

The ACRE Model for Rural Communities Work Plan

This project section introduces the key elements of the **Work Plan**. It summarizes major environmental benefits and indicates how the positive effects of the Work Plan will support the EPA's mission statement: "To Protect Human Health and the Environment."

Summary of Environmental Benefits

The Alabama Center for Rural Enterprise (ACRE) is the lead applicant in a consortium of nine agencies pooling their collective resources to address critical wastewater management issues. More precisely, nonprofit organizations, city governments, universities, and state public health officials will demonstrate simple, cost-effective, and decentralized wastewater management solutions to growing problems that represent significant threats to public health and the environment in Lowndes County, Alabama. This project will protect the public health and water quality in an area that is rural, poverty stricken and plagued by drought and impaired environmental quality.

Relevance to EPA's Mission

This project precisely matches EPA's mission. In fact, spiraling concerns over human health and the environment provided the rationale for this project. Specifically, this project recognizes that less than one resident in five in Lowndes County – one of the poorest in the nation – has an onsite wastewater system. Establishing a management infrastructure for wastewater will reduce public health hazards while improving the environment. This planning grant is the first step in a comprehensive effort to improve environmental quality in Lowndes County. The following statement from a Pacific Institute Research report entitled, *Dirty Water: Estimated Deaths from Water Related Diseases 2000-2020* sums up the severity of the problem.

"The failure to provide safe drinking water and adequate sanitation services to all people is perhaps the greatest development failure of the 20th Century. The most egregious consequence of this failure is the high rate of infant mortality among young children from preventable water-related diseases."

It is estimated that world wide, more than 3,000,000 children die every year due to diseases linked to the environments where they live, learn and grow. In addition, a large number of child diseases are caused or triggered by risk factors present in rural and urban degraded environments. Diarrhea, respiratory disease, malnutrition, and many other health conditions are linked to unsafe water and polluted air, and contaminated soil and air.

The state of Alabama's top public health official stated in a recent presentation that the three things that separate Life Expectancy in the United States from Third World countries are: 1) childhood immunization; 2) nutrition; and 3) our skill at treating and disposing of our own human wastes and protecting our water supplies. Water resources in Lowndes County are

compromised by improper waste management.

Description of Project

This section describes planning grant project objectives, identifies relevant potential problems, documents community-wide support, and cites pertinent planning data.

Goals

ACRE has developed two goals which arise from extensive collaborations with the following strategic partners.

1. The Equal Justice Initiative (EJI)
2. Alabama Department of Public Health (ADPH)
3. Alabama Wastewater Authority (AWA)
4. Community Resources Group/Rural Community Assistance Program (CRG/RCAP)
5. Fannie Mae
6. Homebuilders Association of Alabama (HAA)
7. Town of White Hall, Alabama
8. United States Department of Agriculture Rural Development
9. University of West Alabama Onsite Wastewater Association Training Center (AOWATC)

Long-term, this project has two broad project *goals* that provide an overall conceptual orientation to the ultimate purposes of this proposal.

1. To develop a plan to demonstrate the feasibility and benefits of **decentralized** wastewater management to protect water quality for underserved rural areas by addressing critical issues such as poverty, lack of economic opportunity, hazardous health conditions, and inadequate infrastructure in Lowndes County, Alabama.
2. To develop a decentralized wastewater management entity to serve as a model for rural communities, and to research and develop cheaper and better approaches to protecting the water quality and public health. This will address the benign neglect of the raw sewage problem in this economically depressed county.

Conditions exist for a cholera or typhoid epidemic in this county, and throughout the impoverished Black Belt region. The Black Belt region of Alabama is part of a larger Southern Black Belt region stretching from Maryland to Texas. Alabama's Black Belt region has some of the highest poverty rates within the United States. The area is characterized by lack of access to health care, high unemployment, and substandard housing. Not only are doctors in short supply but chronic diseases flourish. There have been seven great cholera pandemics throughout history

with the seventh beginning in 1961 and extending to present day. The diseases can be prevented by the adequate disposal of human waste. The Alabama Department of Public Health has reported that 50% of all conventional, onsite septic systems are currently failing or are expected to fail in the future. In the Black Belt region of West Alabama, the anticipated failure rate is 90%. Traditionally, rural homeowners have used simple wastewater treatment systems consisting of a concrete septic tank and a connected network of perforated pipes, or field lines, buried in the neighboring soil. Sewage generated within the home flows into the septic tank. In the septic tank, solids settle down to the tank bottom or float to the surface of the tank contents. The wastewater is partially treated by anaerobic microorganisms within the tank. The wastewater, also called effluent, leaves the septic tank and flows into the field lines. As the effluent trickles out of the perforations in the lines, soil borne microorganisms, along with the natural filtering properties of the soil itself, continue the treatment process. By the time the wastewater reenters the groundwater supply, it is relatively free of pollutants. However, many people who live in rural areas cannot utilize a conventional system. Why? Conditions within the soil, such as the presence of heavy, slowly permeable, thick clays, high seasonal water tables, shallow bedrock, or an overabundance of sand can prevent a conventional system from performing properly. When a septic system fails, disease-causing pathogens, nutrients, and chemicals can contaminate local water supplies.

Compounding the problem in Lowndes County is the high cost of a septic system and the low income of many residents of the county. The high rates of poverty and poor soils make it almost impossible for poor families to repair or purchase a system. This leads to the straight piping raw sewage onto the ground.

Mission

Lowndes County and the rest of Central Alabama have prairie soils that are unsuitable for conventional onsite sewage disposal due to low permeability and seasonal high water tables. This planning grant project will develop a comprehensive, workable plan to demonstrate simple, cost effective wastewater management solutions to situations in Lowndes County that are a significant threat to public health and the environment. It will also show that a properly designed and operated decentralized management program can: 1) protect public health, water quality and environment; 2) facilitate economic development in economically disadvantaged rural areas; and 3) provide a better quality of life for rural citizens, many of whom are living on the margins of society.

The Work Plan identifies three primary objectives that describe more specific, immediate, measurable accomplishments, as noted in the following table:

Work Plan Objectives	
Project Management and Coordination	Develop and maintain a process to manage and coordinate the project with maximum local community involvement
Needs Assessment, Analysis and Planning	Identify and prioritize a list of wastewater

	<p>management needs that are responsive to local deficiencies</p> <p>Develop an overlay of maps that can be used to identify and assess future wastewater needs.</p> <p>Develop a local model for addressing rural wastewater management needs through design alternatives and the formation of a management entity.</p> <p>Coordinate with local and state regulatory agencies to assure options addressed are appropriate and permissible.</p>
Education and Outreach	<p>Create an education and outreach plan for local residents to encourage further installations</p> <p>Develop a strategy to promote local adoption of wastewater management practices</p> <p>Report project accomplishments to local, state, and national audiences.</p>

Viewed collectively, these objectives constitute the ACRE Model for Local Wastewater Management in Rural Communities (henceforth, the ACRE Model). The ACRE Model begins with formation of a stakeholder advisory group and a simultaneous, comprehensive needs analysis. These form the basis for comprehensive strategic plan. From that baseline information, the model progresses systematically through needs assessment and analysis, capacity development, planning, management, education, and evaluation phases. The local stakeholder advisory group will provide input throughout the process. Rather than rely on rigid, “top-down” intervention strategies, the ACRE Model follows a “bottom-up” approach that is driven by local needs and directed by local residents. Since they are actively engaged in the entire process, their “buy-in” is ensured and long-term impact is sustained.

Relevant Data from Planning Studies

Relevant data exists from multiple planning studies. This section first addresses an overview of our targeted geographic region, followed by comments on the native soils that interact with the wastewater, and finally concludes with a focus on documented septic tank failures.

Broad Consequences of Failed Wastewater Systems

According to the EPA*, State and tribal agencies report that nationwide onsite septic systems currently constitute the third most common source of ground water contamination and that these systems have failed because of inappropriate siting or design or inadequate long-term maintenance (USEPA, 1996). In the 1996 Clean Water Needs Survey (USEPA, 1996), states and tribes also identified more than 500 communities as having failed septic systems that have caused public health problems. The discharge of partially treated sewage from malfunctioning onsite systems was identified as a principal or contributing source of degradation in 32 percent of all harvest-limited shellfish growing areas. Onsite wastewater treatment systems have also contributed to an overabundance of nutrients in ponds, lakes, and coastal estuaries, leading to the excessive growth of algae and other nuisance aquatic plants (USEPA, 1996). In addition, onsite systems contribute to contamination of drinking water sources. USEPA estimates that 168,000 viral illnesses and 34,000 bacterial illnesses occur each year as a result of consumption of drinking water from systems that rely on improperly treated ground water. Malfunctioning septic systems have been identified as one potential source of ground water contamination (USEPA, 2000).

Geographic Target: Lowndes County, Alabama – Mid-Black Belt Region

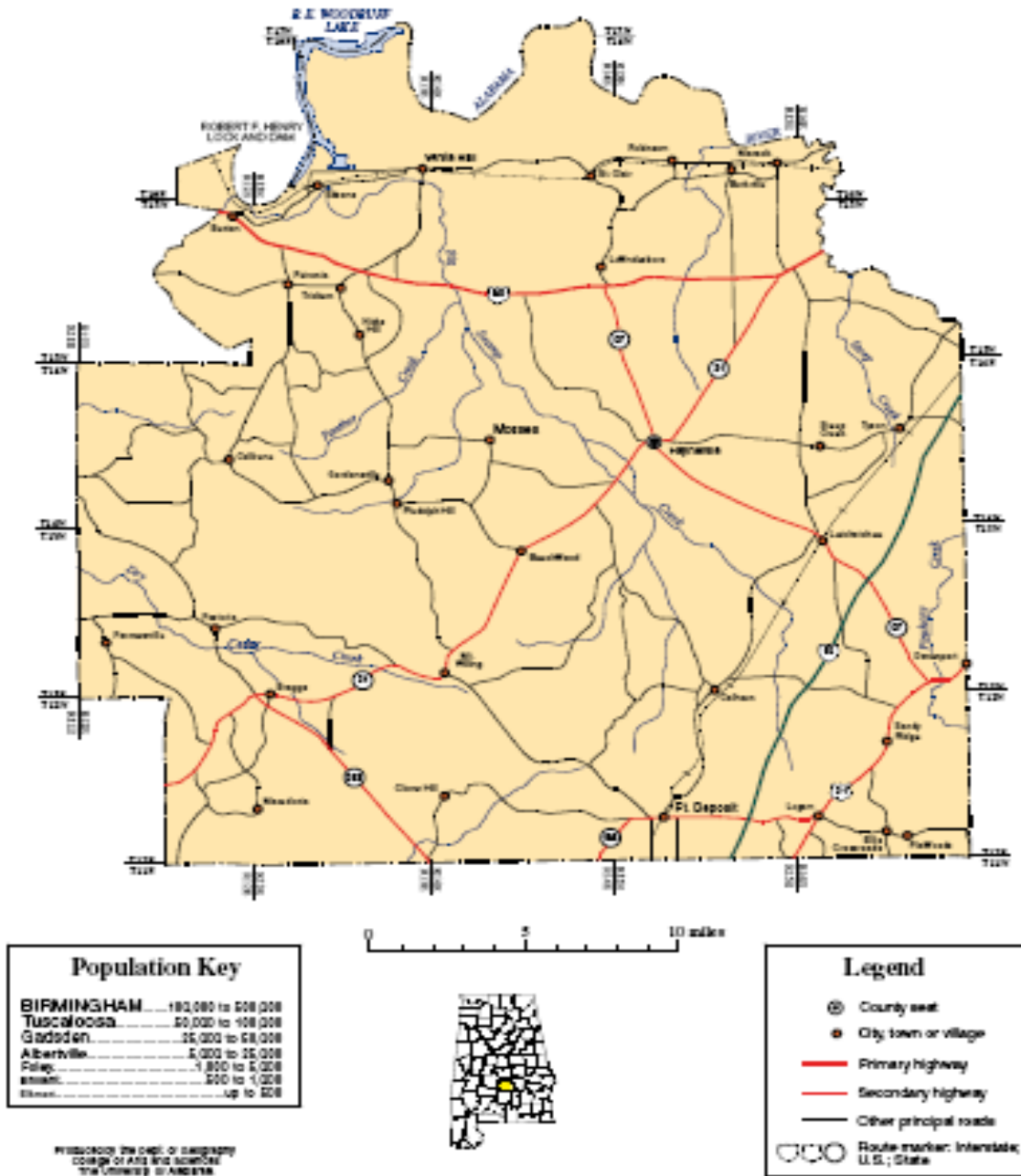
Lowndes County is an economically depressed, largely rural county of 718 square miles located in south central Alabama. The county is considered a part of a geophysical region in the southern United States called the “Black Belt,” a region named for its dark, fertile, calcareous soils that stretches from Georgia through Alabama into Mississippi.

This region was one of the South’s most important agricultural areas before the Civil War, and as such, was home to a large number of plantations and associated black slaves. The 2000 Census reports 13,473 residents, including 73% Black persons, 26% White persons, and 1% of other races. Eighty percent (80%) of the population is in the 18-65 age range. There has been no appreciable population change between 2000 and 2004. Nearly two-thirds are high school graduates. Of the 4,900 households in the county, 83% are owner occupied. Per capita income was slightly above \$12,000. This is below the poverty level established by governmental agencies. Collectively these demographic data from the federal government¹ portray a southern, rural, predominantly Black community of modest means, but proud of its heritage and committed to its betterment.

*<http://64.233.161.104/search?q=cache:oZrBpsN8Es4J:www.epa.gov/nrml/pubs/625r00008/html/625R00008.htm+failed+septic+tanks+and+illnesses&hl=en&gl=us&ct=clnk&cd=12>

¹ www.fedstats.gov/qf/states/01/01085.html Accessed October 23, 2005

LOWNDES COUNTY



Lowndes County Soils

Key to understanding the serious need for wastewater infrastructure and management in Lowndes County is a broad understanding of its native soils. As a mostly rural county, only 18% of its residents are served by conventional municipal sewer systems, specifically residents of Hayneville and Fort Deposit. Accordingly, 82% of the Lowndes County residents must rely on

onsite wastewater systems, typically a septic tank and in-ground dispersal fields (trenches). Unfortunately, the soils in Lowndes County consist principally of heavy clay material, which does not transmit water, resulting in significant “run-off” problems. Conventional onsite wastewater systems do not work well to infiltrate septic tank effluent into the ground. The most common alternative onsite wastewater approach in these poor soil conditions is to construct a “mound” dispersal system. This mound is a raised bed of imported fill material, usually sand, in which effluent dispersal trenches can be installed. While this trenching methodology is environmentally effective, it presents two major problems. First, soils with better infiltration characteristics are not locally available and must be transported from distant locations more than thirty miles away. Second, several dump truck loads, representing several tons of the appropriate fill material are needed to construct a typical mound as a result of poor native soil conditions. Raised mound wastewater dispersal systems may range in cost from a minimum of \$5,000 to as much as \$30,000 in these conditions—money that most residents don’t have.

Although no survey has quantified the precise number of households with inadequate or no septic systems, the Alabama Department of Public Health estimates the number may range from 40% to 90% in Lowndes County. Regardless of exact numbers, the potential presence of disease-causing pathogens and other contaminants remain a grave public health concern.

Documented Septic Tank Failures

In the late 1990s, legal actions (litigation and arrests) were initiated by the Alabama Department of Public Health against 41 sites for releasing raw sewage on the ground surface. This action came after repeated notices of violation in an attempt to force wastewater management that met minimum environmental and health standards. However the people cited could not afford the remedy and many now have arrest records for being too poor to pay for the costly remedy that is generally far more affordable in more affluent communities.

Upon being made aware of the crisis nature of the situation by local advocate Catherine Coleman Flowers, the Alabama Rural Initiative (ARI) was launched by the Washington, DC based National Center for Neighborhood Enterprise (NCNE) under her leadership. Further, NCNE and Flowers persuaded the Alabama Department of Public Health to place a moratorium on legal actions against the indigent while a solution to the overall problem was found. A broader understanding of the problem included lack of sanitary facilities, lack of economic development, and derelict housing. A partnership between NCNE and the Alabama Department of Public Health was created that has been maintained since 2002. The partnership is a foundational element of this proposal. ACRE, the successor to NCNE’s Alabama Rural Initiative continues to maintain that partnership.

In 2003, the Alabama Rural Initiative, now operating under the auspices of ACRE, surveyed 41 non-compliant sites with support from project collaborators and consultants. Information from each of the sites was recorded, including soil descriptions, number of occupants at residence,

type of system, nature of violation, and best repair option. Briefly, the survey revealed the following information.

- 21 sites (50%) did not have any type of onsite wastewater system
- 11 sites (27%) had septic tanks but no dispersal field lines installed

- 3 sites (7%) had acceptably functioning systems, but lacked a Health Department permit.
- 1 site (2%) exhibiting failure had a valid Health Department permit.

Significantly, many of the sites visited were found to serve more than one household; in reality, the 41 sites visited served a total of 86 different residences. In essence, ACRE discovered that the ramifications of the septic tank failures impacted more persons than first anticipated

Results and Benefits

The ACRE Model is intended to demonstrate to regulatory authorities, small rural communities and utilities in other counties and states that decentralized wastewater management programs are feasible and cost-effective. Stated differently, the ACRE Model will demonstrate the life-changing power of a properly designed and operated decentralized wastewater management program that protects public health, safeguards the environment, provides a better quality of life, and facilitates economic development in disadvantaged rural areas. The following section delineates specific benefits for the environment, the recipient, the population served, and the general public.

The project outcomes will impact the knowledge, attitude, and behaviors in four inter-related sectors. Specifically, the project outcomes and results will benefit:

The Environment

- Develop a model for rural wastewater management
- Develop local capacity to manage rural wastewater systems
- Improve the environmental impact of rural wastewater management systems
- Improve the water quality and avoid contamination of water resources.

The Recipient

- Increase knowledge about alternative wastewater management technologies
- Serve as a focal point for marshalling local human, fiscal, and physical resources
- Advocate for rural wastewater management in other rural communities

The Population Served

- Restore potential for compliance for noncompliant households
- Remove threat of jail or eviction from noncompliant properties

- Create new job opportunities in a county where the jobless rate exceeds the national average at 17% by providing information on training programs for installing, operating, and repairing rural wastewater systems
- Create economic development opportunities in one of the poorest regions in Alabama.

The General Public

- Protect public health of local residents
- Provide knowledge and incentives through education and outreach programs to homeowners
- Empower citizens in wastewater management issues

Approach

The following section details the Work Plan and how it will be accomplished. Once described, mitigating factors are discussed along with the rationale for the selection of the Work Plan and its unique features.

Work Plan Details for Objectives

Separate Work Plans are described for each project objective, including a list of action items, tasks necessary to accomplish them, and the responsible parties for generating the project products. The responsible parties are generally described below using their project titles.

Objective 1: Project Management and Coordination

As previously stated, the ACRE Model follows a “bottom-up” approach. Input and direction must come from the project participants and stakeholders, those most directly affected by the wastewater problems, along with knowledge from experts in the field of rural wastewater management. We anticipate acceptance of solutions is much higher when participants have an active voice in the decision-making process. This proposal section discusses how to build a consensus that maximizes project management through shared governance. The first step is to establish a Governance Advisory Committee. This committee will consist of local mayors, business leaders, water board and county commission members. They will have the business acumen needed to make thoughtful decisions. They also have peer relations with other community leaders that are essential to attract volunteer support, as well as access to their constituents. Finally, they are a source of wisdom, insight, and strategic counsel.

A. Maximize Project Administration through Shared Governance

Action 1.1 Establish the collaborative principles of shared governance.

Tasks:

- a. Establish a Governance Advisory Committee
- b. Identify key principles of shared governance, including, but not limited to the following:
 - i. **Collaboration Principle # 1:** Collaborators talk about the strategic planning process used to develop the proposal.
 - ii. **Collaboration Principle # 2.** Collaborators identify the contributions of each participant and how it contributes to the "big picture."
 - iii. **Collaboration Principle # 3.** Collaborators will cooperate programmatically and sign a cooperative agreement.
 - iv. **Collaboration Principle # 4.** Collaborators schedule progress reports that involve the major stakeholders.

Through these collaboration principles, participants will be able to exchange tips, tools, and techniques. Effective collaboration will cause significant behavior change to occur during the project because it will allow provide for sharing of information that does not occur between mayors, the business leaders and the county officials. As a consequence, collaboration becomes an instrument of change. It significantly improves the distribution of tasks associated with the work process or reduces the number of steps needed to achieve desired results. It becomes the catalyst for work process change, streamlining decision-making and improving the quality information presented to participants. As a result, the collaboration is “real” and not a phantom one because all stakeholders can share in the project.

Responsibility: Project Director, Governance Advisory Committee

Outcome: An agreed-upon set of principles to collaborate on this project, one that encompasses community support since each government entity or utility has a representative on the Committee.

Action 1.2: Build consensus to operationalize shared governance principles**Tasks:**

- a. Review collaborative principles of shared governance
- b. Brainstorm ways in which each principle can be put into practice via a Round Robin procedure
- c. Establish action plans for each implementation suggestion

Responsibility: The Black Belt Water and Sewer Authority Board, Project Director and Technical Advisory Committee

Outcome: A list of action items to implement the collaborative principles of shared governance.

B. Develop and Maintain a Process to Manage and Coordinate the Project with Maximum Local Community Involvement

The process of developing a solution to the pervasive problem of absent or failing onsite wastewater treatment systems in Lowndes County has been one of citizen involvement from the outset. One of the fundamental principles of the ACRE Model is that the people suffering the problem must be involved in the creation and implementation of the solution. When ACRE was first made aware that residents of Lowndes County were facing arrest and eviction from their own land because they could not afford to install septic systems, public hearings were held in the five commission districts of the county. To underscore the value placed on the testimony and opinions of the community, the sessions were videotaped and a court reporter was hired to make a record of the proceedings. Some 1500 residents participated in the public meetings. They told of their inability to afford the \$5,000 to \$30,000 cost of the systems to comply with the regulations, and expressed their fears of losing their land or going to jail. During the meetings, hundreds of people volunteered to help address the problems of their communities.

The need for a citizen-controlled authority that would manage development of a county-wide approach became evident. The residents decided that the most expeditious avenue for creation of the authority would be through the Town of White Hall. The Mayor and Council of the Town of White Hall approved the application to charter the Black Belt Water and Sewer Authority (BBWSA). With technical assistance from the Community Resources Group/Rural Community Assistance Program (CRG/RCAP), the National Center for Neighborhood Enterprise/Alabama (now ACRE) convened a new round of hearings in each of the Lowndes County commission districts to enable residents of each district to choose their own representative to the governing board of the BBWSA. NCNE/ACRE helped the residents acquire the services of an experienced Alabama land use lawyer who drew up the articles of incorporation. The BBWSA received its charter in 2004 as a public corporation for the purpose of operating a sanitary sewer system pursuant to Code of Alabama 11-50-310 *et seq.* The Residential Management Entity (RME) will be reactivated.

Action 1.3: Establish and maintain a coordinated program management structure.

The ***Project Management Team*** will consist of a Project Director and the Administrative Assistant. Both will be fulltime employees of the project.

The ***Project Director*** will be responsible for overall management and technical direction of the project. The Project Director is responsible for communicating with local government stakeholders through the Governance Advisory Committee; prioritizing individual projects; ensuring that the assessment and planning is executed; overseeing outreach activities within the community; and developing the long term management model. Through education and outreach, the Project Director will inform the community of funding options available to ensure

compliance with Health Department standards. The Project Director, Catherine Coleman Flowers, will hire consultants, and direct and receive reports from project consultants.

Administrative Assistant will maintain a database of information collected in the surveys, will maintain all schedules and communications and act as the project “switchboard.” With the Project Director and Accountant, the Administrative Assistant will create financial records and reports, maintain accounts, and transmit reports and expenditures to the accountant.

Accountant will prepare and file the appropriate tax records associated with the project.

The **Engineering Consultant** will help develop the house to house survey with the assistance of the Project Director; review the data collected when the survey is completed; evaluate problem soils as needed; and suggest design solutions to be included in the final report.

The part time **IT Consultant** will be contracted to define the software, hardware and network requirement for the project, as well as provide technical support and training to staff as needed.

A professional part time **Grants Administrator** will be contracted to provide technical assistance to the Project Director.

An **Outreach Coordinator** will be contracted to coordinate activities with homeowners/residents/community members; coordinates educational workshops and materials; brief homeowners and work with community surveyors; schedule public meetings; and encourage community participation in a variety of ways.

Five **Community Surveyors** residing in each of the County Commission Districts will be contracted to conduct surveys in their local communities and throughout the county to help gain the cooperation of local residents who may otherwise be unwilling to disclose their lack of a sanitary wastewater system. A stipend will be paid to each Community Surveyor.

The **Governance Advisory Committee** will serve in an advisory capacity to facilitate collaboration with stakeholders. The committee will consist of a representative of the BBWSA, each local mayor, the Lowndes County Commission, the Lowndes Water Authority, the White Hall Water Authority, EJI, and Lowndes Citizens United for Action.

A **Technology Advisory Committee** consisting of academics, regulators, wastewater professionals, and others will be established by the Project Director to provide guidance on technical wastewater issues such as site suitability evaluations, selection of technological approaches, management system models, potential sources of funding, as well as provide other advice. Some of the nation’s leading experts have volunteered to serve as advisors to the project. They include Dr. Bob Rubin (North Carolina State University); Valerie Nelson (National Onsite Wastewater Association); and Pres Allinder (Alabama Department of Public Health).

Additionally, the Project Director will ask experts such as Leanne Whitehead (Tennessee Valley Authority); Dr. James Buchanan (University of Tennessee, Onsite Wastewater Training Center); Vann McCloud (USDA Rural Housing), Dr. Mickey Smith (University of West Alabama); Scott Drake, P.E., East Kentucky Power Cooperative, Bryan Stevenson of the Equal Justice Initiative, and Jeff Cooley, formerly of RCAP.

Tasks:

- a. Define goals and activities for the Governance Advisory Committee.
- b. Define goals and activities for the Technology Advisory Committee.
- c. Establish communications/reporting requirements, formats, and channels of communication.
- d. Coordinate routine meetings

Responsibility: The Project Director with input from the Technology Advisory Committee and Governance Advisory Committee.

Product: Committee mission statements. Reporting formats and communications plan. Meeting reports.

Outcome: Guidelines for documenting and reporting progress.

Action 1.4: Administer project, document progress and make reports to supporters and stakeholders.

Tasks:

- a. Develop specific individual work plans with timelines and measurable goals.
- b. Document progress on a quarterly basis.
- c. Make reports to Governance Advisory Committee, stakeholders, EPA Project Officer.

Responsibility: Project Management Team

The **Project Management Team** will consist of a Project Director, IT Consultant, Consulting Engineer, Administrative Assistant, part time Grants Administrator, Outreach Coordinator, and Community surveyors.

Outcome: The implementation of management plan to ensure the overall coordination of the project.

Action 1.5: Coordinate with state and local wastewater regulators and other initiatives including economic development and/or housing programs that may offer cross-fertilization of information or benefits.

Each of these potential housing, business or industrial developments will have unique wastewater treatment needs that might be factored into a county wide cooperative plan.

Tasks:

- a. Identify potential partnering entities and coordinate with other agencies and initiatives.
- b. Designate a member of the Project Team to be liaison to these other entities.
- c. Meet with economic development project managers to ascertain possible relationship with project.
- d. Ensure that Governance Advisory Committee is informed of these developments.

Responsibility: Project Management Team, coordinated by ACRE Project Director

Outcome: Reports on economic development efforts that may impact project as it relates to sewer needs.

Objective 2: Needs Assessment, Analysis and Planning

A. Identify and Prioritize Wastewater Management Needs Responsive to Local Deficiencies.

In 2003, the 41 sites cited by the Alabama Department of Public Health as lacking or having failing septic systems were surveyed by representatives of the ADPH, ACRE and consulting engineer Larry E. Speaks of Montgomery, Alabama. The initial survey determined that on the 41 sites there were 86 residences. To determine the current extent of the threat to water quality, the survey will be updated and expanded to include adjacent areas and communities.

Action 2.1: Update and expand survey of onsite failures in Lowndes County.

Using the 2003 information, the 41 sites will be resurveyed to 1) update the information (owner, occupants, sewage system, GIS location); and (2) determine if a new onsite system is necessary. Owner cooperation is crucial. This survey will be a cooperative activity between the Project Team and the Alabama Department of Public Health. The survey will include the entire five thousand households within the entire 714 square mile county.

Tasks:

- a. Inform residence owner of intent to assess situation.
- b. Create agreement and secure permission to do survey.
- c. Update information as to ownership, occupants, water usage, sewage system
- d. Use GIS Systems to determine the location of each home and plot settlement patterns to overlay on map provided by the Natural Resource Conservation Service.
- e. Formulate appropriate intervention strategy

- f. Discuss potential intervention strategies with homeowner
- g. Disseminate educational material regarding threat to public health and need for project
- h. Expand the survey to include homes within a mile radius of the survey sites.

Responsibility: Project Management Team with the assistance of the Alabama Department of Public Health, and the Alabama Department of Environmental Management

Outcomes: Updated survey and map.

Action 2.2: Prioritize and rank residences in terms of risk and need.

Based on public health risk, environmental risk, need, and homeowner cooperation, each site will be scored and ranked for replacement/repair/installation of an appropriate onsite wastewater system. The Project Team (and/or its contractors), the BBWSA, and the Alabama Department of Public Health (local and state-level, if possible) will establish the priority and ranking, based on field surveys and information.

Tasks:

- a. Develop a rating system to establish intervention priorities, and determine intervention strategies, taking into account public health risk, cooperation, and location.
- b. Generate a rank ordered listing of intervention priorities and appropriate work plans.

Responsibility: Project Director, ADPH, Engineering Consultant

Outcome: Prioritized work plan.

B. Develop a Local Model for Addressing Rural Wastewater Needs

ACRE, and its contractors will use the survey to assess local population density, locations of housing units, areas of potential growth (industrial parks, residential development, commercial development), existing sewer systems, and other factors to determine present and future wastewater infrastructure needs. Ideally, certain areas of the region (county/counties) will be identified (because of potential growth) for new wastewater clusters.

The United States Department of Agriculture Natural Resource Conservation Service (NRCS) will provide copies of their recently completed soil survey of Lowndes County. The soil data also includes groundwater location and water table levels. This data will be interfaced with the data collected by Community Surveyors using leading edge GIS and mapping technology. Incorporating this technology in their field work, the community surveyors will go visit each of the approximately 5000 households that are located within the 714 square mile county to determine whether or not they have functioning wastewater systems. The information obtained and the GPS location of the residences will be interfaced with the data from NRCS. This will provide a broad spectrum of information to be used in planning and design. It will also provide valuable information about population density, soil types, groundwater location, and water table levels.

Dr. Kevin White of the University of South Alabama took a group of Lowndes County residents on a tour to see wastewater technology is being used in Mobile County to cost-effectively provide effluent sewer to areas of 5 mile radii. Existing municipal sewer systems in Hayneville, Mosses and Fort Deposit may be identified for expansion to capture potential development. And certain areas of the county will be identified as likely to be served by individual onsite wastewater systems indefinitely. Problem areas (soils, failures, economic conditions, etc.) will be identified and prioritized for action. Essentially, rural county wastewater might be managed in three different ways: (1) with conventional sewer (within and surrounding existing sewer systems, e.g., the conventional sewer systems that exist in the towns of Hayneville, Fort Deposit, and Mosses; (2) with cluster systems, where higher housing densities may exist now or in the future, and (3) with individual onsite systems, where residences are isolated and housing density is low.

Use of the 5 Decentralized Management Models,² as developed by EPA will be considered and incorporated into the “Strategic Management Plan.”

Action 2.3: Gather appropriate data such as population density, housing units, existing sewer, soils, and implement into a GIS database.

Tasks:

- a. Collaborate with Alabama Department of Environmental Management (ADEM) and U.S. Department of Agriculture Natural Resources Conservation Service to get soils Information regarding the type of soil and its percolation or infiltration rate to determine the suitability of the soil for an absorption area;
- b. Conduct a house to house survey within the county to determine wastewater needs and population density.
- c. Obtain from the mayors of townships within the county and county officials information about future areas having high growth potential.
- d. Organize this information into a GIS database.

Responsibility: Project Director, Administrative Assistant, IT Consultant, Community Surveyors

Outcome: A GIS searchable database of key wastewater management variables, and a map showing the soil types, slope, proximity to water resources and other information essential for making wastewater management and planning decisions.

Action 2.4: Assimilate GIS database information into an overall prioritized plan.

Tasks:

² U.S. Environmental Protection Agency Onsite Wastewater Treatment Systems Manual, (EPA/625/R-00/008), Feb. 2, 2002, Washington, DC.

- a. Develop and print maps of the county with results of the survey
- b. Review variables and their interaction effects
- c. Complete soil evaluations as needed
- d. Seek input from Technical Advisory Team
- e. Share Data and seek input with Governance Advisory Committee
- f. Formulate an intervention plan.

Responsibility: Project Director, Administrative Assistant, Engineering Consultant, Grants Administrator

Outcome: Prioritized plan for developing local interventions.

Action 2.5: Incorporate a public/private partnership to continue Black Belt Water and Sewer Board training regarding management of rural wastewater systems.

Local capacity building efforts have begun. For instance, the Community Resources Group/RCAP provided 30 hours of board management training to the Black Belt Water and Sewer Authority. Further, local community leaders visited Dr. Kevin White in Mobile, AL to learn about alternative systems demonstrations and their application in difficult soil conditions. In addition, Dr. Robert Rubin, then a visiting scientist at USEPA, also visited the community with representatives from ADPH and ADEM to evaluate conditions in the community. Three members of the ACRE staff attended an EPA conference on Decentralized Systems in Atlanta, Georgia. The Alabama Wastewater Authority, a for-profit entity, will partner with ACRE to provide training for local technicians and Board members.

A major resource is the University of West Alabama's Onsite Wastewater Association Training Center (AOWATC) located in Livingston, Alabama. The Governance Advisory Committee will visit AOWATC for additional orientation in onsite systems. Finally, ACRE will establish lines of communication and share information with other local utilities such as the seven water authorities in Lowndes County.

CRG/RCAP has a comprehensive board training curriculum which includes these topics:

1. --Wastewater System Management
2. --Current and Future EPA, ADEM, and ADPH Rules and Regulations
3. --Basics of Centralized and Decentralized Wastewater Systems
4. --Administrative Management Practices
5. --Policy Development
6. --Working with Consultants and Engineers
7. --Financial Options for System Projects or Upgrades
8. --Managing People
9. --Financial Management
10. --Long Range Plans

Tasks:

- a. Host a workshop to orientate Project Team, community leaders, media representatives and other and stakeholders regarding systems and soil identification.
- b. Arrange a bus tour of alternative systems and management entities that to be attended by community leaders, residents and other stakeholders.
- c. Provide Board Training for BBWSA and stakeholders in conjunction with RCAP and other technical advisors.

Responsibility: ACRE

Outcome: Board understanding of management responsibilities (see CRG-RCAP topics above)

Action 2.6: Orient staff regarding systems and site/soil identification procedures.

Tasks:

- a. Site visits to failing sites and properly operating wastewater systems in Lowndes County directed by Project Director.
- b. Workshop on public health issues by Director of Environmental Services, Alabama Department of Public Health.
- c. Orientation on needs of economic development projects by representatives of businesses that are locating, or potentially locating in Lowndes County.

Responsibility: Project Director

Products: Updated knowledge on wastewater systems, as well as the establishment of an information clearinghouse developed based on information collected.

Outcome: ACRE staff will be educated on current techniques for identifying and documenting failed systems.

Action 2.7: Coordinate and communicate with other local utilities.

Tasks:

- a. Identify point of contact for all local utilities
- b. Meet individually with contacts to explain project purpose and solicit cooperation

- c. Pinpoint capacities and capabilities for each utility

Responsibility: Project Director

Outcome: A database of contacts with utilities including their local capacities and capabilities.

Action 2.8: Research alternative technologies to determine suitability for the Demonstration project.

Tasks:

- a. Visit trade shows to identify appropriate and sustainable technologies.
- b. Collect case studies on products with the assistance of the Technical Advisory Committee.
- c. Evaluate potential solutions for affordability by the local community.

Responsibility: Project Director, Engineering Consultant, Technical Advisory Committee

Outcome: A plan outlining the sustainable technologies that could be used in the demonstration project and the cost for completing the next phase.

Objective 3: Education and Outreach

Education and outreach are essential to the success of this project. Community participation in the survey is needed in order to determine the scope of the problem. In 1997 EPA advised Congress that one of the factors that inhibit the use of decentralized wastewater systems is the lack of knowledge and public misperception. In Lowndes County, another factor is at play, the fear of prosecution which could lead to arrest and eviction from one's home. This specter is underscored by a nationwide economic recession that is has devastating effects on poor families. Therefore, outreach and education is especially important to help residents understand their role in helping to find a solution to this problem and how it impacts the health and safety of their families.

A. Create an Education and Outreach Plan for Local Residents to Encourage Future Installations

Action 3.1: Develop workshops with information about ongoing program and need for systems.

Tasks:

- a. Develop workshop presentations
- b. Disseminate information to community about workshops.
- c. Obtain materials from ADPH.
- d. Secure speakers from ADPH, AOWATC
- e. Publicize in newspaper, television stories, and documentary film.
- f. Conduct workshops in various venues
- g. Write and record Public Service Announcements

Responsibility: Project Director, Grants Administrator, Outreach Coordinator, Technical Advisory Committee, Governance Advisory Committee

Outcomes: Workshop materials, documentaries, and greater knowledge of the issue by the general public.

Action 3.2: Implement a strategy to promote local adoption of wastewater management practices.

Tasks:

- a. Develop presentations for policy makers.
- b. Enlist the support of the media in educating the policy makers and their constituents.
- c. Identify stakeholders and develop a general consensus of the approach to the solution.
- d. Develop a resource library of best practices as a reference for strategy and best practices.
- e. Disseminate information collected through a media campaign targeting policy makers and community leaders.

Responsibility: Project Director, Project Management Team, Technical Advisory Committee, Governance Advisory Committee

Outcome: Policies created to encourage and support the installations of sanitary sewers.

B. Report Project Accomplishments to Local, State and National Audiences

The ACRE Model is not unique to wastewater management problems in Lowndes County, Alabama. Rather, it is a parsimonious device for rural communities to develop local solutions to local problems. Briefly, it begins with a needs analysis that forms the basis for strategic planning as it deals with universal topics: financing, capacity development, project management, education, and evaluation. To fulfill its commitment to provide transparent reports on accomplishments and, more broadly, articulate the ACRE Model throughout the nation, a comprehensive mix of 10 dissemination strategies are adopted, as described below.

3.3 Action: Report project accomplishments and outcomes

Tasks:

- a. Compare quarterly progress against benchmarked timelines
- b. Write quarterly and annual progress reports
- c. Distribute reports to EPA with copies to all project collaborators
- d. Publish reports on various web sites
- e. Collect all recordings of meetings and news coverage from the beginning of the project in 2002.
- f. Record progress in documentary employing established contacts with the mass media.

Responsibility: Project Director, Administrative Assistant

Outcome: Publish reports where key stakeholders are aware of and can monitor project progress.

3.4: Action: Disseminate widely the ACRE Model**Tasks:**

- a. Implement Active Dissemination Strategies
 - i. Short Courses/Seminars
 - ii. Web Sites
 - iii. Demonstrations
 - iv. Site Visits
 - v. Teleconferences
 - vi. Community meetings
- b. Implement Passive Dissemination Strategies
 - i. Consumer Summaries
 - ii. Journal Articles
 - iii. Press Releases
 - iv. National Information Sources
 - v. Conference Papers

Responsibility: The Project Director, Governance Advisory Committee, and Technical Advisory Committee will identify target audiences and specific project messages for each dissemination strategy.

Outcome: The project outcomes and the ACRE Model are disseminated widely to interested citizens and the influential informal decision makers, health officials, environmental professionals, academics, practicing engineers, construction managers, policy makers, and local governmental officials throughout the nation.

Mitigating Factors

This project faces two mitigating factors. First, Lowndes County is a poor rural community. It lacks a wealthy tax base to finance many public works projects, including wastewater management. The EPA funding is a necessary but not wholly sufficient condition of total project funding; the full amount needed to provide a comprehensive solution will not be known until engineering recommendations are received. The ACRE Model anticipates potential financial concerns for residents that are not in compliance.

The second mitigating factor is organizational management; that is to say, successful completion of a project of this scope requires the mutual support and collaboration of many parties. Not all of the stakeholders have a history of working with collaborators outside of their own organizations. That is why, for example, this project is led by an individual who has a long and demonstrated track record of successful community coalition building.

Both mitigating factors – finances and leadership – are duly anticipated and project systems and procedures are in place to minimize their potential negative impact.

Rationale for Approach

Two factors underpin the motivation for this project. First, the harsh reality of wastewater management in Lowndes County demands immediate action to protect the health of the citizens and their environment. Paltry improvements in wastewater management will fail in the quest for sufficiency. A comprehensive, community-based plan is required, exactly what this proposal advocates.

Second, whatever wastewater management systems are eventually adopted must have the support of the local citizenry; otherwise, the project is doomed to eventual failure. That is why this project depends on local involvement of the citizens to the point that they actually become stakeholders in the decision making process. This local shared governance approach ensures participant “buy-in.”

Unique Project Features

This project has three unique features, ones that have been discussed earlier in the proposal and are summarized again for convenience.

1. The community is not only actively involved, they actually decide project actions and outcomes through a process of shared governance
2. The ACRE Model underpinning this project has universal applications among poorer rural communities throughout the nation. Rather than offering a prescriptive approach to wastewater management, it establishes key parameters within which local communities make their own decisions
3. The project draws on the rich resources that exist within the broad networks available to the Project Team. Multi-disciplinary expertise from community, academic, business, and government sources can be marshaled to ensure project success.

Chronological Project Schedule

This project covers a two-year timeframe, beginning on August 1, 2010 and ending on September 30, 2012. This period spans eight calendar quarters. The following table reproduces the project primary and secondary objectives and indicates the project quarter (Q) in which the specific activities and tasks will occur, ranging from Quarter 1-8

Work Plan Objectives		
Objectives		
Type	Objectives	Milestones
Project Management and Coordination	<p>Maximize project reach through collaboration with local entities.</p> <p>Develop and maintain a process to manage and coordinate the project with maximum local community involvement.</p>	Q1-8
Needs Assessment, Analysis and Planning	<p>Identify and prioritize wastewater management needs responsive to local deficiencies</p> <p>Develop an overlay of maps that can be used to identify and assess future wastewater needs.</p> <p>Develop a local model for addressing rural wastewater management needs through design alternatives and the formation of a management entity.</p> <p>Coordinate with local and state regulatory agencies to assure options addressed are appropriate and permissible.</p>	Q1-8
Education and Outreach	<p>Create an education and outreach plan for local residents to encourage further installations</p> <p>Develop a strategy to promote local adoption of wastewater management practices</p> <p>Report project accomplishments to state and national audiences.</p>	Q1-8

The milestones are target time frames and will be adjusted as demanded by current circumstances. Nevertheless, they are measured and realistic estimates based on past project experiences.

Responsible Project Personnel

Catherine C. Flowers, Executive Director, ACRE

Project Evaluation

Evaluation is a multifaceted term. In a general sense, the term "evaluation" means to gather information to judge the effectiveness of the project. However, more precise types of evaluation are warranted for this proposal. Specifically, this project will conduct both process and outcome evaluations. The process and outcome evaluations examine both quantitative and qualitative data following the evaluation model by Brinkerhoff, Brethower, Hluchyj, and Nowakoski.³

D. General Project Description

Data Collection and Evaluation Criteria

This project does not involve any research or demonstration with human subjects or research animals. Rather, this project will survey and document the all 5,000 of the residences in the county to determine wastewater needs. This house to house survey will be done by five surveyors using computers employing sub-meter GPS accuracy to determine the actual location of the homes. The survey will also determine if the resident has a septic tank that is in compliance with regulations. The information gathered will be incorporated into a database of soil types and water level maps of the county provided by the Natural Resource Conservation Service. This will allow for the production of comprehensive maps that will be used by the Consulting Engineer and Technical Advisory Committee to make decentralized wastewater design suggestions in the formulation of a master plan to address wastewater issues in this county.

Project Impacts

The management of onsite wastewater treatment systems has traditionally been the responsibility of the homeowner. In many locales, this responsibility is codified into regulations requiring the installation of a wastewater system before a building or occupancy permit is issued. Alabama does not have such a requirement, which means that thousands of households do not have any septic treatment systems.

In rural Alabama, many householders occupy mobile homes that are trailered to a rural lot and set into place. Although there may be bathroom fixtures and plumbing within the dwelling, only a straight pipe leads to the outside and wastewater is left to run onto the ground or into a ditch. The extreme poverty of many households in the Black Belt creates a major challenge to the creation and management of any kind of wastewater treatment scheme.

As alternative wastewater technologies have been developed, a second category of households experience a different problem, namely, management of complex technology that allows occupancy of land that does not “perc” for conventional septic systems and drain fields. Some counties, such as the nation’s fastest growing county—Loudoun County, Virginia—are moving to create new management systems including regulations mandating operations and maintenance contracts to ensure that the more complex treatment systems are adequately maintained to protect public health.

The U.S. Environmental Protection Agency has encouraged the use of onsite decentralized wastewater treatment systems as alternatives to conventional centralized sewer systems through publications analyzing costs and benefits and identifying barriers to their use. In 1997, the EPA advised Congress that “Adequately managed decentralized wastewater systems are a cost-effective and long term option for meeting public health and water quality goals, particularly in less densely populated areas” (Response to Congress, 1997). While these decentralized wastewater systems hold bright promise for the future, certain barriers exist, according to the EPA, that inhibit the use of these systems:

1. Lack of Knowledge and Public Misperception
2. Legislative and Regulatory Constraints
3. Lack of Management Programs
4. Liability and Engineering Fees
5. Financial Barriers

In 2003, The USEPA published a comprehensive set of guidelines for management of decentralized wastewater systems. These guidelines provide opportunity to address the issues identified in the 1997 Response to Congress. This project purports to support the management models described in the USEPA Management Guidelines.

The ACRE Model will have a strong and positive impact on adopting decentralized wastewater systems and advances mechanisms for dealing with these barriers. Equally important, this project will help worthy, deserving, and need people to regain control over part of their daily living that is now characterized by lost hopes and limited aspirations.