

US EPA ARCHIVE DOCUMENT

## Project Summary

**Project Title:** Formation of Alabama's Office of Innovation

**Applicant:** Alabama Department of Environmental Management (ADEM)

**Partners:** Alabama Water Pollution Control Association

**Project Manager:** Jim Grassiano

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**Total Project Cost:** Total Budget: \$309,600

Requested from EPA: \$232,500

Leveraged, Non-Federally Funded Staff Time: \$77,100

**Project Period:** October 1, 2009 – September 30, 2011

**Project Abstract:** The Alabama Department of Environmental Management is faced with a growing concern of maintaining its unusual biodiversity in a challenging economy while struggling with unprecedented water resource limitations. ADEM will develop and institute an Office of Innovation that will identify new methods of regulating facilities in a cooperative environment. The Office of Innovation will require two new program initiatives: 1. The Sustain Alabama's Varied Ecology & Resources (SAVER); and 2. The Waste Minimization and Lean Manufacturing program. The new high technology office will evaluate methods to improve energy efficiency, reduce waste, resolve compliance concerns, and improve air and water quality. Early metrics are expected to document improved business practices, foster source control and prevent pollution, assist small businesses in targeted business sectors, and even improve struggling municipal wastewater plant performance. State-wide training documents will be developed, enabling other businesses and industries to implement the findings documented by the new Office of Innovation. Long-term water and air quality improvements are anticipated, leading to an improved ability to maintain biodiversity in the years ahead, once the program is fully up and running.

### Statutory Authority and Flexibility

The statutory authorities for implementing the proposed application package consists of the federal Clean Water and Clean Air Acts and the corresponding State laws assigned to ADEM. There is a high likelihood of future state regulation changes (or new regulations), policy or guidance resulting from the concept and ultimate implementation of an Office of Innovation. ADEM envisions, as a minimum, embarking on development of a Water Reuse regulation prior to initiation of the project, should it be awarded to ADEM. However, the flexibility afforded by existing statutes should be sufficient to implement this project.

### Certification of State Agency Support from the Highest Level:

The ADEM Director is aware of and strongly endorses this proposal. If this proposal is selected, a letter of endorsement will be provided with the final work plan submitted to EPA.

## Pre-Proposal Narrative

### Problem Statement

ADEM is faced with striving to maintain the unique, exceptionally rich biodiversity of Alabama's flora and fauna in a time of economic strife, nearly unprecedented limitations on water resources, a challenging business market, and rapid land development. In recent years, the once 'water-rich' southeast has been plagued with an unusual, long-term drought, one that, together with rapid metro area development, has led to unusual circumstances such as "water wars" and residential and industrial water restrictions. Tough economic times are making it more challenging for many business sectors to remain compliant with ADEM regulations. In addition, Alabama has a strong history of agricultural land use that, together with rapid residential and commercial development, has contributed to nutrient loading and siltation of many streams and rivers. As a result, several once pristine rivers that support unique plants and aquatic life (many found nowhere else) are struggling to maintain long-term viability in these changing times.

Alabama has the most aquatic species diversity in the Continental United States. Alabama has approximately 117 species listed as endangered or threatened, ranking third in the highest number of threatened and endangered species, behind Hawaii and California. Overall, Alabama is the most species-rich State east of the Mississippi River, when including plant and animal species. Alabama even has more species of freshwater turtles than the rest of North America combined.

Special examples of Alabama's unique diversity include the Cahaba River, with more species of fish per mile than any other river in North America and many rare and endangered plant and mollusk species, too. There are also no less than 25 endangered species in Alabama's Black Warrior River basin. And the lower reaches of the Alabama River are believed to be the only remaining habitat for the Alabama Sturgeon.

The low water levels statewide have at times highlighted the importance of going 'beyond compliance'. The need for enhanced environmental performance pertains to municipalities and industries doing more than the minimum actions required to comply with NPDES and Air Permit requirements.

As a result of the unprecedented long-term water availability concerns and the need to maintain critical habitat, ADEM is embarking on a plan to help Alabama facilities intercept potential compliance concerns while keeping very mindful of economic issues specific to each regulated entity.

ADEM runs a very successful, fully delegated NPDES Permitting program. In recent years, ADEM has issued an unprecedented and continuing number of significant enforcement actions to reign-in non-compliant point source dischargers. These actions include numerous administrative orders and judicial complaints filed in circuit court. While the enforcement actions have been able to correct compliance concerns, ADEM also wishes to embark on new methods of bringing industrial and municipal facilities into compliance, including proactive methods to maintain compliance. Likewise, ADEM desires to embark on a process that will help municipalities and industrial facilities identify compliance concerns quicker, hopefully before they occur, but also fostering rapid resolution of excursions for the long-protection of aquatic life.

With conventional permitting and enforcement tactics, the obstacles for species preservation, habitat preservation, and resource and economic sustainment are many. For instance, an industrial facility can marginally achieve Title V Air Permit or NPDES permit limits for an extended period of time, coming into and out of compliance intermittently over a period of perhaps years before incremental enforcement takes full effect to resolve a long-term issue of permit violations. At that point, the cost for resolving the violations may be very significant. Furthermore, any potential adverse effects resulting from the non-compliance have already occurred. While many species can recover, the long-term effects on critical habitat, threatened or endangered species, and overall biodiversity are a concern.

ADEM's new approach must consider today's business practices and economic climate. Hence, dovetailing improved environmental practices with energy efficiency and Lean Manufacturing offers a needed paradigm shift that will: 1. Re-tool Alabama's regulatory approach and contribute to the long-term protection of Alabama's resources; 2. Improve watershed conditions to improve endangered species habitat; and 3. Sustain the economic viability of targeted business sectors and small businesses.

Definitive, measurable successes are expected. Environmental compliance rates for specific business sectors will improve in the short-term. Also, short-term savings will be realized due to reduced energy consumption. At the same time, atmospheric emissions will be reduced and Alabama's overall natural resources will be preserved, including water savings and other raw materials savings through enhancement of recycling and improved materials reuse.

Long-term viability of endangered species habitat is also expected to measurably improve once the Office of Innovation is well established and in place in the years to come.

## **Background**

Presently, ADEM strives in some manner to meet the five important goals established by EPA's Strategic plan. In recent years, ADEM has ramped up its enforcement program to bring industrial and municipal facilities into compliance. This enforcement effort included the Clean Air Act, Clean Water Act, and Hazardous Waste programs. For example, ADEM's Municipal NPDES Program alone has issued 30 to 40 administrative orders each year for the last several years. In fact, ADEM issued 42 administrative orders to municipalities for wastewater discharge violations in FY08. ADEM also initiated litigation proceedings in circuit or district court for about 10 other municipalities.

The conventional enforcement approach has been effective to a degree, but at great cost to municipalities and industries in Alabama. Furthermore, there has been little focus, through conventional enforcement, on the ever important issues of resource conservation, habitat preservation, financial profitability, or innovation. The proposed new Office of Innovation will address these important missing factors and work to bring non-compliant facilities into compliance, where possible, outside the bounds of conventional enforcement.

The Office of Innovation will also help industrial and municipal facilities maintain compliance. The program will not necessarily target facilities that are out of compliance. Rather, the Office of Innovation will provide industrial and municipal facilities with the tools and technologies needed to avoid compliance problems in the future, specifically due to the

imposition of new management practices and technology implementation that proactively resolves compliance concerns in an expedited fashion.

### **Program Guidelines and Eligibility Requirements:**

Implementation of the Office of Innovation will provide a clear link to each of the five goals and objectives identified in EPA's Strategic Plan.

#### ***1. Clean Air and Global Climate Change*** ✓

ADEM expects that opportunities for energy efficiency will be realized. As power savings and resource management practices are implemented by the industries and facilities assisted by the ADEM Office of Innovation, cleaner air will be the result because of the concomitant reduction in the use of fossil fuel. Likewise, global climate change will be positively affected. In particular, when the Office of Innovation is fully up and running, ADEM expects that significant positive effects will be realized, as many facilities and business sectors take advantage of the specific recommendations identified by ADEM's Office of Innovation.

#### ***2. Clean and Safe Water*** ✓

With the new paradigm of compliance sustainment of resources, water quality matters will improve statewide, especially in target areas identified by ADEM's Office of Innovation. There should be more clean water available for a multitude of uses.

#### ***3. Land Preservation and Restoration*** ✓

Through the new Alabama Environmental Performance Track (SAVER) Program, various businesses, industries and developers will be encouraged to participate in the pollution prevention practices, striving to achieve well deserved recognition for their efforts.

#### ***4. Healthy Communities and Ecosystems*** ✓

#### ***5. Compliance and Environmental Stewardship*** ✓

The main objective of the proposed Office of Innovation is to achieve these two strategic goals in particular. ADEM will work in close association with Alabama facilities, leading the effort to improve watersheds and critical ecosystems. We will promote new methods of compliance and foster sustained compliance through well recognized, proven environmental stewardship.

The above objectives will be achieved within the statutory authority of the Clean Water Act, Section 104 (b)(3)(33 U.S.C, part 1254(b)(3); the Clean Air Act, Section 103(b)(3)(42 U.S.C., part 7403(b)(3); the Solid Waste Disposal Act, Section 8001 (42 U.S.C., part 6981); and, to a lesser degree the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act.

Threshold Criterion 1: The Office of Innovation will produce deliverable documents intended to serve a specific business or manufacturing sector in state-of-the-art lean manufacturing. The Office of Innovation will share and distribute the work products to many sector representatives state-wide. We also expect that the deliverables will be shared with representatives from other states. Thus, the efforts put forth by the EPA-funded project will reap benefits in countless other applications in Alabama and other states.

Threshold Criterion 2: The SAVER environmental performance track program and the Lean Manufacturing Program, the fulcrum aspects of the Office of Innovation, will indeed prevent or control pollution, first and foremost. Each of the five EPA Strategic Plan objectives will be achieved, as stated above, with particular emphasis on *Healthy Communities and Ecosystems* and *Compliance and Environmental Stewardship*.

Threshold Criterion 3: Substantial Compliance of the proposal with RFIP and submission requirements. The proposal has been carefully reviewed to ensure that all requirements are met.

## Project Objectives

The short term objectives of the program include:

- Development, implementation, and tracking the expanding participation in the new Alabama Environmental Performance Track (SAVER) Program.
- Education and training of targeted business sectors (e.g., Metals Handling, Finishing, & Plating; Paint & Related Products Handling & Manufacturing; and Food Processing Industry) in Lean Manufacturing processes intended to reduce waste and pollution while improving the bottom line economic outlook for each manufacturing sector helped by the program.
- Improved energy efficiency, reduced fuel consumption, and reduced air emissions by industries and municipalities.
- Measured resolution of ongoing Municipal Wastewater Plant compliance violations

These objectives will be measurable during the performance period of the project. Real-time improvements in air emissions are expected. However, the emissions sources targeted for improvement through performance track and lean manufacturing probably will not be significant enough to affect general ambient air quality. Local streams are expected to show marked improvements in water quality, even in the short term. In the coming five to ten year period, however, ADEM expects to see measurable improvements exhibited by water quality in expanded areas, i.e., within significant watersheds.

Strategies for implementing innovative methods of reducing pollution, minimizing waste, energy conservation, and habitat preservation will be shared statewide within like business sectors. Findings will be shared with the Alabama Water Pollution Control Association and presented at association meetings and conferences. AWPCA's objective is to advance the knowledge of wastewater treatment. Hence, innovations identified to educate municipal and industrial operators through the 2009 State Innovative Grant Program will be rapidly shared to the benefit of pollution control state-wide.

## Methodology

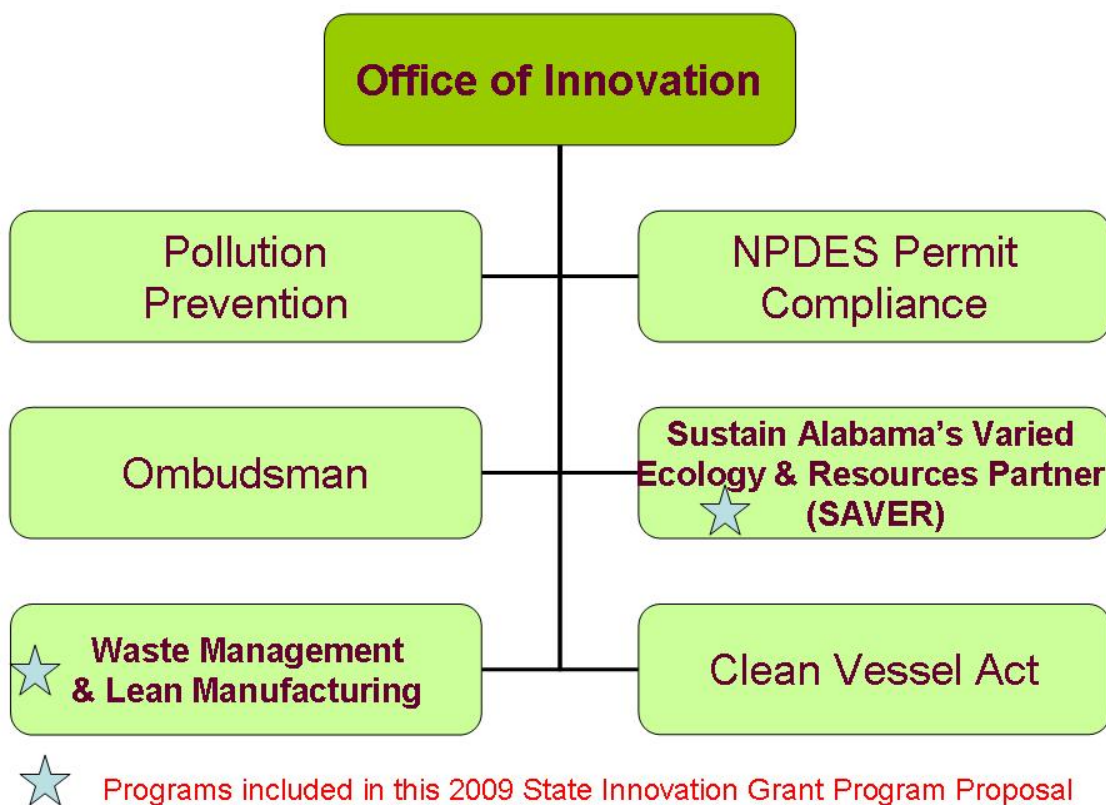
ADEM will form an Office of Innovation (OI) comprised of six facets of progressive assistance to industries, small businesses and municipalities. The organization of ADEM's Office of Innovation is presented in Figure 1. Only two of the organization facets will be



funded by the proposed 2009 State Innovative Grant Program. However, these two areas are the fulcrum of the entire OI group. The two key facets are:

- The Sustain Alabama's Varied Ecology and Resources (SAVER) Program;
- The Waste Minimization and Lean Manufacturing Program

**Figure 1 – Organization of the Proposed Office of Innovation**



#### **SAVER Program:**

The SAVER program will be ADEM's National Environmental Performance Track. ADEM will develop a program that imposes strict requirements for partnering with industries exhibiting exceptional environmental responsibility and a clear, sustained record of compliance. ADEM will develop protocols for expedited permitting, reduced reporting, and/or self-implementing inspections. The program will not just encourage environmental excellence. It will reward such performance and demonstrate how ADEM can streamline certain regulatory requirements in a cost effective manner for industrial facilities that become a dedicated Partner of ADEM's new SAVER program.

ADEM expects that the SAVER program will be a tiered process that, even at the lowest partnering level, fosters development of an Environmental Management System. ADEM's program will expand on the performance track work initiated by EPA in Alabama, leading to defined benefits for partners that can now be fully realized by ADEM embracing the performance track concept with its own program.

A facility in the program will be required to continually challenge itself with new initiatives and to express and demonstrate leadership in environmental responsibility.

A municipal performance track will also be established to help develop and reward model, sustained performance of wastewater treatment and collection systems. This will provide an unprecedented incentive for municipalities and private sewer systems to offer proactive, well planned financing and implementation of collection system and treatment facility improvements. The practice will allow ADEM to also focus its compliance and conventional enforcement efforts on facilities clearly deserving the most attention.

ADEM will develop the requirements of the SAVER program, advertise the program, and commence accepting and reviewing applications within six months of initiation of the grant. Within the first year of implementation, a first wave of facilities will be accepted into the program. Success stories will be documented and shared with Alabama's business and environmental community as well as EPA Region 4 as a whole.

**Waste Minimization and Lean Manufacturing:**

The focus of this group is to get very much involved in the technology and innovation of targeted business sectors. A series of representative facilities will be closely reviewed for a minimum of three business sectors, including: Metals Handling, Finishing, & Plating; Paint & Related Products Handling & Manufacturing; and the Food Processing Industry. Rather than focusing on EMS plan review and SAVER Program application review, this group will closely involve itself in manufacturing and business operations. The group will work together with companies and municipalities to identify specific areas of improvement with regard to energy consumption, waste reduction, recycling, and pollution prevention. ADEM will contribute, where possible, to the identification of innovative production methods to improve overall manufacturing efficiency. In turn, facilities will work with ADEM to improve environmental compliance, enhance corporate environmental awareness, and foster employee participation in identifying methods to improve the environmental effects of plant operation.

Waste Minimization and Lean Manufacturing will help companies ensure that raw products are used as efficiently as possible. ADEM's WMLM group will also strive to implement a component of resource and habitat preservation into the Lean Manufacturing Program, because maintaining Alabama's biodiversity is important to the quality of life to all corporate employees. Hence, with habitat preservation in mind, properly training employees will be more likely to take extra effort to conserve energy and resources and to reduce waste generation.

Within the first 12 months of the program, ADEM will develop its protocols for conducting the Lean Manufacturing facility reviews. The reviews will include all waste operations, even through to the operation of the municipal wastewater treatment facility ultimately receiving wastewater from the manufacturing operation. Also within the first 12 months, two engineers will conduct the plant reviews of two to five representative facilities within each business sector. Reports will be generated and provided to appropriate leading companies, trade groups, and representatives of each business sector.

The emphasis on lean manufacturing and environmental sustainment will join compliance, manufacturing, and habitat preservation in ways as yet unseen in Alabama. In today's



economic times, the establishment of an agency initiative to lead this triad union is imperative.

### **Funding for Other Components of the Office of Innovation**

In addition to ADEM's 25 percent commitment to support this proposal, ADEM is also in part committing additional funding for the four other Office of Innovation programs not covered by the 2009 State Innovation Grant Program.

### **Outyear Activities:**

After the 24-month period covered by this proposal, ADEM envisions maintaining the activities of the Office of Innovation and possibly expanding the work initiated by the new office programs. The intent of the proposal is to assist ADEM in initiating the program. The scope for the 24-month project does not specifically include activities related to formation of an Environmental Results Program (ERP). However, ADEM envisions that the new Office of Innovation will become a leader in the ERP initiative in Alabama in years to come, as alternative permitting strategies are identified.

### **Outcomes and Measures:**

**Environmental Outputs** – The Office of Innovation will prepare a Guidance Manual outlining the steps a business or industry must take to achieve a designated performance track level under the voluntary SAVER program. Guidance will also be presented on a new ADEM web page. The web page will also provide appropriate recognition to participants.

ADEM will provide additional training for the program during the Alabama Water Pollution Control (AWPCA) workgroup meetings and at the 2010 annual state-wide AWPCA conference. As well, ADEM will host a local (in Montgomery) one-day training conference. The AWPCA Conference and the ADEM Montgomery Conference will address a number of environmental topics, including the voluntary SAVER Program and the Lean Manufacturing Program.

ADEM will prepare three Waste Management-Lean Manufacturing Review documents, one for each business sector (Metals Handling, Finishing, & Plating; Paint & Related Products Handling & Manufacturing; and Food Processing Industry). The documents will be a reference to all businesses within the sectors, even to business and industries in other states. Associated municipal wastewater plants will also be reviewed, to address the end-point resolution of waste generation, treatment, and efficiency concerns.

**Environmental Outcomes** - For the SAVER Program, each participant will voluntarily commit to instill a philosophy of environmental excellence in all facets of business, from customer service to production. Each company will be trained (through guidance manuals, conference attendance, and general assistance from ADEM's Office of Innovation) in how to make and achieve exceptional environmental goals. They will learn how to conduct an environmental audit and will be fully trained in how to develop and fully implement an EMS.

A commitment to prepare an EMS will demonstrate a definitive change in corporate behavior. ADEM expects that the SAVER initiative will become somewhat competitive, with increased positive exposure leading to additional industries wanting to tow the line and commit to environmental excellence. The start-up of this voluntary program will be

unparalleled and is expected to take many businesses and municipalities “beyond compliance”.

The Waste Minimization and Lean Manufacturing Initiative will likewise train many Alabama businesses. Several representative industries within each business sector will have the benefit of a close facility review. However, the truest long term advantage will be achieved by the many other businesses within each sector that will ultimately have the benefit of knowledge and guidance directly applicable to them. They will receive a documented regulatory review summarizing waste minimization and lean manufacturing issues of direct concern. The release of each document is expected to change the behavior and increase the corporate environmental responsibility of numerous industries within each business sector.

The ‘hard’ outcomes or positive environmental conditions will be ground-breaking for Alabama as a result of both initiatives. The outcomes will be as follows:

- Increased NPDES Permit Compliance Rates
- Less need for significant enforcement on municipalities
- Less need for significant enforcement on private sewer companies
- An increased number of industries with a fully functioning EMS
- Lower usage of fossil fuel
- Less waste of raw materials
- Lower water use rates
- Higher water quality of effluent discharge
- Lower air emissions

All of the above outcomes will be measurable over the 18-month project and compared with representative baseline levels. For example, ADEM will compare compliance and enforcement rates at the start and at the completion of the project to determine the extent of the trend. Water, energy, raw material and recycling rates will be compared for the three business sectors that ADEM closely reviews.

The main long-term objective is:

- Increased habitat preservation through innovative corporate and municipal initiatives

With the exception of a few possibilities (greenway and wildlife refuge projects), the long-term preservation of habitat and species cannot readily be measured during the 18-month period of this project. However, ADEM fully expects that in the coming five to ten years, should the Office of Innovation be maintained, the main long-term objective will be achieved.

### **Summary of Reporting on Past Performance of Environmental Results**

ADEM has experience appropriately tracking the status of cooperative agreements and grants. Examples include the Brownfield 128(a) State Program Response Cooperative Agreement, the CERCLA PA/SI Cooperative Agreement, and the Brownfield Revolving Loan Fund Grant. ADEM provides narrative quarterly and semi-annual reports to EPA under these federal assistance agreements. These grant and cooperative agreement programs are

ongoing and demonstrate ADEM's ability to meet EPA reporting requirements. They were all re-issued in 2008. Examples of three related grants are as follow:

<b>Grant Id #</b>	<b>Description</b>
VC96487008	CERCLA
VC96487208	SACA
BL97467102	Land SRF Grant

Under the 2009 State Innovation Grant, ADEM will track costs and prepare a narrative quarterly progress report, summarizing the milestones achieved in each three month period. Any unusual conditions will be summarized and project performance will be monitored so that all planned milestones will be achieved.

### **Budget Summary**

State: Alabama

Agency: Alabama Department of Environmental Management

Project Title: Formation of Alabama's Office of Innovation

	<b>Total Project Costs</b>	<b>Proposed State Leverage Funds</b>	<b>EPA Funding</b>
Personnel (Incl Fringe & Overhead)	\$298,300	\$74,300	\$224,000
Travel	\$11,300	\$2,800	\$8,500
Capital Equipment	0	0	0
Supplies	0	0	0
Contractual	0	0	0
Other	0	0	0
<b>Total:</b>	<b>\$309,600</b>	<b>\$77,100</b>	<b>\$232,500</b>

### **Logic Model**

See Attachment 1