

US EPA ARCHIVE DOCUMENT

State Innovation Grant
Missouri Department of Natural Resources
St. Louis Air Quality Management Plan (AQMP)
2nd Quarter 2011 Progress Report

This quarterly report includes:

1. A short summary of the work performed during the reporting period.
2. Description of progress on completing individual tasks and milestones reached.
3. Summary of grant expenditure.
4. Planned next quarter activities.

List of the Tasks Worked On

The key tasks worked on in this quarter were:

1. Received and reviewed Draft Modeling Protocol,
2. Continued to develop local-scale toxics inventory (Task 4.1),
3. Acquired MOVES input data (Environ) ,
4. Continued to acquire point, area, and nonroad emission inventories (Environ), and;
5. Acquired met data to run WRF with observational nudging (Environ).

Description of Progress on Completing Individual Tasks

The activities planned in this quarter were designed to continue development of technical data necessary for implementation of the AQMP. Below is a summary of tasks worked on.

Draft Modeling Protocol

The draft modeling protocol was received on May 3rd. It was distributed amongst the Air Program staff, IEPA, and EPA regions 5 & 7 for comments. The comments were discussed with Environ via a conference call. Environ is now working on implementing the resolutions to the comments into a revised protocol.

Local-scale Toxics Inventory

The Air Program continued working on the development of St. Louis air toxics inventory. It was suggested that point sources toxics inventory needed to be expanded to include facilities with basic operating permits since the first round of inventory preparation only included facilities with part 70 and intermediate operating permits.

Acquisition of MOVES Input Data

The ENVIRON Team has contacted personnel responsible for MOVES input data for the states of Missouri, Illinois, Kansas and Oklahoma for the following data for 2007:

- Data for representative counties
 - Age distribution by MOVES vehicle class
 - Fuel supply by month and fuel formulation
 - I/M program coverage
 - Representative county cross reference
- Data for all counties
 - Annual VMT by HPMS vehicle type
 - Vehicle population by MOVES vehicle class
- Optional data
 - Percent time traveling on freeways that occurs on access ramps

Environ has, so far, acquired the necessary input data only from Missouri. Oklahoma informed Environ that it would not provide MOVES data. In addition, Illinois and Kansas are yet to provide their own data. MOVES default data will be used for any data that are not provided.

Acquisition of Point, Area and Nonroad Emission Inventories

The ENVIRON Team has completed nearly all quality assurances for the point, area and nonroad inventory files for the MARAMA/MANE-VU region. The team has acquired and processed the inventory files for the LADCO domain. The 2008 National Emissions Inventory (NEI) Version 1.5 data was also acquired and processed for the WRAP states. Table 1 summarizes the current status of the point, area and nonroad inventory files. The schedule for completion of the SEMAP inventory data is still unclear, and Environ will continue to monitor their progress. Almost all of the inventory files have an inventory year of either 2007 or 2008 with a few potentially anomalous records with inventory years of 2006 and 2009. All inventory data of other than 2007 will be used “as is” without conducting any inventory year adjustments using forecasting or backcasting.

Table 1. Current status of point, area, and nonroad inventory files.

Inventory Domain	States	Inventory Year	Current Status
MARAMA/ MANE-VU	CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA ^a , VT	Point – 2007 Area ^c – 2007 (99.6%); 2009 (0.4%) Nonroad – 2007	Nearly all QA conducted.
LADCO	IL, IN, MI, MN ^b , OH, WI	Point ^c – 2006 (0.2%); 2007 (84.4%); 2008 (15.4%) Area – 2008 Nonroad – 2007	Final QA completed.

SEMAP	AL, FL, GA, KY, MS, NC, SC, TN, VA ^a , WV	Point – 2007 (not confirmed) Area – 2007 (not confirmed) Nonroad – 2007 (not confirmed)	Data still not obtained. SEMAP still revising inventories; tentatively will be ready in late July or early August.
CENRAP	AR, IA, KS, LA, MN ^b , MO, NE, OK, TX	Point (KS, LA, MO, OK, TX) – 2007/2008 ^d	QA underway.
		Point (AR, IA, MN, NE) – 2008 (NEI) Area – 2008 (NEI) Nonroad – 2008 (NEI)	Final QA and processing completed for area and nonroad sources; QA underway for point sources.
WRAP	AZ, CA, CO, ID, MT, ND, NM, NV, OR, SD, UT, WA, WY	Point – 2008 (NEI) Area – 2008 (NEI) Nonroad – 2008 (NEI)	Final QA and processing completed.
Mexico	11 entire states ^e and 9 partial states ^f	Point – 2008 Area – 2008 Nonroad – 2008	Final QA completed. Formatting completed (separate from U.S. files).

^a Virginia is included in both the MARAMA/MANE-VU and SEMAP inventories; not yet sure which data to use, but some reconciliation will be required.

^b Minnesota is included in both the LADCO and CENRAP inventories; not yet sure which data to use, but some reconciliation will be required.

^c Percentages represent the percentage of records for each indicated inventory year.

^d Inventory year (2007 or 2008) indicated by file names and actual point source database may potentially be inconsistent for Kansas, Louisiana, Missouri, Oklahoma, and Texas. Additional research needed to confirm the precise inventory year.

^e Mexico entire states – Aguascalientes, Baja California, Baja California Sur, Coahuila, Chihuahua, Durango, Nuevo León, Sinaloa, Sonora, Tamaulipas, and Zacatecas

^f Mexico partial states – Guanajuato, Hidalgo, Jalisco, Nayarit, Querétaro, Quintana Roo, San Luis Potosí, Veracruz, Yucatán

Preparation of WRF Observational Nudging

The ENVIRON Team has acquired the 2007 MADIS data needed to run madis_to_little_r, an NCAR program. This converts the MADIS data from netCDF format to "little_r" format. This data will be merged into hourly files, and fed to OBSGRID.EXE to produce the OBS:YYYY-MM-DD_HH files necessary to run WRF with observational nudging. OBSGRID.EXE also requires a previous WPS.EXE run. A script was written to run WPS.EXE and OBSGRID.EXE in succession, using the 2007 GFS FNL data (NCAR's ds083.2) which was also acquired.

Financial Report

The following items were billed to the grant during the 2nd quarter 2011.

Expenditures as of 06-30-2011		
CATEGORY	CURRENT PERIOD EXPENDITURES	CURRENT CUMULATIVE
PERSONAL SERVICE	12,645	84,268
FRINGE	5,541	35,028
CONTRACTUAL	23,185	23,185
INDIRECT	9,006	36,178
SUPPLIES	0	0
OTHER	0	0
TRAVEL	0	113
TOTAL EXPENDITURES	50,377	178,772

Next Quarter Activities

The activities in the 3rd quarter of 2011 will further the implementation of the St. Louis AQMP. The Air Quality Advisory Committee will meet to continue discussions about the implementation of the AQMP. In addition, discussions will be held regarding health-based evaluation metrics under the AQMP and the other ancillary air quality issues to be included in the AQMP evaluations. The group will review and discuss the revised modeling protocol. Development of a local-scale toxics inventory for the pollutants identified in the AQMP will continue. Base Case 2007 MOVES runs will also begin.

Table - Schedule Changes of Major Project Tasks

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
1	AQMP Work Plan	Development of AQMP plan including input from both states, regional Offices, OAQPS, and stakeholders	Submit workplan to USEPA	10/07	1/08	Yes	Submitted on 1/15/08
2	Summary of Current Status	Development of AQMP document that provides the current status of St. Louis with respect to current air quality, planning activities, problems, outreach efforts, SIP history	Submit summary to USEPA	1/08	6/08	Yes	Final draft summary was submitted on 5/22/08
3	Conceptual Model	Development of AQMP document that provides the conceptual model for the project including discussion of individual pollutant formation, planning activities/outreach and policy issues	Submitted conceptual model to USEPA	5/08	9/08	Yes, submitted in January 2009	Conference calls are on-going
3B1	Draft Quality Assurance Project Plan (QAPP)	Development and submittal of draft QAPP for creation and implementation of the St. Louis AQMP	Submittal of draft QAPP for the project to USEPA	10/08	1/09	Yes, Submitted a draft to EPA, 12/08	
3B2	Final Quality Assurance Project Plan (QAPP)	Development and submittal of QAPP for creation and implementation of the St. Louis AQMP	Submittal of final QAPP for the project to USEPA	1/09	3/09	pending	EPA Region VII is continuing review of the final QAPP and will provide additional specific comments on the

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
							QAPP
4	Additional Analyses for Efforts affecting Air Quality	Development of the tools necessary to begin the AQMP technical work including air toxics inventory creation, quality assurance, and subsequent analyses, emission model training and construct/data transfer, and photochemical model training/transfer (including air toxics)	Detailed under each sub-task			On-going	With the ENVIRON contract in place we expect modeling training /data transfer will commence later this year
4.1	Air Toxics Inventory	Obtain and process for use air toxics inventory information from Missouri/Illinois sources along with EPA National Toxics Inventory database for point, area, and mobile sources as a template for AQMP use	Template to develop air toxics inventory for use in photochemical modeling and inventory analyses	7/08	10/09	on-going	Work continues and staff has received air quality emission data from Illinois to proceed and continues work on the Missouri data. Staff has converted IL emission data to SMOKE format and started running SMOKE emission model for some of the emission categories (area, point, etc.)

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
4.1.1	Emission Model Construct Transfer/Training *	EPA-OAQPS has developed an emission modeling construct to process air toxics inventory information from a wide variety of sources that is critical for use in this project; transfer of this construct from OAQPS along with guidance and support for use	Transfer of information from EPA-OAQPS and trained technical staff (with guidance from EPA)	7-8/08	1-3/09	N/A	EPA-OAQPS has told us there is no construct to transfer. This will require a thorough review of the methods utilized by EPA and training for the staff mentioned in the workplan, but will require additional effort to begin the modeling process
4.2	Photochemical Modeling Transfer/Training **	EPA-OAQPS has developed (is developing) an air quality (photochemical) model to evaluate ozone, PM, and air toxics using the same model/inputs; transfer of this model to allow for a comprehensive evaluation of all relevant pollutants in St. Louis	Transfer of information from EPA-OAQPS and trained technical staff (with EPA guidance)	10/08	4-6/09	N/A	Same as 4.1.1
5	Creation of AQMP*	Development of the plan entails considerable public outreach, incorporation of technical information, policy discussions between the	The AQMP submitted to USEPA	12/07	12/09	N/A	The AQMP development is proceeding. The development of the conceptual

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		relevant agencies and stakeholders, and ultimately decisions about what are air quality priorities in St. Louis (how can we reach them)					model has lead to the discovery of policy issues that need to be addressed in the coming months.
5.1	Public Outreach/ Education*	Meetings with local community to begin the education process about AQMPs; meetings with AQMP team, stakeholders and internal management to discuss technical policy issues related to the AQMP; formal public comments/hearing on the plan	Meeting summaries; documented revisions to the AQMP; Missouri Air Conservation Commission adoption of the AQMP	12/07	12/09	on-going	Two meetings of the Air Quality Advisory Committee in St. Louis were held and the AQMP is an on-going topic with discussion regarding progress and upcoming developments
5.2	Incorporation of Technical Information**	Incorporate experience with model constructs and processes from Task 4 into the AQMP structure	Discussion within the AQMP about problems/solutions, concepts to be included, start of documentation regarding transfer of data to others	4-6/09		on-going	
5.3	Prioritization of Air Quality Issues in St. Louis**	Decisions by the agencies with substantive stakeholder input regarding the prioritization of air quality problems within the area, resource allocation,	Discussion within the AQMP about resources, air quality priorities, funding issues, etc.	8/09	10/09	Draft, This task is on-going as new standards	At this point, the key focus areas are the 2010 ozone standard and the air toxics

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		staffing, etc.				are promulgated. It is complete for now, but will change in the future.	evaluation necessary for inclusion. The new SO2 standard is problematic for the St. Louis area and will ultimately be part of control decisions using the multi-pollutant paradigm
6	Development of technical Analysis Tool*	The AQMP will dictate that the area will continue to address air quality problems and the methodology utilized for environmental control decisions (include technical products that will be considered)	Technical outcomes (reports, memoranda, etc.) designed to inform decision-making on environment control in St. Louis	12/08	10/12		
6.1	Development of "Next Generation" Emission Inventory and Modeling database*	After the modeling constructs are implemented, the next step is the generation of new SIP technical products including criteria pollutant and toxics inventory creation, processing of emissions and other input data for use in the air quality modeling system (meteorological, air quality,	Detailed in each subtask	12/08	10/12		

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		etc.)					
6.1.1	Development of Request for Proposal (RFP) for Air Quality Modeling Contract**	After the “new” modeling constructs have been transferred, an RFP will be created for assistance in the development of the emission inventory and modeling databases for the AQMP process; the contract will be for \$169,973 (this amount will not fund the whole effort; assistance only)	Completed RFP for modeling assistance	12/08	3-5/09	Complete 11/10	Originally, \$100,000 was allocated for this task but additional fund needed to generate 4km/1km metrological data and on-road emissions using MOVES for Missouri, Kansas, Oklahoma states.
6.1.2	Selection of Contractor/Contract Agreement**	Evaluation of the RFP and completion of the contractor selection culminating in the negotiation and finalization of the contract	Documentation of contract process and selection of contractor for this project and final contract for use	7/09	9/09	Complete 1/11	ENVIRON was selected based on its technical expertise and experience
6.1.3	Selection of Modeling Database (year, domain, etc.)*	Selection of the new modeling inventory year and database including domain size(s) for evaluation of criteria pollutants and air toxics (the outcome of this task will drive the remainder of the process and will need to be thoroughly discussed with EPA OAQPS and the Regional Offices and	Technical document detailing decision and rationale	9/10/09		On-going	Many of these choices have been made including domain size(s), but some of the remaining decisions will have to wait until EPA has finalized the new 8-hour

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		will be based on available EPA guidance for the new NAAQS)					ozone standard
6.1.4	Development of Baseyear Emission Inventory**	Obtain available emission inventory data from states, regional planning organizations, and EPA for criteria and air toxics pollutants (e.g. National Toxics Inventory); develop Missouri/St. Louis information then, process these data to develop the model-ready inventory database for the project (majority of contract funding will be expended here)	Model-ready emission inventory database	Early 2010	Mid 2011	On-going	Contractor started collecting available data from states, RPOs and EPA
6.1.5	Development of Other Baseyear Inputs	Development of air quality, metrological, and other photochemical modeling inputs (some of contract funding will be expended here)	Model-ready database	Early 2010	Mid 2011	On-going	Contractor obtained the 2007 36-/12-km WRF meteorological model outputs; Contractor is determining usefulness of data for 4-/1.33-km domains.
6.1.6	Baseyear Air Quality Modeling*	Development of air quality model that sufficiently predicts the monitored concentrations to be used in control strategy development (iterative process with inventory and other input	Air quality model ready for consideration of control strategy development	Mid-2010	Late-2011	On-going	

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		development)					
6.1.7	Development of "Attainment" Year Emission Inventory	Obtain available growth and control projection information from sources in 6.1.4; develop Missouri/St. Louis information; process data for inclusion in photochemical model	Model-ready future year (base) emission inventory database	Mid-2011	Late 2011	On-going	
6.1.8	Control Strategy Sensitivities*	Evaluate control strategies designed to achieve air quality goals in the photochemical model	Data used to support control decisions	Late 2011	10/12	On-going	
6.1.9	Air Toxics Reporting**	Detailed evaluation of air toxics exposure to the citizens of the St. Louis area based on the findings of 6.1.7 and 6.1.8.	Separate technical memorandum evaluating air toxics exposure in St. Louis	Late 2011	10/12	On-going	
6.2	Monitoring Data Evaluation	On-going evaluations of ambient monitoring data in the St. Louis area utilized to identify problems and potential source contributions for all pollutants, including air toxics in 6.1.9	Reports regarding monitoring data	10/08	10/12	On-going	
7	Transfer of AQMP Data/Procedures to Other Agencies**	Task is designed to allow other regulatory agencies to evaluate the benefits/problems of the multi-pollutant AQMP approach through the plan itself and a narrative regarding issues associated with this approach compared to the	Report on the efficacy of the project including problems and solutions	7/12	10/12	On-going	

	Task Name	Task Description	Outputs Expected	Start Date	End Date	Complete	Comments
		current approach					
8	Project Reports	Task is designed to provide quarterly and project completion reporting	Quarterly status reports to Region VII and final report documenting activities supported under the grant	1/09	10/12	On-going	

* Portions of this task funded buy SIG

** All task funded by SIG