16,705 | 0 | 0 | 390,386 |