#383

Report To
The Mississippi Legislature

A Compliance Review of the Landscape Gardener Licensure Examination Processes

October 29, 1998

The Bureau of Plant Industry, a division of the Mississippi Department of Agriculture and Commerce, regulates the professional service of horticultural and floricultural work (i.e., landscape gardening), primarily through examining applicants for licensure. The bureau's licensure examination processes are not valid because they do not fully comply with recognized testing standards for professional regulatory agencies. As a result, the bureau cannot ensure that it is licensing individuals who possess the necessary knowledge and skills to provide competent landscape gardener services in Mississippi.

The PEER Committee

PEER: The Mississippi Legislature's Oversight Agency

The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A standing joint committee, the PEER Committee is composed of five members of the House of Representatives appointed by the Speaker and five members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms with one Senator and one Representative appointed from each of the U. S. Congressional Districts. Committee officers are elected by the membership with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of three Representatives and three Senators voting in the affirmative.

Mississippi's constitution gives the Legislature broad power to conduct examinations and investigations. PEER is authorized by law to review any public entity, including contractors supported in whole or in part by public funds, and to address any issues which may require legislative action. PEER has statutory access to all state and local records and has subpoena power to compel testimony or the production of documents.

PEER provides a variety of services to the Legislature, including program evaluations, economy and efficiency reviews, financial audits, limited scope evaluations, fiscal notes, special investigations, briefings to individual legislators, testimony, and other governmental research and assistance. The Committee identifies inefficiency or ineffectiveness or a failure to accomplish legislative objectives, and makes recommendations for redefinition, redirection, redistribution and/or restructuring of Mississippi government. As directed by and subject to the prior approval of the PEER Committee, the Committee's professional staff executes audit and evaluation projects obtaining information and developing options for consideration by the Committee. The PEER Committee releases reports to the Legislature, Governor, Lieutenant Governor, and the agency examined.

The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

A Compliance Review of the Landscape Gardener Licensure Examination Processes

October 29, 1998

The PEER Committee

Mississippi Legislature

The Mississippi Legislature

Joint Committee on Performance Evaluation and Expenditure Review

PEER Committee

SENATORS
EZELL LEE
Chairman
HOB BRYAN
WILLIAM CANON
BOB M. DEARING
JOHNNIE E. WALLS, JR.

REPRESENTATIVES
TOMMY HORNE
Vice-Chairman
HERB FRIERSON
Secretary
WILLIAM E. (BILLY) BOWLES
ALYCE G. CLARKE
MARY ANN STEVENS

TELEPHONE:
(601) 359-1226

FAX:
(601) 359-1420

Post Office Box 1204
Jackson, Mississippi 39215-1204

Max K. Arinder, Ph. D.
Executive Director

OFFICES:
Professional Building
222 North President Street
Jackson, Mississippi 39201

October 29, 1998

Honorable Kirk Fordice, Governor
Honorable Ronnie Musgrove, Lieutenant Governor
Honorable Tim Ford, Speaker of the House
Members of the Mississippi State Legislature

On October 29, 1998, the PEER Committee authorized release of the report entitled **A Compliance Review of the Landscape Gardener Licensure Examination Processes.**

Senator Ezell Lee, Chairman

This report does not recommend increased funding or additional staff.

Table of Contents

Letter of Transmittal.....i

List of Exhibits v

Executive Summary..... vii

Introduction 1

Authority 1
Purpose 1
Method 1
Overview 1

Background 3

Regulation of Landscape Gardener Services 3
Authority and Responsibility for Regulation..... 3
Scope of Regulation 3
Organization..... 4
Qualifications and Licensing of Landscape Gardeners..... 4
Required Qualifications..... 4
Licensure Examination..... 6
Landscape Gardener Revenues and Expenditures..... 7

Bureau of Plant Industry Licensure Examination Processes..... 8

Recognized Testing Standards for Professional Regulatory Agencies..... 8
Bureau of Plant Industry's Compliance with Recognized Testing Standards 11
Test Development.....11
Test Administration.....12
Statistical Analysis and Research.....13
Scoring and Reporting.....13
Examination Security.....14

Recommendations.....15

Legislative Recommendations.....15
Administrative Recommendations 15

Appendix A. Standard Testing Practices in the Recommendations of the Council on Licensure, Enforcement, and Regulation (CLEAR) 16

Agency Response.....19

List of Exhibits

1. Schematic of Participants in Landscape Gardener Regulation in Mississippi 5

2. Number of Landscape Gardener Licenses Issued (From FY 1982-FY 1998)..... 6

3. Estimated Landscape Gardener Regulatory Expenditures (For Fiscal Year 1998)..... 7

4. Bureau of Plant Industry's Compliance with Standard Testing Practices.....10

A Compliance Review of the Landscape Gardener Licensure Examination Processes

Executive Summary

October 29, 1998

Introduction

The PEER Committee authorized a review of the Landscape Gardener licensure examination processes pursuant to the authority granted by MISS. CODE ANN. Section 5-3-57 et seq. (1972). The Bureau of Plant Industry, a division of the Department of Agriculture and Commerce, is responsible for developing and administering examinations for the licensure of landscape gardeners.

Overview

The Bureau of Plant Industry regulates the professional service of horticultural and floricultural work (i.e., landscape gardening), primarily through examining applicants for licensure. The Bureau of Plant Industry is responsible for developing and administering examinations to ensure that licensed individuals possess the entry-level knowledge and skills needed to provide professional landscape gardening services in Mississippi.

The bureau's current landscape gardener licensure examination processes are not valid because they do not fully comply with recognized testing standards for regulatory agencies. An examination process is considered "valid" if it accurately tests applicants for the knowledge and skills necessary to competently perform work in the profession. Recognized testing standards require that regulatory agencies provide documentation of all facets of the examination to provide evidence that the tests are valid, reliable, fair, and legally defensible. The bureau does not have adequate testing procedures to provide evidence of valid licensure testing. Because of this, the bureau cannot assure the public that it is licensing individuals who can provide competent landscape gardener services.

Also, the bureau does not maintain adequate security over licensure examination information to assure that no applicant has an unfair advantage. The bureau allows test developers to conduct test preparation sessions sponsored by the Mississippi Nurserymen's Association prior to each examination. The test developers' involvement in preparing applicants for the licensure examination has the appearance of impropriety.

Recommendations

1. The Legislature should amend MISS. CODE ANN. Section 69-19-9 to require the Bureau of Plant Industry within the regulatory office of the Department of Agriculture and Commerce to administer examinations that measure job competency and comply with professional testing standards such as those advocated by the Council on Licensure, Enforcement, and Regulation (CLEAR).

2. The bureau should improve licensure procedures to insure that the examinations measure job competency and comply with professional testing standards such as those advocated by the Council on Licensure, Enforcement, and Regulation (CLEAR). Specifically, the bureau should:

   (a) ensure that the licensure examinations measure landscape gardener entry-level knowledge and skills and discriminate between competent and incompetent candidates;

   (b) develop written test administration procedures to provide candidates with standardized test administrations; information on test scoring and content; and a plan for accommodating candidates with disabilities which complies with the 1990 Americans with Disabilities Act;

   (c) statistically analyze test results to determine which examination ques-

tions need revision to ensure that the test is measuring appropriate knowledge and skills;

(d) develop written procedures to ensure uniform test scoring and due process to candidates relating to test scoring concerns; and,

(e) develop written procedures for responding to possible test security problems and contracts with professionals involved in test development or review to ensure that they do not engage in preparing candidates to take licensure examinations.

For More Information or Clarification, Contact:

PEER Committee
P. O. Box 1204
Jackson, MS 39215-1204
(601) 359-1226
http://www.peer.state.ms.us

Senator Ezell Lee, Chairman
Picayune, MS (601) 798-5270

Representative Tommy Horne, Vice-Chairman
Meridian, MS (601) 483-1806

Representative Herb Frierson, Secretary
Poplarville, MS (601) 795-6285

A Compliance Review of the Landscape Gardener Licensure Examination Processes

Introduction

Authority

The PEER Committee authorized a review of the Landscape Gardener licensure examination processes pursuant to the authority granted by MISS. CODE ANN. Section 5-3-57 et seq. (1972). The Bureau of Plant Industry, a division of the Department of Agriculture and Commerce, is responsible for developing and administering examinations for the licensure of landscape gardeners.

Purpose

In conducting this review, PEER sought to determine whether the bureau's examination processes comply with professional standards for regulatory testing to ensure the licensure of competent landscape gardeners.

Method

In conducting this review, PEER reviewed state laws relating to the operations of the Department of Agriculture and Commerce. PEER also reviewed Bureau of Plant Industry rules, policies, and procedures, along with committee meeting minutes, records, and other documentation. PEER interviewed Bureau of Plant Industry staff, advisory board and council members, state agency personnel, and representatives of other state boards and associations. PEER also obtained and reviewed literature and relevant publications and materials from other state agencies and associations and Fiscal Year 1998 examination and financial documents.

Overview

The Bureau of Plant Industry is a regulatory division of the Mississippi Department of Agriculture and Commerce. The bureau regulates the professional service of horticultural and floricultural work (i.e., landscape gardening), primarily through examining applicants for licensure. The Bureau of Plant Industry is responsible for developing and administering examinations to ensure that licensed individuals possess the entry-level knowledge and skills needed to provide professional landscape gardening services in Mississippi. The bureau's current landscape

gardener licensure examination processes are not valid because they do not fully comply with recognized testing standards for regulatory agencies. An examination process is considered "valid" if it accurately tests applicants for the knowledge and skills necessary to perform work in the profession competently. Recognized testing standards require that regulatory agencies provide documentation of all facets of the examination to provide evidence that the tests are valid, reliable, fair, and legally defensible. The bureau does not have adequate testing procedures to provide evidence of valid licensure testing. Because of this, the bureau cannot assure the public that it is licensing individuals who can provide competent landscape gardener services.

Also, the bureau does not maintain adequate security over licensure examination information to assure that no applicant has an unfair advantage. The bureau allows the test developers to conduct test preparation sessions sponsored by the Mississippi Nurserymen's Association prior to each examination. The test developers' involvement in preparing applicants for the licensure examination has the appearance of impropriety.

Background

Regulation of Landscape Gardener Services

Mississippi has regulated landscape gardener services since 1938 by providing for the licensure and certification of individuals who perform horticultural and floricultural work as a professional service. Landscape gardeners in Mississippi generally include owners, employees, agents, and contract workers of gardener centers, nurseries, independent lawn and gardener services, or independent landscaping services. The Legislature gave the Commissioner of the Department of Agriculture and Commerce the ultimate responsibility for regulation of the profession and established the Plant Industry Advisory Board to provide for professional input into the regulatory process.

Authority and Responsibility for Regulation

The Commissioner of the Mississippi Department of Agriculture and Commerce has authority, through MISS. CODE ANN. Section 69-19-1, to make rules and regulations to govern agricultural professional services in Mississippi. The Bureau of Plant Industry, a regulatory division of the Department of Agriculture and Commerce, is given the responsibility to administer and enforce the rules and regulations of the professional services defined in MISS. CODE ANN. Section 69-19-5. The Bureau of Plant Industry is charged with the regulation of landscape gardening in Mississippi to protect the public from risk of fraud or bad faith services that may cause harm to the public, animals, or the environment. Individuals cannot practice professional services such as horticultural and floricultural work--"landscape gardening" in Mississippi--unless they are licensed by the Bureau of Plant Industry.

Scope of Regulation

MISS. CODE ANN. Section 69-19-5 (c) defines horticultural and floricultural work (i.e., landscape gardening) as "receiving fees for landscaping and setting of plants or for the sale of any plants for which the seller contracts to render future services." In determining the scope of its regulatory responsibilities, the Bureau of Plant Industry has interpreted the professional service of landscape gardening to include those individuals advertising landscaping services or drawing landscaping designs and setting plants with a contract or an agreement to provide future services.

Organization

State law requires that the Plant Industry Advisory Board, composed of representatives of the agricultural and horticultural interests of the state, approve all Department of Agriculture and Commerce rules and regulations before they are deemed in effect. In 1991, the Plant Industry Advisory Board created the Ornamental Horticulture Advisory Council to advise the bureau concerning the ornamental horticulture industry in Mississippi. The council is a professional organization consisting of nine persons certified or licensed by the bureau to provide professional services within the horticulture industry. The council advises the bureau on the regulation and licensure of landscape gardening. See Exhibit 1, page 5, for an organizational chart of the regulation of landscape gardener practices in Mississippi.

Qualifications and Licensing of Landscape Gardeners

The Bureau of Plant Industry administers the regulatory program for landscape gardeners by reviewing applicant qualifications and requiring that qualified applicants pass a licensure exam before being licensed to practice. The Bureau of Plant Industry designed the licensure process to insure that only qualified applicants having a certain level of knowledge and expertise provide landscape gardener services in Mississippi.

Required Qualifications

To be a licensed landscape gardener in the state of Mississippi, the bureau requires that applicants provide documentation of meeting one of the following criteria to take the licensure examination:

- applicant must be graduated from a recognized college or university with at least fifteen semester hours or the equivalent in the field for which the individual is requesting a license;

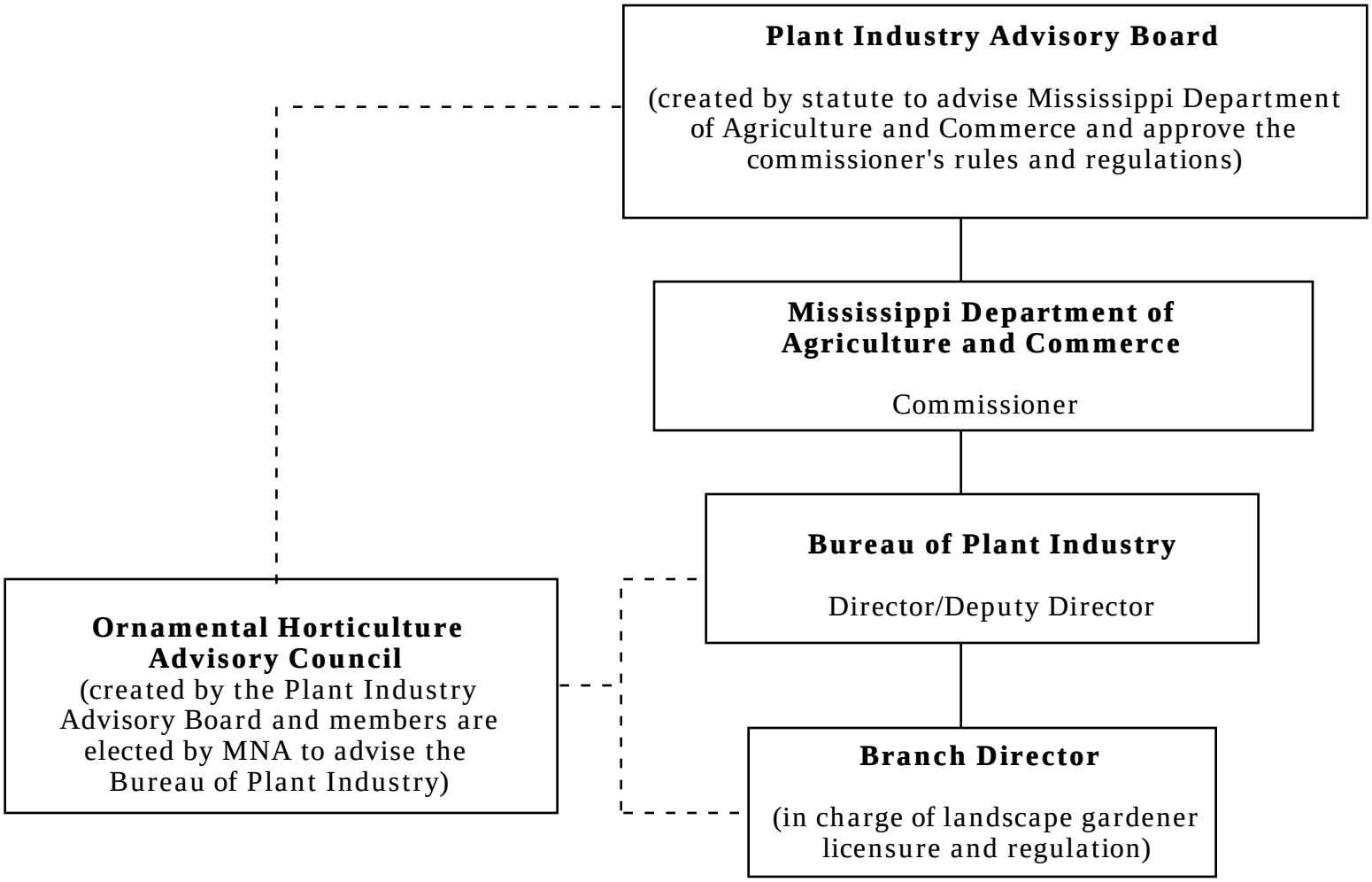
- applicant must have not less than two years of college or university training with special training in the field for which the individual is requesting a license;

- applicant must be at least a high school graduate, and have had, in addition, at least one year of experience with a licensed operator within the past two years; and,

- if the applicant does not have a high school education or its equivalent, the individual must be able to furnish proof of at least two years' experience with a licensed operator within the last three years.

Exhibit 1

Schematic of Participants in Landscape Gardener Regulation in Mississippi



NOTE: Dashed lines (-------) indicate lines of communication.

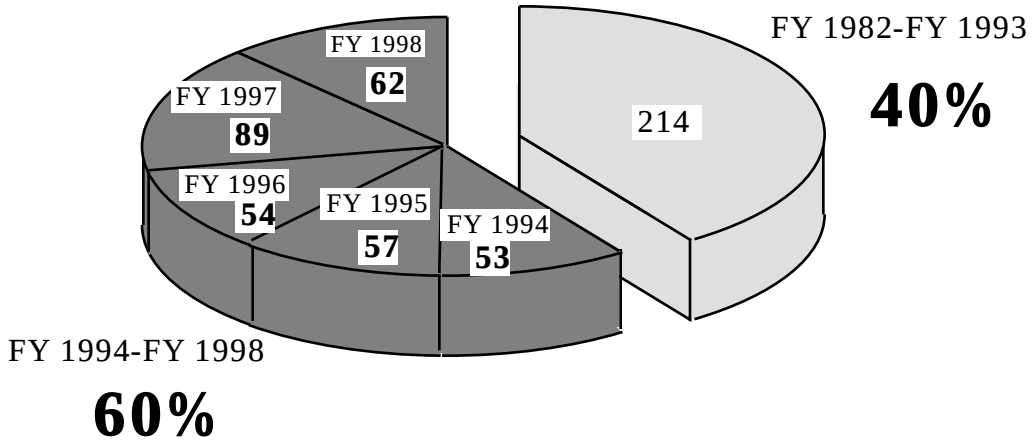
SOURCE: PEER analysis of the Bureau of Plant Industry landscape gardener regulation.

Licensure Examination

Applicants must receive a passing score on the written landscape gardener examination and be bonded for at least $1,000 to guarantee work or future services before being licensed by the Bureau of Plant Industry. The examination for licensure is critical to the regulatory process to ensure landscape gardener competency because the bureau does not currently require licensure renewal or additional training for continued licensure.

The Bureau of Plant Industry licensed the first landscape gardener in July 1938. The bureau's annual reports 1981 to date show that the bureau has issued 529 licenses to landscape gardeners in Mississippi. Although more licenses may have been issued prior to 1981, the bureau provided no documentation to PEER of such. Exhibit 2, below, shows that the bureau has licensed over half (315) of the reported number of licensees within the last five fiscal years. Currently, the bureau has 479 licensed landscape gardeners actively practicing professional services within the state.

Exhibit 2
Number of Landscape Gardener Licenses Issued
(From FY 1982-FY 1998)



SOURCE: PEER analysis of Bureau of Plant Industry licensure data.

The bureau also issues identification cards to landscape gardener employees permitting them to work under licensed landscape gardeners and solicit business or represent the licensee, the landscape gardener, to

the public. The bureau does not test or track the number of landscape gardener employees in the state.

Landscape Gardener Revenues and Expenditures

The Bureau of Plant Industry's revenue for the regulation of landscape gardener services is from general fund appropriations. The bureau does not collect fees for examination or licensure activities. Although bureau personnel do not separately report landscape gardener expenditures, the bureau estimated that in FY 1998, it expended $77,044 for the regulation of landscape gardener services. See Exhibit 3, below, for the bureau's FY 1998 estimated expenditures for the regulation of landscape gardeners in Mississippi.

In FY 1998, the general funds were expended for the salaries of administrative staff and inspectors; travel compensation for the investigation of complaints; contractual services for janitorial and copier repair services; test administration commodities such as paper, pens, and postage; and maintenance of vehicles and office equipment used in the regulation of landscape gardener services.

Exhibit 3

Estimated Landscape Gardener Regulatory Expenditures (For Fiscal Year 1998)

Categories of Expenditures	Estimated Expenditures
Salaries,wages, and fringe benefits	$62,203
Travel	1,033
Contractual services	11,064
Commodities	2,680
Equipment	64
Total	**$77,044**

SOURCE: Bureau of Plant Industry.

Bureau of Plant Industry Licensure Examination Processes

Regulatory agencies have a responsibility to function on behalf of the consuming public, who pay fees for services received from regulated professionals, to license competent individuals for practice. Regulation through examination processes can be deemed adequate if the testing processes are valid. Valid testing practices insure that the test is measuring the knowledge and skills needed for the profession. Since the professional service of horticultural and floricultural work (i.e., landscape gardening) is regulated, according to state law, to protect the public from fraudulent services, PEER sought to determine the adequacy of the bureau's licensure examination processes for landscape gardeners.

Do the bureau's examination processes comply with professional standards for regulatory testing to ensure the licensure of competent landscape gardeners?

Because the bureau's examination processes do not fully comply with professional testing standards which require a valid measurement of the needed skills and knowledge for professional practice, the bureau cannot ensure it is licensing individuals who can provide competent landscape gardener services to the public.

In order to determine the adequacy of the bureau's examination processes, PEER compared the bureau's examination procedures to recognized testing standards for regulatory agencies.

Recognized Testing Standards for Professional Regulatory Agencies

Since the examination process is an important role of regulatory agencies, PEER researched licensure and assessment literature and found that the Council on Licensure, Enforcement, and Regulation (CLEAR) provides standard professional testing practices for regulatory agencies. In summary, these standards address test development; test administration; statistical analysis and research; scoring and reporting; and, examination security. (See Appendix A, page 16, for further details regarding each of these areas.) Although these standards have been formalized and disseminated by CLEAR, they are consistent with testing practices advocated by other national organizations, such as the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education.

CLEAR's testing practices serve to develop valid and reliable examination procedures for regulatory agencies. A regulatory agency should have documentation of the development and standardization of the procedures and rationales utilized in the examination processes to provide evidence of valid and reliable testing. Valid testing is essential for the bureau to maintain that occupational performance standards are measured and complied with for licensure. Reliable testing allows regulatory agencies to license consistently those applicants who are determined competent for professional practice.

If tests are not valid and reliable, the bureau may license incompetent applicants or deny competent applicants the opportunity to begin practice. Without documentation of testing practices, the bureau is unable to justify current testing and may be subject to potential lawsuits by candidates who have been restricted from practice.may be subject to potential lawsuits by candidates who have been restricted from practice.

The Council on Licensure, Enforcement, and Regulation (CLEAR)

CLEAR is an international association with over four hundred members which serves to improve the quality of professional regulation to enhance public protection. CLEAR's standard testing practices provide practical assistance to regulatory agency members to aid in licensing competent applicants.

CLEAR is an affiliate organization of the Council of State Governments, which provides information and other services to government officials to aid in management and policy decisions.

SOURCE: Council on Licensure, Enforcement, and Regulation (CLEAR) and the Council of State Governments.

Exhibit 4, page 10, summarizes the components of CLEAR's professional testing standards and whether the bureau's testing processes complied with those standards. CLEAR's standard testing practices address the examination components of test development; test administration; statistical analysis and research; scoring and reporting; and examination security. See Appendix A, page 16, for a detailed description of CLEAR's standards for regulatory testing.

Following Exhibit 4 are brief explanations of CLEAR's five components of professional testing standards. The bureau's testing practices did not fully comply with the standards.

Exhibit 4
Bureau of Plant Industry's Compliance with Standard Testing Practices

Components	Actions Needed to Meet Testing Standards	Did the Bureau Follow the Professional Testing Standards?
Test Development	Analyze skills and knowledge required for landscape gardener competency	**Partially.** (See page 11.)
	Ensure test includes questions on each necessary landscape gardener skill	**No.** (See page 11.)
	Set a valid passing score based on entry-level knowledge and skills	**No.** (See page 11.)
	Develop oral, practical, and essay exams with standard answers that can be consistently graded	**Partially.** (See page 11.)
Test Administration	Provide applicants with detailed information on testing times and dates, test content, test site conditions, grading procedures, and disclosure of test scores to applicants	**Partially.** (See page 12.)
	Develop a written plan for accommodating candidates with disabilities which complies with the 1990 Americans with Disabilities Act	**No.** (See page 12.)
	Develop written test administration procedures to ensure consistent testing conditions	**No.** (See page 12.)
Statistical Analysis and Research	Analyze test results to determine which test questions need revision to ensure the test is measuring appropriate knowledge and skills	**No.** (See page 13.)
Scoring and Reporting	Ensure that tests are graded and tests results are reported to students in a fair and uniform manner	**Partially.** (See page 13.)
Examination Security	Ensure secrecy of test questions in advance	**Partially.** (See page 14.)
	Maintain test materials in secure locations	**Yes.** (See page 14.)
	Ensure students have no access to tests during printing, storage, transportation, and distribution and develop procedures for responding to test security problems	**Partially.** (See page 14.)

Note: Appendix A, page 16, provides detailed explanations of the standards for landscape gardener testing.

SOURCE: PEER analysis of the Bureau of Plant Industry's current testing practices in comparison to standard testing practices. Test practices listed above summarize the recommendations for licensure testing developed by the Council on Licensure, Enforcement, and Regulation (CLEAR), which is affiliated with the Council of State Governments.

Bureau of Plant Industry's Compliance with Recognized Testing Standards

Test Development

- *The bureau does not ensure that the licensure examination tests the knowledge and skills needed to be a landscape gardener. In addition, the exam's 70% passing score is not based on the minimum level of knowledge needed to practice landscape gardening. The bureau has arbitrarily selected 70 as the cut-off score for passing the test, even though it does not necessarily represent the needed level of competency.*

Based on CLEAR standards, test developers should document the details of what a landscape gardener should be able to do to be competent, test the skills and knowledge needed to be a landscape gardener, and set the test's passing score at the minimum competency level.

Currently, the landscape gardener examination consists of forty-four plant-listing questions, twenty short essay questions, and a design drawing of plant selections for landscaping the exterior of a residential house. Two Mississippi State University (MSU) Plant and Soil Sciences professors developed the current landscape gardener examination through a review of community college suggestions, landscape gardening textbooks, and other landscaping educational materials. The professors revise portions of the exam quarterly from a pool of landscape gardener test questions that they developed from their review of community college suggestions and landscape materials. Although the professors may be experts in their field, they have not developed the exam according to standard testing practices for regulatory agencies.

The bureau does not have records to verify that it analyzed and tested the skills and knowledge needed to practice landscape gardening in Mississippi. In addition, the bureau did not set the test's passing score at the minimum skill level needed to be a landscape gardener. Documentation of analysis and skills tested is needed to provide evidence of valid testing. A test's passing score should be decided by the test developers through their review of needed skills and set at the minimum level of skills required to practice landscape gardening in Mississippi.

Test Administration

- *The bureau's examination process fails to provide test administration information, such as test format or scoring procedures, to applicants prior to examination. Failure to provide exam information to applicants could hinder applicants from performing at their optimal testing level and may unnecessarily restrict applicant access to the field of landscape gardening.*

Based on CLEAR standards, test administrators should send applicants information on test content and how the exams will be graded. The test administrators should also develop written test administration procedures to ensure consistent testing conditions and approve a written plan for accommodating candidates with disabilities which complies with the 1990 Americans with Disabilities Act.

Currently, the Bureau of Plant Industry administers the landscape gardener examinations on the second Tuesday of each quarter in a calendar year at the Mississippi State University campus in Starkville, Mississippi. The bureau does not have written procedures for test administration, but bureau personnel informally notify the applicants of test procedures during test administration. In addition, the bureau does not have written procedures for accommodating applicants with disabilities, but bureau personnel reported that they assess applicant needs on a case-by-case basis.

The bureau sends applicants for licensure written information on the availability of study materials from the Mississippi State University Extension Service for the examination but does not routinely inform applicants in advance of the detailed subject categories which would be included on the test, the test format, administration policies and procedures, or scoring method.

The only source of detailed exam information is provided in a preparation session offered by the Mississippi Nurserymen's Association (MNA) since October of 1997. The MNA test preparation sessions are promoted by the bureau and conducted by the MSU professors that developed and grade the licensure exams. (See page 14 for additional information concerning the MSU professors' involvement in grading and preparing students for the examination.) The sessions are currently held on the Sunday afternoon prior to each scheduled testing at the Mississippi State University campus. The sessions include a review of horticultural practices, plant identification, state law, and examination study materials provided by the Mississippi State University Extension Service. Although this practice may convey information about the nature of the exam, not all applicants elect to pay $100 to attend a four-hour test preparation session. Prior to October of 1997, MNA did not offer the study session to applicants, but of the applicants sitting for the exam since October of 1997, less than 30% have attended the sessions. As of July of 1998, twenty-eight applicants

have attended the training sessions, resulting in approximately $2,800 in revenue for MNA.

Statistical Analysis and Research

- *The bureau does not statistically analyze test results to determine which examination questions need revision to ensure the test is measuring the appropriate knowledge and skills.*

Based on CLEAR standards, test developers and reviewers should analyze the results of tests to determine whether test questions need to be revised or even omitted. For example, if a test item is repeatedly missed by applicants, statistical analysis of the test would identify the item for review and possible revision. Test results should be analyzed to help establish the reliability and validity of the examination. The bureau does not currently perform any statistical analysis.

Scoring and Reporting

- *The bureau's test graders do not use a standard grading key to ensure uniform scoring of the licensure examinations. Also, the bureau does not have written procedures to ensure the candidates and avenue of recourse relating to test scoring concerns.*

According to CLEAR, test developers and graders should set fair and uniform practices for the scoring and reporting of examination results. Methods should be established, through grader training, to identify acceptable and unacceptable responses to test items on a consistent basis. Also, standard due process procedures should be provided to test candidates to allow candidates to review test results and address testing concerns.

Currently, the developers of the examination also grade the examinations. (See page 14 for additional information concerning the MSU professors' involvement in developing and grading the examination while preparing students for the examination.) The MSU professors reported that they grade the examinations according to their own knowledge and skills--i.e., there are no predetermined standard answers for the short essay questions or landscape drawings. Although the professors reported that they recheck examinations before giving a failing grade to an applicant, the lack of standard grading procedures, such as a standard grading key, could result in test scoring varying from exam to exam. Also, bureau personnel report test results privately but do not have written procedures to ensure the candidates due process (i.e., standard procedures or an avenue of recourse for applicants to discuss questions relating to test administration or scoring.)

Examination Security

- *The bureau allows test developers to conduct test preparation sessions which may result in disclosure of test information. This practice not only constitutes an appearance of impropriety, but potentially creates a security problem by allowing preparatory course participants access to test information not available to others. The bureau does not have written procedures for canceling or rescheduling exams if a security problem is discovered.*

CLEAR standards state that test developers should ensure that test writers and reviewers do not disclose test questions to students in advance. Specifically, question writers and reviewers (e.g., test graders) should be "required to affirm that they will not engage in preparing candidates to take the examination." Test developers should also keep test materials in secure locations; ensure that no students have access to the tests during printing, storage, transportation; and have written procedures for responding to test security problems.

Since October of 1997, the bureau has allowed the two MSU professors to conduct MNA test preparation sessions prior to each examination. According to the MSU professors, these sessions include a review of the MSU Extension Service test study materials and general horticultural practices. Because the MSU professors developed and grade the test and consequently have information on its content, the professors may give an unfair advantage to applicants taking the MNA test preparation sessions. While PEER detected no evidence to suggest unfairness, test standards require that test developers and writers not prepare candidates for licensure examinations. Also, because the test developers could divulge actual questions or specific test materials in such preparatory sessions, the test developers' involvement in test preparation activities may constitute an appearance of impropriety.

Currently, the bureau limits access to testing materials and requires that examinees present photo identification or the bureau's test notification letter prior to testing to verify examinee identity. While these measures improve exam security, two other test security practices of the bureau greatly weaken its testing program. First, the bureau does not have written procedures for canceling or rescheduling exams if a breach in security is discovered. Second, the bureau allows its exam developers to provide test preparation training to applicants.

Recommendations

Legislative Recommendations

1. The Legislature should amend MISS. CODE ANN. Section 69-19-9 to require the Bureau of Plant Industry within the regulatory office of the Department of Agriculture and Commerce to administer examinations that measure job competency and comply with professional testing standards such as those advocated by the Council on Licensure, Enforcement, and Regulation (CLEAR).

Administrative Recommendations

2. The bureau should improve licensure procedures to insure that examinations measure job competency and comply with professional testing standards such as those advocated by the Council on Licensure, Enforcement, and Regulation (CLEAR). Specifically, the bureau should:

   (a) ensure that the licensure examinations measure landscape gardener entry-level knowledge and skills and discriminate between competent and incompetent candidates;

   (b) develop written test administration procedures to provide candidates with standardized test administrations; information on test scoring and content; and a plan for accommodating candidates with disabilities which complies with the 1990 Americans with Disabilities Act;

   (c) statistically analyze test results to determine which examination questions need revision to ensure the test is measuring appropriate knowledge and skills;

   (d) develop written procedures to ensure uniform test scoring and due process to candidates relating to test scoring concerns; and,

   (e) develop written procedures for responding to possible test security problems and contracts with professionals involved in test development or review to ensure that they do not engage in preparing candidates to take licensure examinations.

Appendix A

Standard Testing Practices in the Recommendations of the Council on Licensure, Enforcement, and Regulation (CLEAR)

Test Development	1. Job analysis involves researching the knowledge and skills needed for overall job competence. State laws and regulations related to the specified job, such as the scope of practice, are considered in the test design to ensure that the findings are consistent with law.
	2. Test specifications are commonly known as the blueprint for the examination. A table of specifications contains an outline of the content, the number of questions, and type of questions for the examination. Documentation should exist to show how the job analysis led to the test specifications.
	3. Developing Objectively Scored Examinations- (A) The process of question development involves identifying experts in the specified job, training them in test development, and evaluating their work to create well-written test items. (B) Assembling an examination form involves selecting and reviewing test items as a set. It is important to ensure that the selected items do not contain clues to answering other questions on the examination. (C) Standard setting refers to the process of determining a minimum passing score. The process is standardized and documented to ensure the set score reflects minimally acceptable job competence and is legally defensible. (D) Timing the examination refers to setting a time limit for examinees to complete the testing process. The limit should be consistent with any job analysis findings and should ensure that a minimum of 95% of the examinees complete the examination. (E) If an outside agency is used to print and distribute the examinations, the security policies of these agencies must be reviewed and documented.
	4. Developing oral, practical, and essay examinations should be done only if the job analysis indicates that the skills and abilities cannot be assessed through multiple-choice examinations. The administration and scoring of the oral, practical, and essay examinations are designed and standardized to ensure that evaluated behaviors can be clearly elicited and objectively evaluated.
Test Administration	1. Prior to testing, a candidate bulletin is distributed to the examinees to explain testing procedures (e.g., location, materials needed) and the specific content to be covered in each subject area tested.
	2. Candidates taking the examination who have qualifying disabilities under the 1990 Americans with Disabilities Act must be appropriately accommodated when they sit for the examination.
	3. An Administration Manual provides procedural information to test proctors to ensure similar test administrations.
Statistical Analysis & Research	1. Question Analysis-A. Item difficulty refers to the number of examinees who correctly answered a test question. B. Item discrimination refers to the extent to which a test question is correctly answered by high-scoring candidates and incorrectly by low-scoring candidates.

	2. Test Analysis- A. The mean score is the arithmetic average of the test scores. Changes in the mean may indicate a variance in the testing procedures or in the examinees' capability. B. Score standard deviation is a measure of the dispersion of the examination scores. If candidate scores range from very high to very low, the standard deviation will be high. If the candidate scores are all clumped near the mean score, the standard deviation will be low. C. Test reliability refers to the level of consistency associated with a given candidate's test scores. The indices range from 0 to 1.0. Higher reliability indices are interpreted to mean that we can have a great degree of confidence in the accuracy of each candidate's score. D. Standard Error of Measurement (SEM) describes the variability of the test scores due to imprecision associated with the examinations. The test developer would want the SEM to as low as possible. E. Score frequency distributions show the number of examinees that achieved each score. The distributions allow the test developer to view any changes in achievement from group to group.
	3. Test Equating is a process of ensuring that the reported scores from all test forms have the same meaning. Test equating accounts for differences in the difficulty of alternative test forms.
Scoring & Reporting	1. Standardized score scales are used to report the results of examinations that are equated. The use of score scales helps to assure that the same reported scores have the same meaning and interpretation from form to form.
	2. Reporting the results of testing to failing examinees is required. It is a standard practice to provide failing candidates with a diagnostic breakdown of their strengths and weaknesses.
Examination Security	1. Experts that participate in the writing and review process should sign a contract that obligates them to maintain the confidentiality of the examination questions to which they have access.
	2. The Question pool, potential test items, should be maintained in a database which is secure and to which access is permitted only with appropriate access and password recognition. Files should be given coded file names to obscure the file contents. Ideally, the data files should be encrypted.
	3. Documentation should be created and maintained related to the storage and disposal of materials used during the testing process.
	4. The agency selected for book printing should provide documentation of its security measures. Examination booklets should be uniquely numbered to provide a means of accounting for all booklets at all times.
	5. Secure storage should be provided for the materials sent to the examination proctors.
	6. Examination materials should be transported only by traceable carrier such as Federal Express. The U. S. Mail is considered untraceable.
	7. Planning for the examination administration should include responses to potential security problems.

Note: The professional testing practices are in compliance with the Standards for Educational and Psychological Testing developed by the American Psychological Association, American Educational Research Association, and the National Council on Measurement in Education.

SOURCE: PEER review of the *Development, Administration, Scoring and Reporting of Credentialing Examinations: Recommendations for Board Members* by the Council on Licensure, Enforcement, and Regulation (CLEAR) and related information provided by Dr. Lee Schroeder, President of Schroeder Measurement Technologies.

Agency Response
THE STATE OF MISSISSIPPI
DEPARTMENT OF AGRICULTURE AND COMMERCE
BUREAU OF PLANT INDUSTRY
P.O. BOX 5207
Mississippi State, Mississippi 39762-5207
Telephone (601) 325-3390; FAX (601) 325-8397

LESTER SPELL JR., D.V.M.
COMMISSIONER

ROBERT MCCARTY
DIRECTOR AND
STATE ENTOMOLOGIST

October 21, 1998

Dr. Max K. Arinder
Executive Director
PEER Committee
222 North President Street
Jackson, Mississippi 39201

Dear Dr. Arinder:

Thank you for providing an opportunity to respond to the review of the landscape gardener licensure examination processes. The Bureau of Plant Industry presently is responsible for implementing the Professional Services Act, Mississippi Code 69-19-1 et. seq. This act provides for the Bureau to license persons in numerous categories (Appendix A). Landscape gardening represents only one category out of some thirty different license categories.

The original intent of the Professional Services Act was to prevent fraud and protect the public from unprofessional individuals. The Bureau of Plant Industry supports the need to protect the public interest. However, we feel it is important for the Joint Committee on Performance Evaluation and Expenditure Review to realize the legitimate reports of fraud in landscaping are virtually non-existent and are extremely few in number. In fact, our office received only two legitimate complaints from consumers in the state during FY 98. The legislature may want to consider placing the landscape licensing program under the authority of the "Landscape Architectural Practice Law," Mississippi Code 73-2-1 et. seq. Another possibility may be to include this profession in the State Board of Contractors licensing activities by amending Mississippi Code 31-3-1 et. seq. There is currently an Ornamental Horticultural Advisory Council in place that is heavily involved with this industry that could be legally involved with the licensing process with passage of appropriate legislation to make this group part of an official licensing board or commission.

With this understanding, we respectfully wish to respond to the recommendations outlined in your review.

If the Mississippi Code Section 69-19-9 is amended to require the use of CLEAR testing standards, all licensing categories under the Professional Services Law would be impacted. As a result, the Bureau would need to do an intensive review/overhaul of all of the examinations given in order to insure consistency within the license categories. Such a

review will require additional personnel, increased expenditures, and an adequate time period to implement changes.

The Bureau has administered programs since the Professional Services Act was passed in 1938 in such a way that individuals licensed can provide competent services. The programs have been conducted within the limits of resources available for regulatory, examination, continuing education, and licensing processes to assure the public that competent individuals are available to perform the regulated services. We do not agree with the recommendation to amend the statute to mandate that specific standards, i.e., Council on Licensure, Enforcement, and Regulation (CLEAR) be utilized. We do agree that valid, reliable, fair, and legally defensible methods with adequate security be utilized and this can be accomplished without amending the current law. We are currently evaluating our examination and licensure procedures and making modifications where necessary to insure these principals and standards are followed. We are using CLEAR information as guidance, but do not believe it is necessary to make this part of the statute. The PEER staff recommendations and suggestions are either in place or we are in the process of getting them in place.

In response to your recommendation 2b, the Bureau would be able to develop written test administration procedures, information on test scoring and content, and a written plan for accommodating candidates with disabilities in compliance with ADA. The Bureau currently provides most of this information orally and some of it is currently in written form.

The Bureau has a legitimate concern about our ability to satisfy your recommendation 2c. It is our belief that statistical analysis of the landscape gardener licensure examination results would be challenging. The examination was given a total of four times within FY 98 with the number of candidates taking the examination ranging from eighteen to forty-two. It is our belief that meaningful statistical analysis cannot be done with such a small pool of candidates. If test questions are reviewed item by item after each test, additional personnel or resources for contract personnel will be required. We believe it is possible to evaluate the questions and validate the exams even if sufficient numbers are not available for statistical analysis. We currently have a statistician reviewing the landscape gardener license exam questions.

The Bureau should be able to comply with your recommendation 2d and 2e and have this implemented to some degree by the next exam date.

In summary, the Bureau of Plant Industry understands the need to provide a fair and valid landscape gardener licensure examination. The Bureau will move toward adopting and implementing uniform valid standards such as CLEAR for licensing examinations.

However, to comply fully with all of the recommendations, resources will have to be re-directed and/or additional personnel, funding and an adequate implementation time period will be necessary.

The Ornamental Horticulture Advisory Council was given an opportunity to review your report and recommendations and enclosed is a copy of their response (Appendix B).

Your staff has been very cooperative and helpful and professional in every way. Again, we appreciate this opportunity to respond to your recommendations.

Sincerely yours,

Lester Spell, Jr., D.V.M.
Commissioner of Agriculture and Commerce

Robert McCarty
Director and State Entomologist

Enclosures

APPENDIX A

REGULATION OF PROFESSIONAL SERVICES ACT LICENSE CATEGORIES

1. Control of Termites and Other Structural Pests
2. Control of Pests in Homes, Businesses, and Industries
3. Control of Pests of Ornamental Plants, Shade Trees, and Lawns
4. Tree Surgery
5. Control of Pests of Orchards
6. Control of Pests of Domestic Animals
7. Landscape Gardening
8. Control of Pests of Pecan Orchards
9. Control of Pests by Fumigation
10. Agricultural Pest Control

A. Agricultural Weed Control
B. Aquatic Weed Control
C. Forest and Right-of-Way Weed Control
D. Ornamental and Turf Weed Control
E. Industrial Weed Control

PEST MANAGEMENT CONSULTANT LICENSE CATEGORIES

1. Agricultural Entomology
2. Forest Entomology
3. Household, Structural and Industrial Entomology
4. Medical, Veterinary and Public Health Entomology
5. Orchard and Nut Tree Entomology
6. Ornamental Entomology
7. Agricultural Plant Pathology
8. Forest Plant Pathology
9. Orchard and Nut Tree Plant Pathology
10. Ornamental and Shade Tree Plant Pathology
11. Agricultural Weed Control
12. Aquatic Weed Control
13. Forest and Right-of-Way Weed Control
14. Ornamental and Turf Weed Control
15. Industrial or Commercial Site Weed Control

SOIL CLASSIFICATION

1. Licensed Soil Classifier

APPENDIX B

Mississippi Nurserymen's Association, Inc.

Serving the Green Industry of Mississippi since 1963

PRESIDENT
Mrs. Karen McKie
Green Oak Nursery
P. O. Box 12219
Jackson, MS 39211
(601) 956-5022

PRESIDENT-ELECT
Mr. Jeff Howell
Rocky Creek Nursery, Inc.
229 Crenshaw Road
Lucedale, MS 39452
(601) 947-3635

EXECUTIVE SECRETARY/TREASURER
Dr. David Tatum
P. O. Box 5385
Mississippi State, MS 39762
(601) 325-1682
fax (601) 325-8379

PAST PRESIDENT
Mr. Larry Barrett
Barrett's Garden Center
127 Old Hwy. 98 East
Columbia, MS 39429
(601) 736-0495

October 15, 1998

Mr. Robert McCarty, Director
MDAC, Bureau of Plant Industry
P. O. Box 5207
Mississippi State, MS 39762

Dear Mr. McCarty:

The Ornamental Horticulture Advisory Council reviewed the report prepared by PEERS regarding the Landscape Gardening Exam. Though some of the comments and opinions expressed in this report were not the intent of this council, we agree with the suggestions and recommendations set forth by PEERS in that:

1. MNA will not request the assistance of Drs. Lester Estes and David Tatum to provide training for any applicant as long as they are associated with preparing and/or grading the exam,
2. The Council concurs with the need to validate the exam questions and grading procedure. After discussing various alternatives in obtaining the necessary statistical authenticity of the exam with Benny and David, it was decided that David would work with the Department of Experimental Statistics in MAFES to validate each exam question. The ultimate goal of this Council is to provide you with the necessary resources to ensure fairness, and integrity of the examination process and enforcement. Benny felt if he had an individual on staff that was knowledgeable in ornamental horticulture, the exam could be handled from his office. Questions could be maintained with randomization of exam questions occurring at each testing period, and
3. We gladly offer our assistance in helping you develop written policies on testing, qualifications and other concerns expressed in the PEERS report.

We offer these comments and feel that we can move forward in a positive manner regarding the PEERS findings to strengthen your services and our industry. Thank you for the opportunity to allowing us to express our comments and concerns regarding this matter.

Respectfully,
Karen McKie

Karen McKie, Chair

DIRECTORS

REGION I

Mr. Jack Williams
Faulk's Farm & Garden Shop
1118 Clay Street
Vicksburg, MS 39180
(601) 636-2832

Mr. Willie Rivers
Rivers Plant Farm
4664 Highway 18
Brandon, MS 39042
(601) 825-9816

Mr. Hubert Ladner
Woodland Ornamentals
87 Edmund Jones Road
Lumberton, MS 39455
(601) 796-3358

Mr. Randy Bounds
Paul Bounds, Inc.
401 South Main
Picayune, MS 39466
(601) 798-3753

REGION II

Mr. George Weathersby
Osborn Flower Co.
1933 Osborn Road
Starkville, MS 39759
(601) 323-6469

Mrs. Judy Finch
Greenery'N Things Nsy & Ldsp.
410 Hwy. 45 North
Aberdeen, MS 39730
(601) 369-2134

Mr. Jamie Holland
Dutch Brothers Greenhouses
7229-B Hwy. 613
Lucedale, MS 39452
(601) 947-8266

Mrs. Peggy Wallace
W. W. Nursery
P. O. Box 672
Lucedale, MS 39452
(601) 947-3891

AT LARGE

Mr. Terry Wilbourn
The Scotts Company
P. O. Box 531
Brandon, MS 39042
(601) 825-9327

PEER Staff

Max Arinder, Executive Director
James Barber, Deputy Director
Ted Booth, General Counsel

Evaluation

Sam Dawkins, Division Manager
Linda Triplett, Division Manager
Pamela O. Carter
Katherine Stark Frith
Barbara Hamilton
Kelly Lockhart
Joyce McCants
Michelle M. Owen
David Pray
John Ringer
La Shonda Stewart
Lynn Watkins
Larry Whiting

Editing and Records

Ava Welborn, Editor and Records Coordinator
Sandra Haller
Pam Sutton

Administration

Mary McNeill, Accounting and Office Manager
Shirley Anderson
Thelisa Chapman
Pat Luckett

Data Processing
Larry Landrum, Systems Analyst

Corrections Audit
Louwill Davis, Corrections Auditor