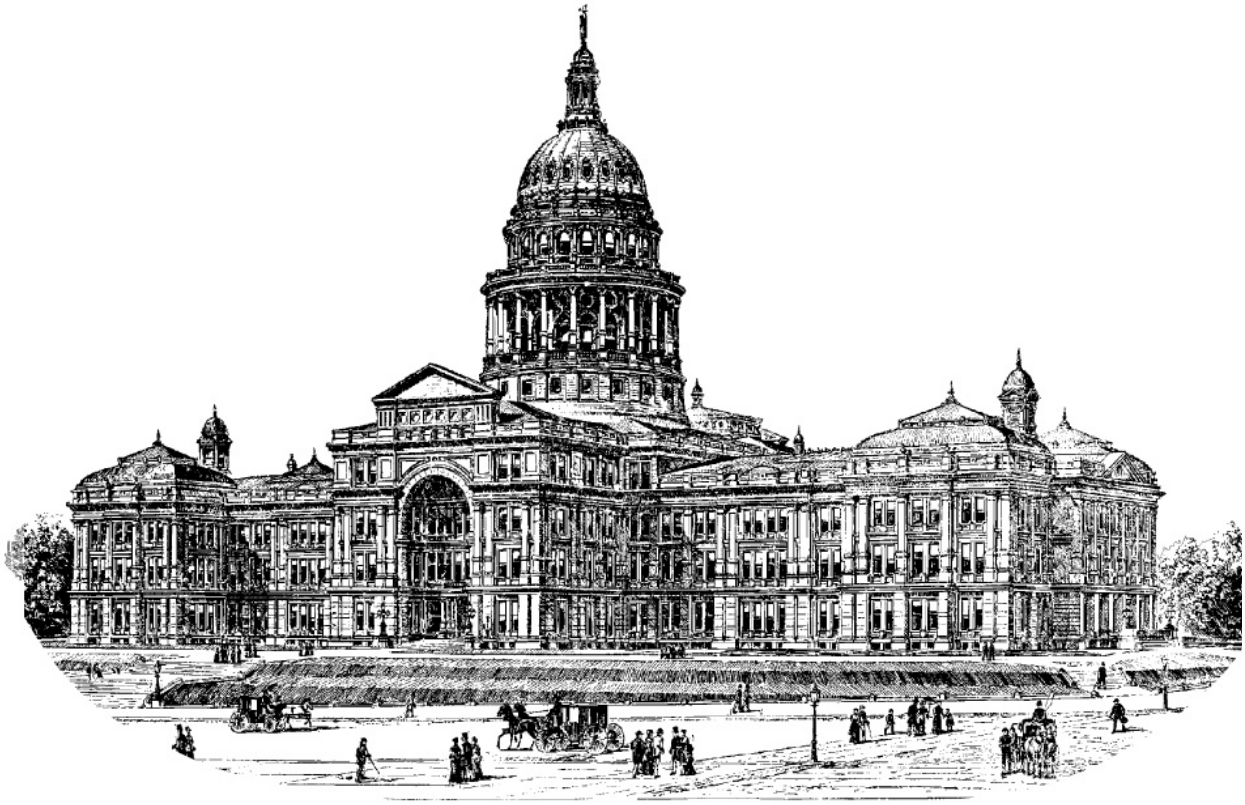
# Interim Report

## to the 83rd Texas Legislature



## House Committee on

# Agriculture and Livestock

December 2012

# HOUSE COMMITTEE ON AGRICULTURE AND LIVESTOCK
# TEXAS HOUSE OF REPRESENTATIVES
# INTERIM REPORT 2012

**A REPORT TO THE**
**HOUSE OF REPRESENTATIVES**
**83RD TEXAS LEGISLATURE**


**REPRESENTATIVE RICK HARDCASTLE**
**CHAIRMAN**

**COMMITTEE CLERK**
**MISSY WARREN**

**ASSISTANT COMMITTEE CLERK**
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Committee On
Agriculture and Livestock

December 7, 2012

Representative Rick Hardcastle
Chairman

P.O. Box 2910
Austin, Texas 78768-2910

The Honorable Joe Straus
Speaker, Texas House of Representatives
Members of the Texas House of Representatives
Texas State Capitol, Rm. 2W.13
Austin, Texas 78701

Dear Mr. Speaker and Fellow Members:

The Committee on Agriculture and Livestock of the Eighty-second Legislature hereby submits its interim report including recommendations for consideration by the Eighty-third Legislature.

Respectfully submitted,

Representative Rick Hardcastle

Representative Charles "Doc" Anderson

Representative Charlie Howard

Representative Tim Kleinschmidt

Representative Borris L. Miles

Representative Bryan Hughes

Representative Jim Landtroop

Representative Jason Isaac

Representative J.M. Lozano

Representative Charles "Doc" Anderson
Vice-Chairman

Members: Charlie Howard, Tim Kleinschmidt, Borris L. Miles, Bryan Hughes, Jim Landtroop, Jason Isaac, J.M. Lozano

## TABLE OF CONTENTS

## INTRODUCTION

At the beginning of the 82nd Legislature, the Honorable Joe Straus, Speaker of the Texas House of Representatives, appointed nine members to the House Committee on Agriculture and Livestock. The committee membership includes the following: Rick Hardcastle, Chairman; Charles "Doc" Anderson, Vice Chairman; Charlie Howard, Bryan Hughes, Jason Isaac, Tim Kleinschmidt, Jim Landtroop, J. M. Lozano, and Borris Miles.

During the interim, the Committee was assigned six charges by the Speaker. The charges are listed on the following page.

The Committee has completed their hearings. The Agriculture and Livestock Committee has adopted and approved the final report.

Finally, the Committee wishes to express appreciation to the agencies, associations and citizens who contributed their time and effort on behalf of this report.

## HOUSE COMMITTEE ON AGRICULTURE AND LIVESTOCK

## INTERIM STUDY CHARGES

Charge 1 Evaluate the role of community gardens and urban farming efforts that increase access to healthy foods and examine the possible impact that state and local policies have on the success of programs of this type. Determine the feasibility of policies to support these efforts, especially in high-population areas. (*Joint with the House Committee on Urban Affairs)*

Charge 2 Study the wildfire response performed by the Texas A&M Forest Service and cooperating state agencies. Examine specifically how state laws and regulations could be enhanced to improve response effectiveness across the state. Study both the available causes of wildfires and mitigation and make recommendations as needed.

Charge 3 Study the adequacy of access to veterinarian care in rural areas of the state. Determine the impact that a lack of access may have on the agriculture business in Texas.

Charge 4 Examine the current enforcement system for performance-enhancing drug testing show horses, performance horses, and race horses in Texas. Specifically, review currently prohibited drugs and quantities to determine if any changes should be made to existing law. Compare the state's current regulations to other systems around the country and make specific recommendations on how the state's system could be improved.

Charge 5 Study the viability of cedar eradication as a means to enhance resource conservation.

Charge 6 Monitor the agencies and programs under the committee's jurisdiction and the implementation of relevant legislation passed by the 82nd Legislature. Specifically, monitor the consolidation of the Texas Department of Rural Affairs into the Texas Department of Agriculture's Rural Economic Division, ensuring that rural communities are not negatively affected by the consolidation.

## INTERIM CHARGE #1

**Evaluate the role of community gardens and urban farming efforts that increase access to healthy foods and examine the possible impact that state and local policies have on the success of programs of this type. Determine the feasibility of policies to support these efforts, especially in high-population areas. (*Joint with the House Committee on Urban Affairs)***

### Background

From 2000-2010, Texas experienced a 20 percent growth in population. Texas' rural population only increased by 5 percent while its urban population increased by 23 percent. Almost 88 percent of all Texans now live in urban areas. Another 16 percent growth in population is expected over the next 10 years. By 2030, the population of Texas is expected to exceed 30,000,000 people.[1] This explosive rate of growth raises questions of sustainability for its citizens.

Urban agriculture plays an important role in environmental sustainability. Urban agriculture is the practice of growing, processing, and distributing food in and around a city of 50,000 or more. Because food is grown locally, demand for energy production is less and pollution associated with transportation of food is reduced. Reductions in processing and distribution costs reduce retail prices, often reducing issues of food insecurity.

Food Security

For a household to be designated food insecure, 1 or more members must have reduced or interrupted their eating patterns at least once during a year due to household-level economic or social conditions.

In 2009, the overall food insecurity rate in the United States was 16.6 percent. In Texas, the rate was 17.8 percent, or 4,245,970 Texans. Texas tied Alabama, Arkansas, and Georgia for the 5th highest overall food insecurity rate in the country. Only Mississippi, South Carolina, North Carolina and Michigan had higher rates.[2] (For a list of the 10 most food insecure states, see Table 1. Overall Food Insecurity in 2009.) The 5 Texas counties with the highest food insecurity rates were Starr, Willacy, Zavala, Presidio and Morris. To be able to afford just enough food to be considered food secure, the predicted additional money required to meet Texas' food needs in 2009 was $1,673,903,770, or $392 per Texan.[3]

In 2009, the national child food insecurity rate was 23.2 percent. In Texas, the rate was 28.2 percent. This was the 5th highest child food insecurity rate in the country. Washington, D.C., Oregon, Arizona and Arkansas had higher rates.[4] (For a list of the 10 most child food insecure states, see Table 2. Child Food Insecurity in 2009.)

**Table 1. Overall Food Insecurity in 2009**

| Rank | State | Food Insecurity Rate |
|---|---|---|
| | United States | 16.6% |
| 1 | Mississippi | 19.9% |
| 2 | South Carolina | 18.3% |
| 3 | North Carolina | 18.2% |
| 4 | Michigan | 18.2% |
| 5 | Alabama | 17.8% |
| 5 | Arkansas | 17.8% |
| 5 | Georgia | 17.8% |
| 5 | Texas | 17.8% |
| 9 | Arizona | 17.4% |
| 10 | Tennessee | 17.3% |

**Table 2. Child Food Insecurity in 2009**

| Rank | State | Child Food Insecurity Rate |
|---|---|---|
| | United States | 23.2% |
| 1 | Washington, D.C. | 32.3% |
| 2 | Oregon | 29.2% |
| 3 | Arizona | 28.8% |
| 4 | Arkansas | 28.6% |
| 5 | Texas | 28.2% |
| 6 | Georgia | 27.9% |
| 7 | Mississippi | 27.7% |
| 7 | Nevada | 27.7% |
| 9 | South Carolina | 27.6% |
| 10 | Florida | 27.5% |

Source: Table 1 and Table 2 adapted from Feeding America, *Map the Meal Gap: Child Food Insecurity 2011*, (2011), 10-11, http://feedingamerica.org/hunger-in-america/hunger-studies/map-the-meal-gap/~/media/Files/research/map-meal-gap/ChildFoodInsecurity_ExecutiveSummary.ashx.

The 2 highest child food insecurity rates in the country were found in Texas: Zavala County and Starr County had child food insecurity rates of 52 percent and 50 percent, respectively.[5] Five counties in Texas ranked in the top 10 percent of counties with more than 100,000 food insecure children. They are Harris, Dallas, Bexar, Tarrant and Hidalgo. With a child food insecurity rate of 43.5 percent, Hidalgo County had the highest child food insecurity rate in the country for a child population of its size.[6] (For a list of counties with the highest percentages of child food insecurity, see Table 3. Counties with More Than 100,000 Food Insecure Children in 2009.)

**Table 3. Counties with More Than 100,000 Food Insecure Children in 2009**

| County, State | Number of Children Living in Food Insecure Households | Child Food Insecurity Rate | Rank |
|---|---|---|---|
| Los Angeles County, CA | 734,490 | 28.8% | 5 |
| New York County, NY | 478,550 | 25.2% | 13 |
| Harris County, TX | 307,570 | 27.2% | 9 |
| Cook County, IL | 304,610 | 23.5% | 16 |
| Maricopa County, AZ | 286, 560 | 27.1% | 10 |
| Dallas County, TX | 187,310 | 27.9% | 7 |
| Orange County, CA | 177,650 | 23.4% | 17 |
| San Diego County, CA | 177,560 | 24.2% | 14 |
| San Bernardino County, CA | 175,670 | 28.9% | 4 |
| Riverside County, CA | 172,400 | 28.7% | 6 |
| Miami-Dade County, FL | 170,070 | 29.5% | 2 |
| Wayne County, MI | 140,190 | 26.9% | 11 |
| Clark County, NV | 132,350 | 27.6% | 8 |
| Bexar County, TX | 129,590 | 29.2% | 3 |
| Tarrant County, TX | 121,890 | 25.3% | 12 |
| Hidalgo County, TX | 110,990 | 43.5% | 1 |
| Santa Clara County, CA | 100,170 | 23.6% | 15 |

Source: Feeding America, *Map the Meal Gap: Child Food Insecurity 2011*, (2011), 15,

http://feedingamerica.org/hunger-in-america/hunger-studies/map-the-meal-gap/~/media/Files/research/map-meal-gap/ChildFoodInsecurity_ExecutiveSummary.ashx.

Food Deserts

Generally, a food desert is a tract of land where low-income populations have low access to a supermarket or large grocery store. In urban areas, this distance is 1 mile. A supermarket or large grocery store is defined as a food store with at least $2 million annually in sales that contains all the major food departments.

United States Department of Agriculture's 2009 Report to Congress

In 2009, the United States Department of Agriculture (USDA) published a report on nationwide access to affordable, nutritious food. The USDA found that:

- Access to a supermarket or large grocery store is a problem for a small percentage of households;
- Supermarkets and large grocery stores have lower prices than smaller stores;
- Low-income households shop where food prices are lower, when they can;
- Easy access to all food, rather than lack of access to specific healthy foods, may be a more important factor in explaining increases in obesity;
- Understanding the market conditions that contribute to differences in food access is critical to policy design;
- Food is a tool for community development; and
- Current research is insufficient to conclusively determine whether some areas with limited food access have inadequate food access.[7]

In conjunction with the report, the USDA developed the Food Desert Locator. Using data from the 2000 Census of Population and Housing and a 2006 directory of supermarkets and large grocery stores, the interactive map provides a spatial overview of low-income neighborhoods across the contiguous United States with low access to healthy food. To use the Locator, visit http://www.ers.usda.gov/data/fooddesert/index.htm.

The Greater Houston Area

On a national level, there exists 1 supermarket for every 8,620 people. In the Greater Houston Area, 1 supermarket serves more than 12,000 people. Put another way, on a national level, there are 11.6 supermarkets for every 100,000 people. In Houston, there are 8.2 supermarkets for every 100,000 people. When measured against the national rate, Houston has 185 fewer supermarkets. Texas, considered as a whole, only has 8.8 supermarkets per every 100,000 people—the lowest number of supermarkets per capita than any other state in the nation.[8]

Rebutting the Food Desert Claim

A recent study conducted by the Public Policy Institute of California reports that low-income urban areas are not the food deserts the USDA makes them out to be. Conducting research on

urban neighborhoods in California, the Public Policy Institute found that low-income urban neighborhoods have nearly twice as many food stores than higher-income urban areas—if the USDA's definition of a supermarket or large grocery store is expanded to include stores with less than $2 million annually in sales.[9] In other words, when smaller-scale food stores are taken into consideration, low-income urban neighborhoods have almost double the access to affordable and nutritious food than more affluent urban neighborhoods.

## State Statutes, Regulations, Legislation and Programs Promoting Urban Agriculture and Community Gardening

Cities and states across the nation are embracing urban agriculture. While city and state policies differ in the manner in which urban agriculture and community gardening is promoted, common themes do exist among state programs. This section identifies current urban agricultural policies in Texas; additional urban agricultural approaches suitable for Texas' planning and regulatory framework, including experiences and best practices of other states; and some of the problems associated with integrating urban agriculture into high-population areas. State statutes, legislation, regulations and programs covered are:

- Statewide Food Policy Councils;
- Using State, County or City Property for Urban Farming and Community Gardening;
- Zoning for Urban Agriculture; and
- Economic Incentives.

Food assistance programs, such as the Farmers' Market Nutrition Program, and programs relating to schools and food, such as the Summer Food Program or Farm-to-School programs, will not be covered in this report. For more information on these issues, please contact the House Committees on Human Services and Public Health.

### Statewide Food Policy Councils

Statewide food policy councils can provide comprehensive statewide examinations of our food system by supporting, developing or refining effective state and local food policies. A statewide council can bring to the table a broader array of interested parties, examine issues that go unexamined by state agencies and coordinate actions on a state level.

#### *Texas*

Texas does not have a statewide food policy council. During the 82nd Regular Session of the Texas Legislature, Representative Borris Miles introduced HB 2669, relating to the creation of an advisory committee to study urban farming. The bill was withdrawn from a hearing and was not heard.

#### *Michigan*

The Michigan Food Policy Council was created under executive order in 2005 and is funded in partnership with the W.K. Kellogg Foundation. Now made up of 25 state government officials

and non-governmental related entities, the Michigan Council provides stakeholders the forum to recommend policies and programs to Michigan's governor that aid in economic development and provide greater access to fresh and nutritious foods.[10]

In February 2010, Michigan held its first Good Food Summit, focusing on shaping a plan to increase local food production, distribution, marketing, and sustainability; and improve the state's economy. Later that year, the Michigan Good Food Charter was published.

One of the priorities enumerated in the Michigan Charter is to examine all of Michigan's food and agriculture related laws and regulations for provisions that create unnecessary transaction costs and regulatory burdens on low-risk businesses and ensure that regulations are applied in a way that acknowledges the diversity of production practices. The review began in 2011 at the Michigan Department of Agriculture and Rural Development. It is predicted that if Michigan could increase the rate of new agri-food startup businesses to 851 per year, then the State could generate 23,020 direct and indirect jobs per year.[11]

Another priority is to establish food business districts in an effort to encourage food businesses to locate to the same area and support their collaboration. The state legislature can spur food innovation district development with targeted incentives such as tax abatements. State economic development officials can work with local governments to package existing and new programs and incentives in support of food innovation districts. Planning and development officials can provide land use guidance, such as a model overlay zoning district, that can ensure land use compliance, encourage agri-food businesses to co-locate, and provide a geographic focus to a community's food business development efforts.[12]

In an effort to spur interest in establishing food business districts, the Michigan Council is assisting in implementing regional food hub models across the state designed to aggregate, store, process, distribute and market locally and regionally-produced food in a central facility. [13] Distinct from a farmers' market, a food hub is different in management practices, community benefits and ownership structure. A key function of a food hub is to provide a permanent structure for aggregation and distribution of food at a wholesale level. This model is ideal for urban farmers. Hubs can provide space and equipment for food to be processed, packed and sold, or serve as pick-up locations for distribution firms. Hubs can also provide community services like incubator kitchens, community event space, and classrooms and offices for health and human service providers.

*New York*

The New York State Food Policy Council was established in 2007. To date, the New York Council has made 51 specific recommendations to the governor relating to urban agriculture and community gardening, including:

- Promoting local agriculture in neighborhoods with limited access to fresh foods through farmers' markets, food cooperatives, community supported agriculture, food trucks, and local food buying clubs, as well as community gardens in parks, schools, housing authorities, and other publicly owned land;

- Promoting urban food production, reviewing policy obstacles that discourage urban agriculture, researching which sustainable urban farming methods and locations are most appropriate for urban conditions, and creating incentives for edible landscaping, green roofs, and backyard gardening;
- Supporting the establishment and expansion of wholesale farmers' markets and storage facilities in cities (similar to food hubs);
- Developing a job incubator program in conjunction with an urban agriculture education program to connect job training with the food industry, such as urban food production, processing, and entrepreneurial job training; and
- Expanding programs that recruit, train, and provide technical assistance for new local food farmers.[14]

*Failed Initiatives: North Carolina and Maine*

While there are benefits to creating a statewide food policy council, there can be limitations. Inadequate staff and funding, the political nature of appointments to a council and priorities that are overly ambitious can all cause the demise of a food council.

North Carolina had a statewide food policy council from 2002-2004, funded by Drake University and coordinated by the North Carolina Department of Agriculture and Consumer Services. The council was disbanded after administrative, leadership and funding changes within the Department of Agriculture and Consumer Services. It was not resurrected again until 2009.[15]

In 2005, the Maine Department of Agriculture, Food and Rural Resources convened a working group to develop a new food policy for Maine. The working group drafted ambitious legislation, recommending a food policy council and 11 state policies. Goals included Maine producing 80 percent of the calories its citizens consume by 2020 and increasing supply of working farmland and access to working waterfront by 2010.[16] The legislation passed in 2006, but was repealed in 2011 due to inactivity of the Maine Food Policy Council.[17]

Using State, County or City Property for Urban Farming and Community Gardening

Implementing flexible leasing options for small-scale urban farmers and community gardeners is a policy used in many other states. Leasing of plots allows the jurisdiction to retain ownership if the land can be used more profitably in the future and reduces the financial burden on the individual to buy land in an urban setting. Issues of liability should be, but are not always, addressed in statute.

*Texas*

During the 82nd Regular Session, Senator Jane Nelson introduced SB 184, relating to the use of certain state property for community food gardens. Senate Bill 184 would have required the General Land Office to develop a plan for state-owned property to be used for community gardens. The bill did not receive a hearing.

*California*

In California, the Department of Transportation is required, upon request by a city, county or district, to lease unoccupied, unimproved property held for future highway use first for agricultural and community garden purposes.[18]

*Michigan*

The State of Michigan Land Bank Garden for Growth Program provides communities and individuals the opportunity to lease state-owned land for agricultural purposes. Any type of gardening or agricultural activity qualifies, and includes vegetable, flower, native plant and educational gardens. A 1-year lease term is $25 and a 3-year lease term is $75.[19]

*New Jersey*

New Jersey law authorizes a county or municipality to sell or lease unneeded public property to nonprofit entities for gardening and urban farming. The land must be used for cultivation, may also be used for the sale of fruits and vegetables, and is exempt from property taxation. Leases may last for up to 50 years, with a 25-year extension by ordinance.[20]

*New York*

In New York, any state-owned land may be used for community gardening purposes. The community organization using the land may be required to purchase liability insurance and assume liability for injury or damage resulting from the use of the land for community gardening.[21] However, in 2006, New York City announced that liability insurance would now be covered through the New York City Department of Parks and Recreation. A review of the previous liability claims involving garden organizations in the city indicated minimal risk. Of 7 liability claims filed between 1978-2006, only 3 involved cash settlements. As of 2006, there were over 500 gardens on city-owned land.[22]

*Tennessee*

Tennessee's Community Gardening Act has existed since 1977. Any local government, state agency or department may make vacant public land available to any citizen of Tennessee for gardening purposes. Herbs, flowers, fruits and vegetables may be cultivated, but cannot be sold for profit. If a local government, state agency or department wants to make vacant public land available, a list of the land is provided to the county's agricultural extension agent. The Tennessee Agriculture Commissioner then contracts for the use of the land. Any person granted use of the land must indemnify and hold harmless the local government, state, and department and all of its officers, agents and employees against suits and liability claims.[23]

Tennessee allows the Department of Agriculture to contract with private owners for use of private land for community gardening. The law also provides an indemnification and hold harmless clause for the state, department and all of its officers, agents and employees.[24]

Local governments may also establish their own community gardening programs. Local governments are allowed to charge permit fees and deposit fees and require the permittee to possess liability insurance and accept liability.[25]

Zoning for Urban Agriculture

A review of urban agriculture zoning ordinances indicates that a variety of urban agriculture issues are addressed, including parking, signage, liability, upkeep, access to water and runoff, impact to property values and pesticide use. Most urban agriculture zoning ordinances address keeping animals, but the ordinances are stricter than those for community gardens. Animal ordinances generally include setbacks for chicken coops and animal housing and place restrictions on the number of animals that can be maintained on the property. Usually, the sale of produce grown in community gardens in urban agriculture settings is addressed and generally permitted. As mentioned previously, Tennessee is an exception.

*Texas*

It is not uncommon for cities to prohibit individuals from operating a business out of a single-family home. These ordinances can have the effect of quelling potential urban farmers. In Frisco, the city council voted last year to specifically ban all cottage food production operations in a home.[26]

*Chicago, Illinois*

The Chicago City Council recently passed legislation permitting community gardens and urban farms in many parts of the city. In most zones, community gardens are limited in size to 25,000 square feet per individual garden, or roughly the size of 8 lots or 1/3 of a city block. Community gardens are allowed to sell produce.[27]

Urban farms are prohibited in all residential districts to restrict commercial activity and business districts that allow urban farms require all business activities be conducted indoors. However, urban farms are allowed on rooftop buildings. Chicago is an urban heat island and can be 10 degrees warmer in the summer than surrounding rural areas. To combat the heat effect, Chicago strongly encourages rooftop gardening; in 2011, there were permits for over 600 green roofs. In some districts, aquaponic systems are allowed indoors and up to 5 bee hives or colonies may be kept.[28]

*Detroit, Michigan*

Detroit, Michigan has suffered some of the worst blight and property abandonment in the country. It also has a thriving urban agriculture movement—in spite of the city's lack of zoning laws on urban agriculture and community gardening. Of the 1,351 vegetable gardens in the city, all fly under the radar.[29] The City of Detroit Zoning Ordinance does not permit agriculture, nor address community gardening.[30] Changes to the ordinance were proposed by the City Planning Commission, but have been rebuffed by the City Council, claiming the Michigan Right to Farm Act prohibits such ordinances.

The Right to Farm Act was designed to protect farmers from nuisance suits as suburban areas encroached into rural areas in the 1970s and 1980s. The Act expressly pre-empts any jurisdiction lower than the state from adopting ordinances, regulations or resolutions that conflict with other parts of the Act or generally accepted agricultural management practices. The preemption serves as a legal barrier for cities wishing to zone for urban agriculture.[31] In order to zone for agriculture, a city must exempt itself from the Act—a request the Detroit City Council has not yet made.

*Missouri*

Although it failed to pass this year, several members of the Missouri General Assembly sponsored a bill to allow municipalities to designate blighted areas of a community as Urban Agriculture Zones (UAZs). House Bill 1600 allows individuals and organizations to grow produce or other agricultural products, raise or process livestock or poultry, or sell a minimum of 75 percent locally grown or raised food. The applicant for a UAZ must provide a plan for at least 1 educational opportunity per month to local school districts. Once granted, the tax assessment of any UAZ is removed for 10 years. House Bill 1660 also provides that a grower UAZ will pay wholesale cost for water consumed and pay 50 percent of the cost to hook into the water source.[32]

*Rochester, New York*

In response to a 20 percent vacancy rate in the City of Rochester, New York, the city's planning department began an initiative in 2009 called Project Green. Project Green seeks to reuse vacant lots for green uses. The goal is to transform 2,988 dwellings over the next 20 years.[33] Although the State of Texas is not suffering from a declining urban population, every large city in Texas has obsolete housing units and buildings that can be transformed into green space.

Zoning changes fell into two categories: low intensity areas, to allow limited urban agriculture city-wide (essentially the formalization of existing practices); and high intensity areas, to allow more intensive urban agriculture. Within those areas, 4 additional criteria were used: soil quality, proximity to features that enhance functionality, economics, and building condition. Low intensity areas allow urban gardens and urban garden stands as permitted uses in residential districts, permit the sale of produce and related items produced on the site, and address urban garden structures (sheds, garages, greenhouses, hoop greenhouses) and outdoor storage of materials. High intensity areas establish new overlay districts for urban agriculture and allows larger scale urban agriculture (some livestock operations, food processing, food retail, restaurants, wineries, etc.), although some will be restricted by size, variance and special permit.[34]

Economic Incentives

Economic incentives are an effective way to encourage urban agriculture. Taxing strategies used in other states include tax abatements, tax credits, reduced tax assessments and creating an agricultural enterprise zone involving other economic benefits.

*Texas*

Generally, Texas does not offer economic incentives for urban farmers. During the 82nd Regular Session, Representative Miles filled 5 bills relating to incentives for urban agriculture. House Bill 2994, relating to the creation, operation, and funding of the urban farm microenterprise support program, became effective August 1, 2011. The program provides financial assistance to microenterprises in urban areas that are primarily engaged in research into processes and technology related to agricultural production in an urban setting, the production or development of tools or processes for agriculture in a manner suited for an urban setting, or agricultural activities in a manner suited for an urban setting. State money is prohibited, but the board is authorized to accept certain gifts and grants of money for use in making loans under the program.[35] House Bills 2996, relating to the creation of the Texas Urban Agricultural Innovation Authority, and 2997, relating to the creation and funding of the urban farming pilot program and the creation of the Select Committee on Urban Farming, were vetoed by the Governor. House Bills 2995, relating to an exemption for urban farms from payment for wastewater service, and 2998, relating to ad valorem tax relief for urban farms and green roofs, did not receive hearings.

*Maryland*

The State of Maryland uses tax credits to encourage urban agriculture. Effective 2010, counties and the City of Baltimore can apply the state's Urban Agriculture Tax Credit to real property used for urban agriculture. The property must be between 1/8 to 2 acres in size and must be used exclusively for agriculture. Counties are permitted to enact stricter requirements and local governments may end the credits after 3 years or extend them for another 5.[36] At the end of 2011, the Baltimore City Council voted not to offer the credit, citing precedent concerns and a potential loss of funds for the city.

*Michigan*

Enterprise zones are traditionally used by cities as a development tool to encourage growth in underserved areas. Enterprise zones are also effective at facilitating economic development across a state as a whole. The Michigan Renaissance Zone Act allows local governments to designate small neighborhoods as renaissance zones. Businesses located within the zone have their property, business, millage and utility taxes abated. Businesses also receive a tax credit on the Michigan Single Business Tax.[37]

In addition to residential enterprise zones, Michigan created Agricultural Processing Renaissance Zones. Agricultural processing operations within these zones do not pay the Michigan Business Tax, the state education tax, personal and real property taxes, nor local income taxes. Businesses must still pay federal taxes, local bond obligations, school sinking fund or special assessments, and the Michigan sales and use tax. Taxes can be abated for 15 years and are phased out in 25 percent increments in the last 3 years.[38]

*Utah*

This year, the Utah State Legislature passed the Urban Farming Assessment Act, providing that

land for urban farming may be assessed based on its agricultural value or productive capacity, instead of its market value. The land must have been used for urban farming for the 2 years prior to the application for a new assessment. Up to a 10-year rollback of taxes occurs if the land ceases to be used for urban farming purposes. The law takes effect January 1, 2013.[39]

## Recommendations

1. Local entities should be encouraged to use resources available at Texas A&M AgriLife Extension Service for guidance in developing future polices and guidelines for urban agriculture and community gardening, including policies and guidelines for adjustments of wastewater system facility charges.
2. The Legislature should examine economic incentives as a way to promote urban agriculture and community gardening. This should include re-examining taxing strategies such as appraisal methods and procedures for land designated for agricultural use.
3. Cooperatives should be encouraged between local landowners, farmers and utilities to allow the use of vacant or underused lands in urban and suburban areas. Particular attention should be paid to issues surrounding the limitation of liability for landowners for injury or damage resulting from the use of the land.

## INTERIM CHARGE #2

**Study the wildfire response performed by the Texas A&M Forest Service and cooperating state agencies. Examine specifically how state laws and regulations could be enhanced to improve response effectiveness across the state. Study both the available causes of wildfires and mitigation and make recommendations as needed.**

### Background

The following is an excerpt from an August 2011 interview with John Nielsen-Gammon, Texas State Climatologist and professor of atmospheric sciences at Texas A&M University.

> It's official, Texas is now in its worst-ever one-year drought. The epic heat wave and lack of rainfall is baking Texas dry, leaving the nation's second largest agricultural producer reeling. The records set for Texas in 2011 tell the story of a polluted climate killing the state:
>
> - Hottest month ever (July)
> - Hottest July ever, average temperature 87.2 degrees Fahrenheit
> - Hottest June ever
> - Least year-to-date precipitation, 6.53 inches
> - Driest consecutive 8, 9, and 10 months
> - Driest 12 months ending in July
> - 99.93 percent of the state is in some level of drought
> - 73.49 percent of the state is in exceptional drought
>
> Never before has so little rain been recorded prior to and during the primary growing season for crops, plants and warm-season grasses. The extreme heat and unprecedented dry weather are crippling agricultural operations in Texas upon which all Americans rely for food, fuel, clothing and other daily necessities. This historic drought has depleted water resources, leaving our state's farmers and ranchers in a state of dire need. The damage to our economy is already measured in billions of dollars and continues to mount. [40]

Why was 2011 so bad?

In 2010, late season rains across much of Texas resulted in above average vegetation growth. As the state moved into the winter months, precipitation stopped and drought conditions began to appear, setting the stage for a severe fire season across the state (driest Oct. - Sept. on record, *National Weather Service*). Drought conditions, available fuels and significant weather events combined to produce one of the most active wildfire seasons in Texas history, as well as some of the most dramatic high impact fire days.[41]

Impact of Fire Season (November 15, 2010 - October 31, 2011)

- 30,547 fires across 3,993,716 acres
- 39,413 homes saved: 3,017 homes lost
- Texas A&M Forest Service (TFS) and TFS-coordinated resources responded to 3,436 fires across 2,904,003 acres (twice the state-response acres burned in 2006, the previous highest at 1.46 million acres)
- Since November 15, 2010, wildfires in East Texas have wiped out more than $97 million worth of the region's trees (does not include Bastrop Complex fire)
- Bastrop County before the wildfire: 31 million cubic feet of live trees; after the wildfire: 7 million cubic feet of tress are considered likely to survive (about 22 percent of total volume)

**Table 1. Ten Largest Wildfires in 2011 by Acre**

| Date | Wildfire Reference | Acres Burned | County |
|---|---|---|---|
| 09-Apr-11 | Rockhouse | 314,444 | Jeff Davis |
| 25-Apr-11 | Deaton Cole | 175,000 | Val Verde |
| 11-Apr-11 | Cooper Mountain Ranch | 162,625 | Kent |
| 10-Apr-11 | Wildcat Fire | 158,308 | Coke |
| 09-Apr-11 | Possum Kingdom Complex | 126,734 | Palo Pinto |
| 06-Apr-11 | Swenson Fire | 122,500 | Stonewall |
| 06-May-11 | Dickens Complex | 89,200 | Dickens |
| 09-May-11 | Iron Mountain Fire | 87,401 | Brewster |
| 07-May-11 | Schwartz Fire | 83,995 | Brewster |
| 14-Apr-11 | Frying Pan Fire | 80,907 | Andrews |

Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)

**Table 2. Ten Most Destructive Wildfires in 2011 by Homes Lost**

| Date | Wildfire Reference | Acres Burned | Homes Lost | County |
|---|---|---|---|---|
| 04-Sep-11 | Bastrop County Complex | 34,068 | 1,649 | Bastrop |
| 09-Apr-11 | Possum Kingdom Complex | 126,734 | 168 | Palo Pinto |
| 05-Sep-11 | Riley Rd | 19,960 | 73 | Montgomery |
| 04-Sep-11 | Pedernales Bend | 6,500 | 67 | Travis |
| 04-Sep-11 | Bear Creek | 41,050 | 66 | Cass |
| 09-Apr-11 | Rockhouse | 314,444 | 41 | Jeff Davis |
| 30-Aug-11 | 101 Ranch | 6,555 | 39 | Palo Pinto |
| 04-Sep-11 | Steiner Ranch | 125 | 35 | Travis |
| 09-Apr-11 | Hickman | 16,500 | 34 | Midland |
| 27-Feb-11 | Tanglewood Fire | 1,659 | 33 | Randall |

Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)

## Wildfire(s) Cost Summary

The total estimated state and fire department expenditures for Fiscal Year 2011 is $337,211,924. The total state and fire department expenditures for December 1, 2011 through May 13, 2012, is $15,106,210. See Table 3.

**Table 3. State of Texas Wildland Fire Response Costs**

| | Expenditures from 09/01/2010 - 11/30/2011 | Expenditures from 12/01/2011 - 05/13/2012 |
|---|---|---|
| **TFS** | $30,843,187 | $2,460,832 |
| **Federal Agency Costs** | $263,861,297 | $12,153,410 |
| **Compact** | - | - |
| **TxDOT** | $2,858,347 | $42,868 |
| **TxMF** | $8,124,883 | - |
| **DPS (RLO's, Aviation, THP, LES & TDEM)** | $3,344,251 | - |
| **Regional Incident Management Teams** | $817,574 | - |
| **TIFMAS** | $3,979,094 | - |
| **Agency Totals** | $313,828,633 | $14,657,110 |
| **Fire Department Wildfire Response Costs** | $23,383,291 | $449,100 |
| **Total State + Fire Department Expenditures** | $337,211,924 | $15,106,210 |
| **Total Estimated Eligible Costs Within FMAGs** | $52,190,809 | $5,225,917 |
| **Estimated FMAG Reimbursement from FEMA** | $39,143,107 | $3,919,438 |
| **Percentage of Total State Expenditures Reimbursable by FEMA (Estimated)** | 11.6% | 25.9% |

Source: Texas A&M Forest Service

## Causes of Wildfires

Table 4 reflects the wildfires responded to by TFS and Table 5 reflects the wildfires responded to by local fire departments. The number of fires responded to by local fire departments for 2011 is much larger than the number responded to by TFS, but the total acreage responded to by TFS is significantly larger.

**Table 4. Wildfires Responded to by the Texas A&M Forest Service**

| | TFS 2011 Fires | | | | TFS 2012 Fires | | | |
|---|---|---|---|---|---|---|---|---|
| | **Fires** | **Percent of Fires** | **Acres** | **Percent of Acres** | **Fires** | **Percent of Fires** | **Acres** | **Percent of Acres** |
| **Campfire** | 38 | 1.1% | 10,220 | 0.3% | 2 | 0.7% | 87 | 0.3% |
| **Children** | 44 | 1.3% | 450 | 0.0% | 5 | 1.7% | 19 | 0.1% |
| **Debris burning** | 593 | 17.9% | 48,584 | 1.7% | 145 | 50.3% | 1,217 | 3.8% |
| **Equipment use** | 353 | 10.6% | 269,356 | 9.2% | 13 | 4.5% | 810 | 2.5% |
| **Fireworks** | 9 | 0.3% | 28 | 0.0% | 1 | 0.3% | 10 | 0.0% |
| **Incendiary*** | 300 | 9.0% | 26,466 | 0.9% | 15 | 5.2% | 604 | 1.9% |
| **Lightning** | 723 | 21.8% | 900,656 | 30.8% | 25 | 8.7% | 25,861 | 80.5% |
| **Miscellaneous**** | 768 | 23.1% | 1,309,007 | 44.8% | 32 | 11.1% | 1,165 | 3.6% |
| **Power Lines** | 405 | 12.2% | 313,195 | 10.7% | 43 | 14.9% | 1,450 | 4.5% |
| **Railroads** | 44 | 1.3% | 2,954 | 0.1% | 1 | 0.3% | 681 | 2.1% |
| **Smoking** | 45 | 1.4% | 42,049 | 1.4% | 6 | 2.1% | 241 | 0.7% |
| **Total** | **3,322** | **100.0%** | **2,922,964** | **100.0%** | **288** | **100.0%** | **32,145** | **100.0%** |

*Arson **Cause is not determined

Source: Texas A&M Forest Service

**Table 5. Wildfires Responded to by Local Fire Departments**

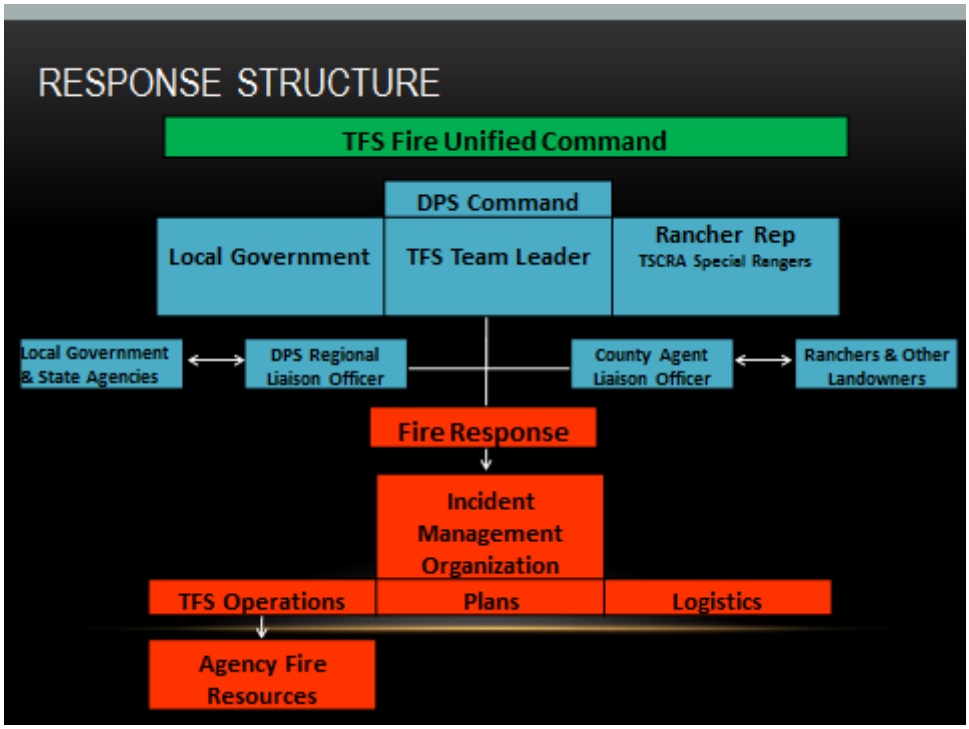
| | FD 2011 Fires | | | | FD 2012 Fires | | | |
|---|---|---|---|---|---|---|---|---|
| | **Fires** | **Percent of Fires** | **Acres** | **Percent of Acres** | **Fires** | **Percent of Fires** | **Acres** | **Percent of Acres** |
| **Campfire** | 249 | 0.9% | 2,077 | 0.2% | 30 | 1.1% | 22 | 0.1% |
| **Children** | 254 | 0.9% | 4,784 | 0.5% | 19 | 0.7% | 108 | 0.4% |
| **Debris burning** | 8,260 | 30.2% | 116,933 | 11.5% | 1,350 | 49.9% | 6,236 | 23.3% |
| **Equipment use** | 3,507 | 12.8% | 167,807 | 16.4% | 288 | 10.7% | 2,756 | 10.3% |
| **Incendiary** | 1,104 | 4.0% | 31,395 | 3.1% | 56 | 2.1% | 542 | 2.0% |
| **Lightning** | 1,385 | 5.1% | 94,687 | 9.3% | 72 | 2.7% | 2,944 | 11.0% |
| **Miscellaneous** | 9,517 | 34.8% | 354,324 | 34.7% | 597 | 22.1% | 6,661 | 24.9% |
| **Power Lines** | 2,043 | 7.5% | 227,745 | 22.3% | 199 | 7.4% | 6,239 | 23.3% |
| **Railroads** | 205 | 0.8% | 2,038 | 0.2% | 22 | 0.8% | 204 | 0.8% |
| **Smoking** | 799 | 2.9% | 19,252 | 1.9% | 70 | 2.6% | 1,069 | 4.0% |
| **Total** | **27,323** | **100.0%** | **1,021,042** | **100.0%** | **2,703** | **100.0%** | **26,781** | **100.0%** |

Source: Texas A&M Forest Service

## Wildfire Response in Texas

Texas uses a tiered approach to wildfire response and suppression. Local fire departments and counties are the first responders, with state response activated as fires or conditions exceed local capabilities. Texas A&M Forest Service is the lead state agency for wildfire response in Texas. As fire activity increases, resources from other state agencies, such as the Department of Public Safety (DPS), the Department of Transportation (TxDOT) and the Texas Military Forces (TMF), are mobilized through the Texas Division of Emergency Management (TDEM).[42]

As the suppression resources of TFS and other state agencies are depleted, out-of-state resources are brought in (under state control) to meet essential needs. Costs associated with the mobilization and support of these external resources are funded through the supplemental appropriations process the following legislative session.[43]




Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)


Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)

Type III All Hazard Incident Management Team Program

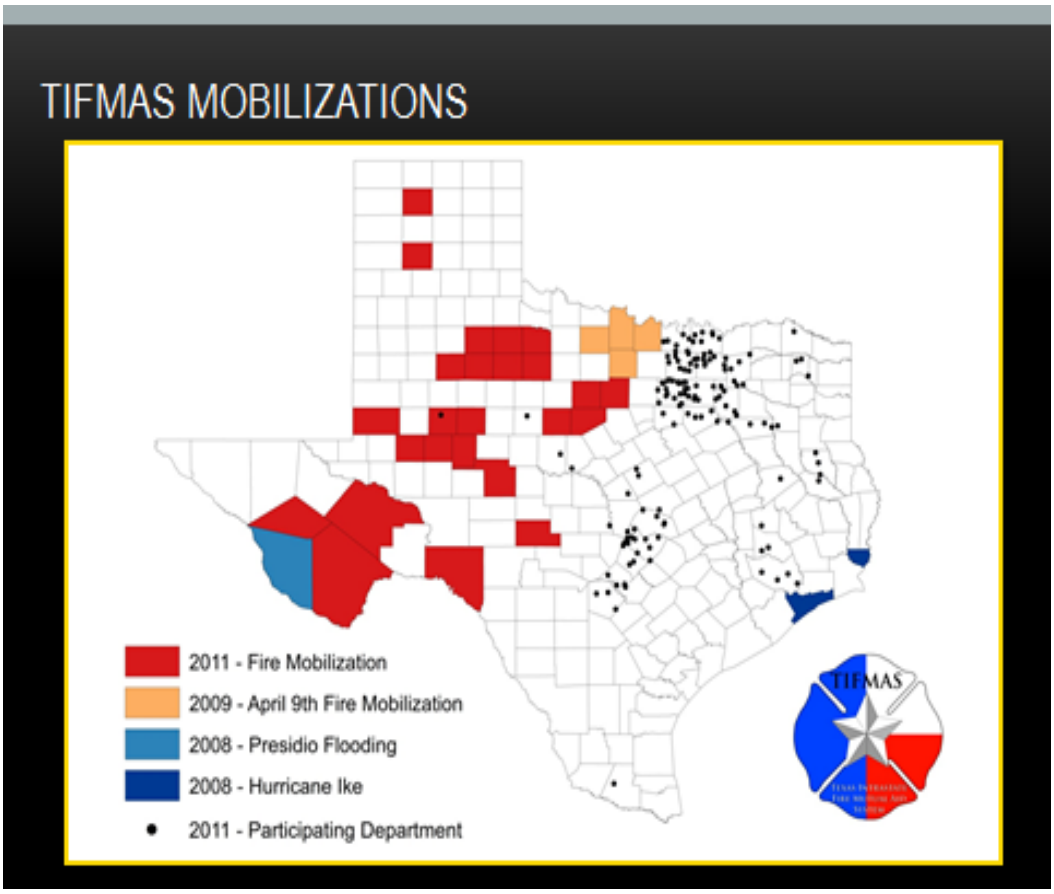
The Texas A&M Forest Service, in cooperation with TDEM has developed the State of Texas Type III All Hazard Incident Management Team (AHIMT) program as an added component to wildfire and all-hazard response. These teams are formed by personnel from local jurisdictions who are trained and qualified in command and general staff positions and are mobilized by TFS to provide incident management support statewide as needed. The AHIMT program was initiated under the direction of the TFS Lone Star State IMT to provide the full array of incident management support including supporting impacted communities in managing security and continuity of government issues, assessment of critical infrastructure and restoration of essential services following a catastrophic incident. There are currently over 600 AHIMT members statewide, representing all first responder disciplines.[44]

- 658 total participants in the program
- 10 regional response teams mobilized in 2011

Texas Intrastate Fire Mutual Aid System

The Texas Intrastate Fire Mutual Aid System (TIFMAS) is maintained by TFS. The program includes training, qualification and mobilization systems to make statewide use of local resources. The program was first used during Hurricane Ike, and has since been used in response to the Presidio flooding; the April 9, 2009, wildfire outbreak in North Texas; and Hurricane Alex. The system was used extensively during the 2011 wildfire season.[45]

- 13 mobilizations
- 207 fire departments
- 329 engines
- 1,274 firefighters



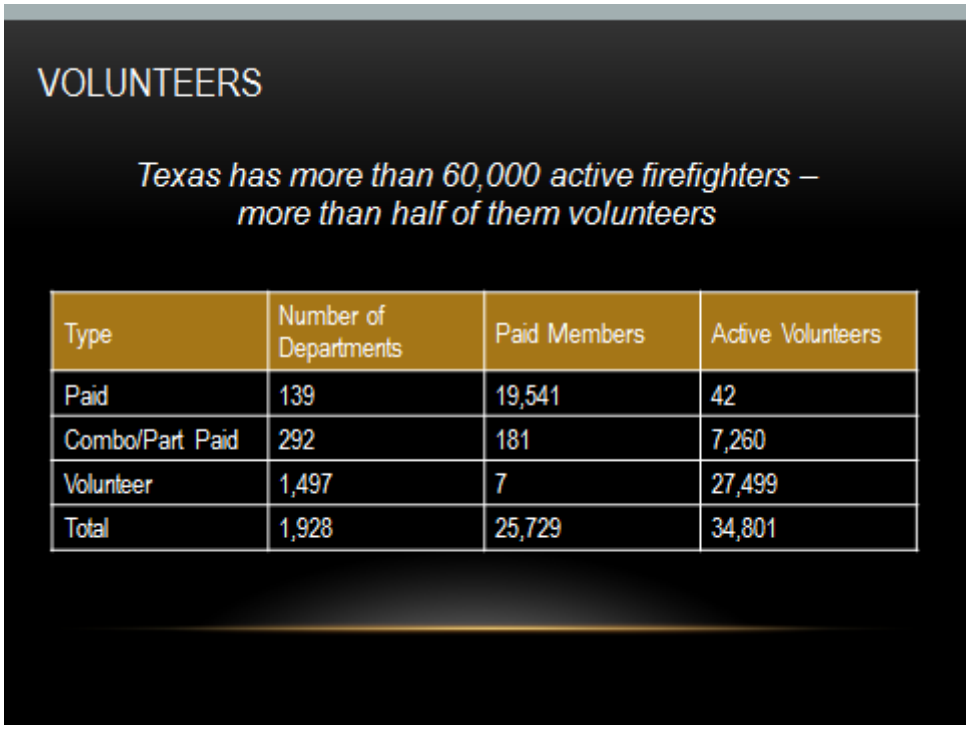
Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)

Volunteer Fire Departments

Texas has more than 60,000 active firefighters - more than half of them are volunteers. Volunteer fire departments respond to 90 percent of the wildfires in Texas—and they do it with little to no money and a staff made up almost completely of volunteers.[46]

Since the inception of the Volunteer Fire Department Emergency Assistance Fund in 2002, the following have been allocated:

- 1,407 tankers and brush trucks;
- 40,729 student tuitions;
- 57,681 sets of protective gear (structural and wildland); and
- 2,614 grants for fire and rescue equipment.



Source: Texas A&M Forest Service - 2011 Texas Fire Season (Handout 02/15/2012)

Texas Military Forces

The Texas Military Forces is tasked by the Governor of Texas and the President of the United States to conduct Defense Support to Civil Authorities operations to mitigate effects caused by natural or man-made disasters, protect critical infrastructure and key resources; protect the citizens of the state in all hazards; and protect Federal Emergency Management Agency (FEMA) Region VI in catastrophic chemical, biological, radiological, nuclear, and explosive incidents.

Some of TMF's partners include TDEM, the Department of State Health Services, TFS, DPS, the Texas Task Force One, TxDOT, the Texas Rangers, and the Texas Commission on Environmental Quality.

The Texas Military Forces' support extends the state's capabilities, personnel, equipment, and costs through various levels of activation, including ground and aerial wildfire suppression, resource management teams, and search and rescue support.

In 2011, the Texas Army National Guard flew 82 missions, dropped nearly 5 million gallons of water, and cut 162 miles of fire break. From August 30 to September 16, 2011, the Texas National Guard provided 3 CH-47s, 3 UH-60s, and fire suppression in 15 fires.

In the Bastrop Complex Fire, TMF provided:

- 8 Blackhawk helicopters;
- 3 Chinook helicopters;
- 147+ hours of flying time;

- 1.4 million gallons of dropped water;
- 4 D7 bulldozers;
- 5 miles of cut fire break;
- 3 firefighting trucks, complete with crews;
- 2 TX Interoperable Communication Package trailers;
- Personnel for the Logistics Section of the State Operations Center;
- An aviation liaison officer to assist TFS with coordinating TMF aviation assets throughout the state;
- Barrack, dining facilities, and staging areas for over 800 firefighters; and
- More than 180 personnel.[47]

## Prevention and Mitigation

Throughout the 2011 fire season, TFS Prevention and Mitigation staff maintained active public education and awareness programs to reduce human-caused fires, assisted communities at risk and helped citizens and local decision makers prepare for large wildfires. Program activities included active public service and educational initiatives:

- 3 PSAs (Agricultural Commissioner, Nolan Ryan, football coaches);
- 54 workshops implementing the International Association of Fire Chiefs' "Ready, Set, Go" program; and
- Post-fire assessments (underway) on major fires, including the PK Complex, Bastrop Complex, Riley Road Fire and others, to identify causal factor related to homes lost.[48]

Texas Wildfire Risk Assessment Portal

The Texas Wildfire Risk Assessment Portal (TxWRAP) is the primary mechanism for the Texas A&M Forest Service to deploy risk information and create awareness about wildfire issues across the state. The Wildfire Risk Assessment Portal is comprised of a suite of web-mapping applications tailored to support specific workflow and information requirements for the public, local community groups, government officials, professional hazard-mitigation planners, and wildland fire managers. Collectively, these applications will provide the baseline information needed to support mitigation and prevention efforts across the state. Some of the key benefits to the application are:

- Making the risk assessment information accessible to virtually anyone with an internet connection and is not restricted to just a few power users with expensive GIS software and a robust computer;
- Increasing awareness, communication, and visualization of the risk assessment information to a significantly larger customer-base;
- Centralizing the deployment, administration, and storage of the risk assessment applications and data, which eliminates the need for local software installation and data management; and
- Presenting a seamless statewide picture of wildfire risk instead of the data being partitioned by county. [49]

For more information on the TxWRAP, go to www.texaswildfirerisk.com.

One Message, Many Voices

One Message, Many Voices is a prescribed fire campaign funded by the U.S. Forest Service through the Southern Group of State Foresters (a non-profit organization consisting of state forestry agencies from the 13 southern U.S. states, the Virgin Islands and Puerto Rico). The social marketing campaign is aimed at individual landowners and attempts to change the attitudes and perceptions of the public regarding the use of prescribed fire.

The goals are to have fewer misunderstandings about prescribed fire, greater policy support for prescribed fire, and a greater public understanding of prescribed fire.

Current activity in Texas includes placing billboards in strategic areas of the state; advertisement on movie screens in East Texas; partnering with Texas Parks and Wildlife Department and Oklahoma Forestry Services to rework the existing One Message, Many Voices video; and providing/conducting smoke management/prescribed fire workshops around the state, targeting the general public and private landowners.[50]

Texas Wildfire Prevention Task Force

In May 2012, Texas Department of Agriculture Commissioner Todd Staples convened a meeting of the newly-formed Texas Wildfire Prevention Task Force. The purpose of the task force is: to identify areas of the state most at risk for wildfire, identify the best tools available to mitigate wildfire risk, and to provide direct and effective outreach to implement mitigation tools. The members of the task force include TFS, TDEM, DPS, the Texas Prescribed Burning Board, various state and local agencies, and several law enforcement agencies and associations throughout Texas. The task force will complement new web applications created by TFS and the Texas A&M University System via TxWRAP that will help homeowners and communities determine wildfire risks in their communities.

Texas Prescribed Burning Board

The Texas Department of Agriculture administers the Texas Prescribed Burning Board, which regulates certified and insured prescribed burn managers who work to control vegetative fuels that can contribute to wildfires. The burn managers help to manage, maintain and restore valuable ecosystems in Texas. New licensing categories have been created which have resulted in more than a 350 percent increase in the number of qualified, licensed and insured prescribed burn managers in Texas.

## Lessons Learned

- Large-scale fire response requires the ability to mobilize, support and coordinate resources from multiple sources, including local, state and federal responders.
- Common standards, credentialing and a common response system (NIMS, NWCG) proved itself again in the mobilization and coordination of thousands of responders.

- Nationally mobilized incident response teams, resources and personnel have done an outstanding job.
- For short duration, high impact weather events - the ability to mobilize and incorporate intrastate resources from local jurisdictions across the state was critical to meet staffing requirements.
- The ability to "surge" resources by utilizing Type III IMT and TIFMAS resources made the difference during these periods of peak fire occurrence.
- Activating TIFMAS and managing the resources using Type III IMT resources increased the ability to mobilize fire resources quickly and directly, reduced losses and minimized risks to firefighters.
- Across the nation, wildland fire response priorities (and incident objectives) predominately start with safety and the protection of lives, homes and improved property. However, once you move past these initial "standards" there may be considerable variations or additional priority considerations based on the properties, landowners, jurisdictions and communities involved. There may also be considerable local variations on how "improved property" is defined and prioritized.
- When utilizing this broad spectrum of resources, increased communications efforts are a must in order to clearly establish and communicate well defined objectives, strategies and tactics.
- The presence, active involvement and cooperation of all jurisdictional authorities (local, state, federal) is essential.
- When responding to long-duration fires that burn for multiple days, fires should be staffed to sufficient levels to support the release of local resources as much as possible. Local emergency service providers need to maintain the ability to respond to new fires or other local emergencies as they occur. Additionally, as citizens living within the impacted areas, local responders may have other demands limiting their availability.
- Effective "response efforts" are no longer limited to fire suppression, but must include active predictive services, mitigation and prevention, preparedness and capacity building programs as well.
- Forecasting southern wildfire outbreaks and extreme wildfire conditions is crucial to public safety and firefighter safety. Coordination with the National Weather Service and state public safety agency (TDEM) is paramount to issuing extreme fire warnings to the public.
- Constantly monitoring fuel and weather conditions through an active predictive services function is vital to managing and directing statewide wildfire season.
- Encouraging and leading communities to develop comprehensive Community Wildfire Protection Plans is essential towards creating fire-adapted communities.
- Implementing self-sufficient proactive programs such as Ready, Set, Go and the National Fire Protection Association's Firewise is critical towards having citizens take personal responsibility to protect their valuables at risk.
- The Ready, Set, Go program and Firewise program complement each other. Conducting Train the Trainer workshops aimed at fire department public educators increased the effectiveness of implementing the Ready, Set, Go program statewide.
- Wildland urban interface fires are impacting both volunteer and career fire departments and require a coordinated approach in planning, training and capability building.

- Hardening of homes against wildfire is a significant method in reducing homes lost.
- Completion of fuel management programs within and adjacent to communities directly reduced wildfire extent and intensity.[51]

## Other Preventive Sources

In a USA Today article dated May 14, 2012, it was reported that the majority of wireless carriers and the federal government are launching a system to automatically warn people of dangerous weather and other emergencies via a special type of text messaging to cellphones. The Wireless Emergency Alerts service, which began in May, is free, and consumers will not have to sign up. The warnings will be location-based: If you are traveling, you will get an alert for whatever emergency is happening where you are. The wireless carriers voluntarily offering the free service are: ATT, Cellcom, Cricket, Sprint Nextel, T-Mobile, U.S. Cellular and Verizon Wireless. Alerts will be issued for such life-threatening events as tornadoes, flash floods, hurricanes, typhoons, tsunamis, dust storms, extreme winds, blizzards and ice storms. The text alerts will be limited to 90 characters. The alert system is a collaboration by the wireless industry, the Federal Communications Commission, FEMA, the Department of Homeland Security, the National Weather Service and other agencies.[52]

## Recommendations

1. Encourage the legislature to restore funding for grants to the Volunteer Fire Department Assistance program and Rural Volunteer Fire Department Insurance Program. Last session, the Assistance program was cut 54.2 % and the Insurance program was cut $100,000 for the biennium. This action will not require any new tax or fee revenues.

2. Review the current statute on liability protections extended to private individuals and companies aiding the state in emergency response. Private companies are interested in using their personnel and equipment to assist Texas Forest Service with wildfire suppression on property adjacent to theirs; however, they are concerned about potential liability issues.

3. Consider providing workers compensation coverage for Regional Incident Management Team (RIMT) and Texas Intrastate Fire Mutual Aid System (TIFMAS) resources. Most members of these teams are not employed by a state agency and are not covered under the state's workers' compensation insurance. A legislative change to allow RIMT and TIFMAS personnel similar coverage to that provided to Texas Task Force 1 members (Education Code 88.303) would address this issue.

4. The legislature has consistently funded response costs during the legislative session following emergency events. Changes in the billing processes and prompt pay requirements for out-of-state resources make the current funding process problematic, especially with resources obtained through federal contracts or from other states. Consider setting aside an amount of funding proper to the occurrence of disasters so that funds would be available, should they be needed, to provide for emergency response cost

reimbursement in a more timely fashion. This will not result in additional costs to the state, but rather a change in when funding occurs.

5. Work with the USDA on the bidding process concerning the use of local resources to help quicken response times and to reduce the need for out-of-state resources.

## INTERIM CHARGE #3

**Study the adequacy of access to veterinarian care in rural areas of the state. Determine the impact that a lack of access may have on the agriculture business in Texas.**

### Background

Texas has more food and fiber animals (animals, other than horses, used for commercial purposes) than any other state. Texas has more head of beef cattle than any other state, concentrated in the High Plains, South Texas, and Central Texas regions.[53] According to the 2007 United States Census of Agriculture, there were 438,827 horses reported as inventory in Texas—almost 11 percent of the equine inventory in the United States.[54] While Texas has no shortage of large animals and horses, it does have a shortage of veterinarians. Texas ranks 45th in the nation for the number of veterinarians per 100,000 of the population. For every 1,000,000 food and fiber animals, there are only 311 veterinarians. The Texas Workforce Commission projects that by 2015, the demand for veterinarians in Texas will have increased by 18 percent since 2007.[55]

In a recent survey designed by Texas AgriLife Extension Service, all 139 licensed veterinarians in the 26 counties of the Texas Panhandle were mailed questions regarding current and future needs of rural Texas veterinarians. Seventy-seven percent of respondents reported perceiving a shortage of rural veterinarians and 52.8 percent reported perceiving a shortage of veterinarians in the Panhandle, specifically.[56]

There are many reasons Texas is losing its large animal rural veterinarians. In 2005, Texas A&M University College of Veterinary Medicine (TAMU) conducted an informal poll of its students' field of interests. A majority indicated a desire to practice in a rural area as large animal veterinarians. This is not surprising, as approximately 1/3 of the students come from rural counties with populations under 100,000 and 1/4 of the students come from counties with populations under 50,000. However, 4 years later, at graduation, most of the students had changed their minds. The top 10 reasons cited were:

1. New interests emerged after taking a variety of veterinary courses
2. Interactions with other students about original career area
3. Lack of flexible work hours in original career area
4. Poor balance between work and family in original career area
5. Heavy time demands from on-call in original career area
6. Too much time working evenings or weekends in original career area
7. Faculty mentor encouraged new area
8. Difficult to get time off for vacations in original career area
9. Not enough use of medical/surgical skills in original career area
10. Difficult to arrange time off for parental/family responsibilities in original career area.[57]

Reasons for not wanting to practice in rural areas included work opportunities for spouses, limited educational opportunities for children, lifestyle issues, physical demands of the work and a desire to treat individual animals rather than entire herds.[58]

## Impact

The trend to abandon rural practice will have serious implications on the agriculture business in Texas. The number of and availability of large animal veterinarians limits the productivity of ranchers. According to the Texas and Southwestern Cattle Raisers Association, West Texas ranchers are now scheduling cattle moves based upon the availability of a large animal veterinarian serving the region.

## Addressing the Shortage

There are no speedy solutions to the rural veterinarian shortage, but state and federal governments are creating new initiatives in an effort to attract and retain students and veterinarians to rural practice.

### Texas A&M University College of Veterinary Medicine

Texas A&M University College of Veterinary Medicine has taken steps to address the shortage of large animal veterinarians in rural Texas. A task force of faculty was appointed to study the practice choices of graduates and the distribution of veterinarians to large animal practice. It was discovered that increased interactions by large animal clinicians and practitioners with multiple education levels were needed.[59] As a result, TAMU expanded the bovine teaching herd at its Riverside campus, initiated new courses on food animal and environmental health issues, enhanced externship programs for students to work directly with practicing large animal veterinarians, developed a faculty mentoring program for graduate students interested in large animal practice, started a rural practice job fair for graduates, and established a program for interested undergraduates and high school students to work with practicing rural veterinarians.[60]

### Texas A&M University-Kingsville Veterinary Technology Program

Beginning with the fall 2012 semester, Texas A&M University-Kingsville offers a bachelor's degree in veterinary technology. Veterinary technologists are required to obtain a 4-year degree; veterinary technicians are required to obtain a 2-year degree. The program will focus on large animals and the university is building an animal and surgical lab on its farm. Thirty currently-enrolled students were selected for the inaugural semester. South Texas lacks adequate large-animal veterinary services, and the program will address the shortage by teaching veterinary technologists to help veterinarians run successful businesses in rural parts of Texas.[61] According to the United States Bureau of Labor Statistics, employment opportunities for veterinary technologists are expected to grow by 52 percent through 2020.[62]

### Veterinary Medicine Loan Repayment Program

Recognizing that the shortage of large animal veterinarians is not only affecting Texas, the USDA's National Institute of Food & Agriculture (NIFA) began administering the Veterinary Medicine Loan Repayment Program (VMLRP) in 2010. If a qualified veterinarian agrees to work in a pre-designated veterinary shortage area for 3 years, up to $25,000 of student loan debt will be repaid each year by NIFA. The pre-designated shortage areas in Texas are determined by

the Texas Animal Health Commission every year.[63] (Table 1. 2012 Designated Texas VMLRP Shortage Situations lists the areas with counties.) A map can be found at: http://www.nifa.usda.gov/nea/animals/in_focus/vmlrp_12/vmlrp_shortage_situation_texas.html.

**Table 1. 2012 Designated Texas VMLRP Shortage Situations**

| Area | Counties |
|---|---|
| Area 1 - North Texas | Cottle, Dickens, Foard, King, Knox, Stonewall |
| Area 2 - Panhandle | Dallam, Hansford, Hartley, Moore, Sherman |
| Area 3 - South Plains | Borden, Crosby, Garza, Lynn |
| Area 4 - West Texas | Crockett, Reagan, Terrell, Upton |
| Area 5 - East Texas | Lamar |
| Area 6 - East Texas | Lamar |
| Area 7 - South Texas | Dimmit, LaSalle, Maverick, Webb, Zavala |
| Area 8 - South Texas | Starr, Zapata |

SOURCE: USDA, http://www.nifa.usda.gov/nea/animals/in_focus/vmlrp_12/vmlrp_shortage_situation_texas.html.

In 2010, 21 Texas veterinarians applied for the VMLRP and 4 received grants[64]; in 2011, 11 applied and 5 received grants.[65]

REFERENCES

Texas Higher Education Coordinating Board, Projecting the Need for Veterinary Medical Education in Texas. January 2009. Available at: http://www.thecb.state.tx.us/reports/PDF/1701.PDF?CFID=29581608&CFTOKEN=67698987.

## Recommendations

1. The Texas Animal Health Commission and TAMU should continue to work with NIFA in administering and encouraging the VMLRP.

## INTERIM CHARGE #4

**Examine the current enforcement system for performance-enhancing drug testing show horses, performance horses, and race horses in Texas. Specifically, review currently prohibited drugs and quantities to determine if any changes should be made to existing law. Compare the state's current regulations to other systems around the country and make specific recommendations on how the state's system could be improved.**

### Background

With the passage of the Texas Racing Act by the Texas Legislature in 1986, pari-mutuel horse racing became legal again in Texas. In 1987, the Texas Racing Commission (Commission) was approved by voters. Responsibilities of the Commission include encouraging the horse-breeding and greyhound-breeding industries. In addition, the Commission awards licenses for pari-mutuel racetracks; provides strict regulation and control of pari-mutuel betting with respect to horse racing; supervises each race meeting conducted in Texas; and adjudicates disciplinary matters arising from the enforcement of laws associated with racing and pari-mutuel betting.[66] This report will only address performance-enhancing drug testing on horses, an issue not addressed in the Sunset Advisory Commission's report on the Commission to the 81st Legislature.

In recent times, the use of performance-enhancement drugs (PEDs) in horses has affected the horse industry in a negative light in some states. The *New York Times*[67]and Time.com,[68] among other sources, have reported on the possible health and safety issues relating to drugs such as furosemide (brand: *Lasix*) and other drugs for horses and jockeys, and on the legality of the use of such drugs in other jurisdictions.[69]

### Texas Racing Commission Veterinary Department

Under the structure of the Commission, the Veterinary Department operates under the supervision of the Commission’s chief veterinarian. The department is responsible for monitoring the health of all animals racing at pari-mutuel racetracks in Texas and for administering the drug testing program for race animals. All race animals participating in pari-mutuel racing in Texas are subject to drug testing to ensure the integrity of the race results.

Pursuant to Texas Racing Commission Rule § 319.304, the executive director developed a classification of prohibited drugs, chemicals and other substances; and a schedule for recommended disciplinary action. In all cases, the stewards have discretion to impose the penalty that best accomplishes the Commission's enforcement goals. Stewards may revoke a license, impose a fine of up to $5,000 and/or suspend an occupational license for up to 1 year. In addition, the executive director may enhance a penalty by increasing a fine to a maximum of $10,000 and a suspension of up to 2 years.[70]

Animal Examinations/Drug Testing

During 2011, Commission veterinarians performed 15,926 equine pre-race examinations. They also supervised the collection of 3,700 equine urine specimens and 3,895 equine blood

specimens. The classification system for equines consists of 7 classes ranging from Class 1—the most egregious substances that have the highest potential of affecting performance and have no generally accepted medical use in race horses, to Class 5 substances—therapeutic medications.[71]

Of the 38 drug violations detected in racehorses during 2011, 2 were for Class 2 substances, 7 were Class 3 substances, 20 were Class 4 substances and 4 were Class 5 substances. Additionally, there were 7 detections for an overage of a permitted substance, phenylbutazone. The majority of the horse positives were generally the result of inadvertent or improperly timed administration of medications considered to have therapeutic value in horses but unlikely to be of a performance enhancing nature. The Commission began testing for anabolic steroids in January 2009. Through the third year of testing, there have been no anabolic steroid positives.[72]

The Association of Racing Commissioners International's Penalty Guidelines provides much stricter penalties for Class 1 substance violations than the Texas Racing Act allows. In addition to longer suspensions and higher fines for the trainer, the owner and the horse are also subject to strict penalties.

Texas Veterinary Medical Diagnostic Laboratory

The Texas Veterinary Medical Diagnostic Laboratory (TVMDL) is the Commission's authorized drug testing laboratory. It performs all primary sample testing. The Texas Rules of Racing require the measurement of blood levels of phenylbutazone and furosemide in horses. A violation occurs when those levels exceed stated permissible limits.

The following is an excerpt from research conducted by the Research Division of the Texas Legislative Council at the request of the Chairman of the Committee on Agriculture and Livestock. The full report can be found at http://www.tlc.state.tx.us/pubspol/EquineDrugs.pdf.

## Racehorse Drug Testing Regimens

Regulatory Agencies

The following state agencies regulate the drug testing of racehorses and horse racing, generally, in each respective state:

- California Horse Racing Board;
- Division of Pari-mutuel Wagering of the Florida Department of Business and Professional Regulation;
- Kentucky Horse Racing Commission;
- Louisiana Racing Commission;
- New York State Racing and Wagering Board;
- Oklahoma Horse Racing Commission; and
- Texas Racing Commission.[73]

Post-Race and General Testing

Each of the 7 states surveyed requires the collection of a post-race specimen for drug testing from each horse that finishes first in a race. Additionally, some of the states require the collection of a post-race specimen from a horse that finishes other than first. Each of the 7 states surveyed authorizes the collection of post-race specimen for drug testing from other horses at the discretion of the applicable regulatory agency, agency representatives and certain racing officials. Additionally, Texas authorizes the collection of a specimen from a horse that finishes second, a horse that is a beaten favorite, and a horse that finishes third in a race with a gross purse of $50,000 or more.

Pre-Race Testing

California, Kentucky, Louisiana, New York and Oklahoma also regulate pre-race drug testing of racehorses.

Postmortem Testing

Florida, Kentucky, New York and Texas authorize postmortem examination, including the collection of a specimen for drug testing, of certain racehorses that die or that are euthanized on race ground or other areas under the jurisdiction of the applicable regulatory agency. California and Oklahoma require postmortem examination of such a racehorse and authorize the collection of test samples for foreign and natural substances.

Out-of-Competition Testing

Kentucky, New York and Oklahoma are the only states surveyed that regulate out-of-competition drug testing of racehorses. In Kentucky and New York, a horse is subject to out-of-competition testing, without advance notice, for specified prohibited substances. Agency regulations limit the time frame and detail the venue for testing. Penalties for violating out-of-competition testing requirements in Kentucky include license revocation, a fine and forfeiture of any purse money. A horse that tests positive for a prohibited substance is barred from racing in Kentucky until the horse has tested negative for any prohibited substance and is approved for racing by the commission veterinarian and the chief state steward. In New York, a horse that tests positive for a prohibited substance is ineligible to participate until the horse has tested negative for the identified substance, and the minimum penalty for not making a horse available for testing, absent extraordinary mitigating circumstances, is a 10-year suspension. Oklahoma regulations require the Oklahoma Horse Racing Commission to establish a procedure for out-of-competition screening for anabolic steroids.

Administrative Penalties for the Confirmed Presence of a Prohibited Substance in a Racehorse

All 7 states have various penalties for licensed horse trainers and owners. In Texas, on a finding of a prohibited substance in a racehorse, the race stewards or racing judges are authorized to disqualify the horse and order the purse redistributed, declare the horse ineligible to race for a period of time, and impose on the horse's trainer or another person responsible for the horse or

the administration of the prohibited substance certain other administrative penalties. As mentioned earlier, the Commission published a 2009 Medication and Penalty Guide that categorizes penalties based on the type of prohibited substance found in the racehorse.

Regulation of Non-Racehorses

California, Florida and New York provide various penalties for horses shown in public horse shows, horse competition or horse sales, that have been administered a certain prohibited or forbidden substance. Texas has no such regulation.[74]

## Racing Medication and Testing Consortium

In 2000, the Racing Medication and Testing Consortium (RMTC) was created by a broad spectrum of horse industry organizations representing different breeds, racing associations, owners, breeders and regulators. The RMTC's mission is to develop and promote uniform rules, policies and testing standards at the national level; coordinate research and educational programs that seek to ensure the integrity of racing and the health and welfare of horses and participants; and protect the interests of the racing public.

Since its inception, RMTC rules regarding the use of anabolic steroids have been adopted in 32 of 34 states currently conducting pari-mutuel horse racing. Other important RMTC model rule recommendations that have been adopted by Racing Commissioners International (RCI) include policies on therapeutic medications (which has seen adoption progress started or completed in 31 of 34 states), out-of-competition drug testing, more severe uniform penalties for the use of prohibited drugs and practices, the administration of furosemide and adjunct bleeder medications, and NSAID thresholds.

The focus of the RMTC is turning to research efforts on those substances which pose an immediate threat to the racing industry. A large part of the effort will be penalty and drug classification reform. Part of their mission has been to acquire and analyze unknown substances to develop information on new threats to the integrity of racing.

The 3 research and regulatory priorities for the RMTC Board going forward are: the advancement of the RMTC Drug Testing Initiatives Task Force, which aims to institute national minimum standards and best practices for drug testing laboratories and implement a laboratory ISO and RMTC accreditation program and an independent Equine Quality Assurance Program; identification of emerging threats; and the continuation of medication classification and a penalty guideline overhaul.

Controversy over the use of race-day medication, including furosemide, is still prevalent today. RMTC, working with the National Thoroughbred Racing Association (NTRA) and the American Association of Equine Practitioners, organized and sponsored the 2011 International Summit on Race Day Medication, Exercise-Induced Pulmonary Hemorrhage and the Racehorse at Belmont Park. At that meeting, RMTC recommended a model rule that requires that furosemide only be administered on race day by regulatory veterinarians or their designees, and that adjunct bleeder medications be prohibited – a rule which has since been adopted by the RCI.

Their model rule on phenylbutazone, which lowered the recommended threshold from 5 micrograms per mL to 2 micrograms per mL, has been adopted for all races in 8 states, in stakes races in 6 states, and is under review in 7 other states.[75]

National Thoroughbred Racing Association

In June 2012, the National Thoroughbred Racing Association (NTRA) endorsed the adoption of RMTC uniform medication guidelines and a ban on all race-day drugs, with the exception of the anti-bleeding medication furosemide. In a press release dated June 21, 2012, the NTRA stated that "any jurisdictions permitting race day use of furosemide should restrict administrations to state veterinarians and comply with limits setting the minimum and maximum dosages."

The National Thoroughbred Racing Association went on to further support the RMTC's efforts to set scientifically supported threshold levels for 26 therapeutic medications, as well as increase penalties for trainers with multiple violations and to allow states to consider violations in other states when applying penalties in their own.[76]

The Texas Thoroughbred Association testified during the Agriculture and Livestock Committee hearing in support of the RMTC's efforts to require that all testing laboratories be accredited to ISO 17025 standards. While the TVMDL is not currently 17025 certified, with additional funding for equipment upgrades and technology enhancement, it could be possible.

The Jockey Club

The Jockey Club has supported efforts of the RMTC to regulate the use of PEDs and is in support of a gradual phase-out of furosemide to properly gauge the impact it will have on horses, the horsemen and racetracks.[77] The Jockey Club hired international management consulting firm McKinsey & Company to review the status of thoroughbred breeding and racing and to make recommendations for remedial action. Their analysis concluded that the sport is losing fans at a rate of 4 percent a year, and that concerns over animal safety/welfare and medication are consistently among the most significant themes.[78]

## The Administering of the Drug Furosemide

Each of the 7 states surveyed regulates the administration of the drug furosemide to a racehorse considered a "bleeder," a horse that experiences bleeding after exercise. State regulations prescribe eligibility requirements for a horse to receive the medication, the maximum allowable amount of the medication, and how many hours before a race a horse may receive the medication, but these requirements vary by state. See Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas for specific regulations of each of the 7 states.

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| California | Authorizes the administration of furosemide for the control of exercise induced pulmonary hemorrhage to a horse on the authorized bleeder medication list and deems a horse eligible to race with authorized furosemide if the licensed trainer or veterinarian determines it is in the horse's best interest. Cal. Code Regs. tit. 4, § 1845 | Requires a horse to be treated on the grounds of the racetrack where the horse will race no later than four hours prior to post time of the race for which the horse is entered and requires the furosemide to be administered by a single intravenous injection in a dosage of not less than 150 milligrams or more than 500 milligrams. Cal. Code Regs. tit. 4, § 1845 | Requires a horse racing with furosemide to show a detectable concentration of the drug in the post-race sample. The minimum allowable specific gravity of a horse's post-race urine sample is 1.010 and the maximum allowable amount of furosemide in a horse's post-race serum or plasma sample is 100 nanograms of furosemide per milliliter of serum or plasma.<br><br>Penalties range from a minimum fine of $500 and a maximum fine of $1,000 for a first offense absent mitigating circumstances to a minimum fine of $2,500 and up to a 30-day suspension for a third offense within a 365-day period absent mitigating circumstances. Cal. Code Regs. tit. 4, §§ 1845 and 1843.3 |
| Florida | Authorizes the use of furosemide solely for the treatment of:<br><br>• a Florida racehorse that has exhibited exercise induced pulmonary hemorrhage within three hours of exercise as witnessed and certified in writing by a Florida licensed veterinarian;<br><br>• an out-of-state horse | Requires a horse placed on the official Furosemide List to have furosemide administered on race day intravenously no closer than four hours prior to the officially scheduled post time of the race for which the horse is entered and in a dosage of not less than 150 milligrams or more than 500 milligrams. Penalties for a violation of these requirements include a fine, license suspension, and scratching of a horse. Additionally, penalties for not | According to the Division of Pari-mutuel Wagering, Florida has not established a threshold amount of furosemide in a post-race sample. |

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| Florida, con't. | racing in Florida that has been so witnessed and certified or has been certified by the racing commission or association or track veterinarian from the previous state; and<br><br>• a horse that has not exhibited external bleeding if the horse's licensed trainer and licensed veterinarian determine that it would be in the horse's best interest to race with furosemide and so notify the state veterinarian. Fla. Admin. Code Ann. r. 61D-6.008 | providing the required documention of a horse's eligibility to race on furosemide include disqualification of the horse, a fine and suspension of the horse's trainer, and redistribution of any purse, stake, award, or other prize or compensation. Fla. Admin. Code Ann. r. 61D-6.008 | |
| Kentucky[79] | Authorizes the administration of furosemide to a thoroughbred race horse entered to compete in a race if the horse's licensed trainer or a licensed veterinarian determines that it would be in the horse's best interests to race with furosemide. 810 Ky. Admin. Regs. 1:018<br><br>Authorizes the administration of furosemide to a horse in a harness race entered to compete in a race, qualifying race, time trial, or official workout if the | Requires furosemide to be administered to a thoroughbred horse or horse in a harness race at a location under the jurisdiction of the Kentucky Horse Racing Commission, by a single intravenous injection, and not less than four hours prior to post time for the race in which the horse is entered. The authorized dosage for a thoroughbred horse is not less than 150 milligrams or more than 500 milligrams and for a horse in a harness race, not less than 100 milligrams or more than 250 milligrams. Kentucky also authorizes the administration of up to two adjunct bleeder medications | Requires a thoroughbred horse or a horse in a harness race that is eligible to race with furosemide and entered in a race to show a detectable concentration of the drug in the post-race sample. The minimum allowable specific gravity of a horse's post-race urine sample is 1.010 and the maximum allowable amount of furosemide in a horse's post-race serum or plasma sample is 100 nanograms of furosemide per milliliter of serum or plasma.<br><br>Penalties for an unauthorized amount of furosemide in a thoroughbred horse's post- |

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| Kentucky, con't. | licensed trainer or licensed veterinarian determines that it would be in the horse's best interests to race with furosemide. 811 Ky. Admin. Regs. 1:090 | for a thoroughbred and one adjunct bleeder medication for a horse in a harness race. 810 Ky. Admin. Regs. 1:018 and 811 Ky. Admin. Regs. 1:090 | race sample range from a maximum five-day license suspension or a $500 fine for a first offense to a maximum 15-day license suspension, a $2,500 fine, or forfeiture of purse money for a third offense within a 365-day period.<br><br>Penalties for an unauthorized amount of furosemide in the post-race sample of a horse in a harness race range from a maximum 10-day license suspension, forfeiture of purse money, or a $500 fine for a first offense to a maximum 60-day license suspension, forfeiture of purse money, or a $2,500 fine for a third offense within a 365-day period. 810 Ky. Admin. Regs. 1:018; 811 Ky. Admin. Regs. 1:090; 810 Ky. Admin. Regs. 1:028; and 811 Ky. Admin. Regs. 1:095 |
| Louisiana | Authorizes approved bleeder medication to be voluntarily administered intravenously to a horse entered to compete in a race if the trainer or attending veterinarian determines it is in the horse's best interests to race with bleeder medication, the trainer or veterinarian makes a written request on the Louisiana Racing Commission veterinarian | Prohibits the administration of bleeder medication to a horse entered to race within four hours of post time of the race in which the horse is to run. Permitted bleeder medication is not limited to furosemide and also includes specific approved adjunct bleeder medications. The permitted amount of furosemide is a single intravenous injection of not less than 150 milligrams or more than 500 milligrams. La. Admin. Code tit. 35, §§ | Requires a horse racing with furosemide to show a detectable concentration of the drug in the post-race sample that is indicative of appropriate administration. The minimum allowable specific gravity of a horse's post-race urine sample is 1.010 and the maximum allowable amount of furosemide in a horse's post-race serum or plasma sample is 100 nanograms of furosemide per milliliter of |

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| Louisiana, con't. | that the horse be placed on the voluntary bleeder medication list, and the request is actually received by the commission veterinarian or the commission veterinarian's designee by the time of entry. La. Admin. Code tit. 35, § 1507[80] | 1507 and 1509 | serum or plasma.<br><br>Penalties for a violation of rules relating to bleeder medication include a fine, suspension, and license revocation. La. Admin. Code tit. 35, §§ 1507 and 1511 |
| New York | Authorizes the administration of furosemide to:<br><br>• a horse that has bled visibly during a race or workout, as determined by the racing association veterinarian;<br><br>• a horse that has bled during a race or workout, as determined by an attending veterinarian based on the veterinarian's clinical assessment of the horse;<br><br>• a horse that has been qualified by the state veterinarian or a veterinarian employed by the racetrack for the administration of furosemide in another racing jurisdiction; and | Requires the administration of furosemide, for a racehorse other than a quarter horse, by a single intravenous injection of not less than 150 milligrams or more than 500 milligrams and on the grounds of a licensed or franchised racing association or corporation during the time period from four to four and a half hours before the scheduled post time of the race in which the horse is to compete. The requirements for a quarter horse are the same as above except the minimum authorized amount of furosemide injection is 250 milligrams. N.Y. Comp. Codes R. & Regs. tit. 9, §§ 4043.2, 4120.2, and 4236.2 | Makes a horse that is eligible for the administration of furosemide but that has not received such administration in the manner required by rule ineligible to start a race. N.Y. Comp. Codes R. & Regs. tit. 9, §§ 4043.2, 4120.2, and 4236.2<br><br>After searching the New York Rules and Regulations regarding horse racing, we could not locate a threshold amount for furosemide in a post-race sample. |

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| New York, con't. | • a horse that has raced on furosemide in its last race in a jurisdiction with rules substantially similar to New York. N.Y. Comp. Codes R. & Regs. tit. 9, §§ 4043.2, 4120.2, and 4236.2[81] | | |
| Oklahoma | Requires a horse to be placed on the Bleeder and Furosemide User list if the horse is administered furosemide prior to a race or if the horse is a known bleeder as determined by a specified process of examination. Okla. Admin. Code § 325:45-1-12 | Requires furosemide to be administered intravenously and not less than four hours prior to post time and in an amount not less than 150 milligrams or more than 250 milligrams. Okla. Admin. Code §§ 325:45-1-9 and 325:45-1-12 | Provides that the maximum permissible post-race plasma concentration level of furosemide is 100 nanograms and requires a horse that is an official furosemide user to show a detectable concentration of furosemide in a post-race plasma or serum sample.<br><br>Penalties range from a $500 fine for a first offense to a $2,500 fine, a license suspension, disqualification of the horse, disqualification of the owner from receiving any portion of the purse or stakes, and the return of any trophy or other award for a third offense within a one-year period. Okla. Admin. Code §§ 325:45-1-9 and 325:45-1-11 |
| Texas | Authorizes a trainer to admit a horse to the furosemide program by stating at the time of entry that the horse will compete with furosemide and requires a horse that | Requires furosemide to be administered intravenously to a horse in the furosemide program by a veterinarian licensed by the Texas Racing Commission not later than four hours before the | Penalties in the Medication and Penalty Guide range from a $100 fine for the first offense to a $500 fine or a fine equal to 10% of the purse earned by the horse up to $5,000, whichever is |

**Table 1. Regulations on the Administration of Furosemide to Racehorses in California, Florida, Kentucky, Louisiana, New York, Oklahoma and Texas**

| State | Furosemide Eligibility Requirements | Pre-race Requirements for Administration of Furosemide to an Eligible Horse, and Related Penalties, if any | Penalties for an Impermissible Amount of Furosemide in an Eligible Horse's Post-race Sample |
|---|---|---|---|
| Texas, con't. | competed with furosemide in its most recent start out-of-state to compete on furosemide in Texas unless withdrawn from the furosemide program at the time of entry. 16 T.A.C. § 319.111 | published post time for the race the horse is entered to run. 16 T.A.C. § 319.111<br><br>The commission's Medication and Penalty Guide prescribes a dosage of 100 to 500 milligrams of furosemide when used therapeutically. (page 17) | greater, for a third offense. (page 30) |

## Recommendations

1. Encourage the Texas Racing Commission to continue cooperation and collaboration with the Association of Racing Commissioners International and the Racing Medication and Testing Consortium in their efforts to institute national minimum standards and best practices for drug testing laboratories and implement a laboratory ISO and RMTC accreditation program and an independent Equine Quality Assurance Program; identification of emerging threats; and the continuation of medication classification and a penalty guideline overhaul**.**

## INTERIM CHARGE #5

**Study the viability of cedar eradication as a means to enhance resource conservation.**

### Background

Water is likely the most limiting natural resource Texas faces. The ability to meet future water needs will significantly impact growth and economic well-being of this state. The United States Natural Resources Conservation Service (NRCS) estimates that brush in Texas uses over 3.5 trillion gallons of water annually.[82] Cedar eradication presents a viable option as a means to enhance resource conservation, allowing the state to meet its future water needs.

Cedar is a common name applied to arborvitae, cedar, cypress, false cypress, juniper and sequoia. In Texas, cedar is most commonly thought of as Ashe juniper. Ashe juniper has increased in abundance and range across Texas. While the exact cause of the increase is unknown, overgrazing by livestock, soil erosion due to overgrazing, fires, periodic droughts and increases in atmospheric carbon dioxide are all believed to be contributing factors.

Ashe junipers produce abundant berry and seed crops. Trees begin to produce berries at 1.5 meters in height (10-20 years old). Large trees can produce 100,000-250,000 fruits per year. Because of their fruitful nature, managing juniper plants before they produce seeds is an important management strategy. Fire, integrated with proper grazing management strategies, seems the most reasonable ecological and economical method.

Ashe juniper is commonly thought to be a larger consumer of water in comparison to native grasses. Ashe junipers have taproots and an extensive lateral root system in the surface foot of soil, allowing it to take advantage of both shallow and deeper soil moisture.

Ashe junipers are not the only dominant brush types thought to consume large quantities of water. Research has shown a Salt cedar uses anywhere from 0.1-15 gallons of water per tree per day. Removing 1 acre of Salt cedar saves 2-5 acre feet per year. Red berry junipers have been documented to use 46.8 gallons of water per tree per day. Removing 3-7 acres of Red berry junipers saves 1 acre foot of water each year. Mesquite trees use up to 44 gallons of water per tree per day. Removing 17 acres of Mesquite trees saves 1 acre foot of water each year.[83]

Managing Ashe Juniper

The Texas A&M System, through AgriLife Research, examined how to manage Ashe juniper to restore ecosystem function and ranch livelihoods. A suitable management plan must be developed. Professional planning and implementing skills must include:

- 1,5, and 10-year plans that are flexible and re-evaluated each year;
- Reducing juniper on a portion of ranch land annually and returning again when needed;
- An annual adaptive grazing plan with different contingencies, in the event of a normal, drought or wet year to improve soil and vegetation health; and

- Developing high tech tools to improve monitoring and management efficacy and link to cost-benefit analyses.[84]

Managing Ashe juniper landscapes for ecosystem goods and services will not be easy. Return to grassland dominance after a juniper reduction becomes difficult and expensive after 25-30 years, depending upon grazing and weather patterns. Very good grazing management is necessary to achieve good conservation of soil and vegetation and slow juniper increase. Additionally, as mentioned later in this report, managing juniper plants before they produce seeds is an important management strategy. [85]

The type of terrain and control treatment used determines the amount of soil damage and recovery time. Shredding trees leaves excellent litter cover. Fires on slopes less than 8 percent take 2-4 years to recover. Herbicides are less damaging to the soil surface than mechanical means. Mechanical damage to soil increases with hand-clearing, chaining, then bulldozing. Mechanical treatment alone on steep slopes takes soil surface and vegetation cover more than 2 years to recover. Fire and mechanical treatment can take more than 10 years for soil surface and vegetation cover to recover. [86]

**Effects of Water Supply Enhancement on the Hydrologic Budget and Water Quality**

The hydrologic cycle is the storage and movement of water between the earth's 4 spheres. It is, in simpler terms, the water cycle. Precipitation entering an area can leave that area through stream flow, evapotranspiration or groundwater. Evapotranspiration is the combined process of evaporation and transpiration, or water emitted from plants. Hydrologic changes resulting from water supply enhancement is the idea that evapotranspiration rates may change due to changes in vegetation cover. That is to say, hydrologic changes resulting from water supply enhancement is the idea that with brush management or cedar eradication, a decrease in evapotranspiration occurs. An area loses less surface water or groundwater.

Impacts to Water Yields

It is important to note that effects on the hydrologic budget occur as a result of changes in vegetation are still not fully understood. Having measured the effects of brush removal on different aspects of rangeland hydrology, scientists are beginning to agree that the amount of rainfall that is intercepted and held by the plant leaves, surface runoff, spring flow, water use by individual plants and plant communities, fluctuation of shallow water tables, and stream flows, all affect hydrology.

- The roots of some brush species extract water from greater depths than do grasses and forbs, and brush control can reduce the total amount of water used by vegetation.
- Brush and other deep-rooted vegetation growing over shallow aquifers near streams can be expected to use large amounts of groundwater, likely reducing the amount in both the interconnected stream and aquifer.
- Removal of brush-like juniper and live oak from upland areas some distance from streams may increase stream flow and/or recharge aquifers especially when:

    - The brush canopy is dense and intercepts substantial amounts of rainfall (for example: dense juniper or live oak stands), effectively reducing the amount of rainfall reaching the soil surface, and
    - Soils, subsoils and/or geologic strata are permeable, and streams in the area are fed by seeps and springs. Water can quickly percolate below the roots of grasses and forbs and move through subsurface pathways to local streams or aquifers.
- Brush control in upland areas is unlikely to increase significantly water yields if soils and geologic formations are not conducive to increased runoff and/or subsurface flows to streams or to aquifers.
- For brush control to have substantial long-term impacts on water yield, most or all of the woody vegetation in the treated area should be killed, and regrowth of brush and herbaceous vegetation should be controlled so that it is less dense and more shallow rooted than the pretreatment vegetation.
- New science-based tools can help pinpoint locations where brush control should substantially increase water flows in streams.
- A geographically targeted brush control program with careful scientific verification of impacts is needed to guide long-term brush control policies.[87]

Brush Removal Criteria for Water Supply Enhancement

In demonstrating the maximum positive impacts of brush removal for water supply enhancement, the Texas State Soil & Water Conservation Board (TSSWCB) believes the best approach is to consider smaller subwatersheds. When considering selection of sites, the following criteria is proposed:

- Soils - low permeability in the watershed catchment area and leading toward the streambed;
- Slope - sufficiently steep to carry runoff to streambed;
- Area - large enough to generate measurable flow contribution;
- Brush cover distribution - fraction of the area with treatable brush cover and proximity to stream channel;
- Land use - vegetarian and land management strategies by land owner;
- Stream flow observation - proximity to a stream gauging station, whether installed for the brush control project or existing for other agency's purposes; and
- Groundwater conditions - depth to groundwater table, groundwater flow direction, and aquifer permeability.[88]

Effects of Brush Management on the Hydrologic Budget and Water Quality In and Adjacent to Honey Creek State Natural Area (Comal County)

In 2001, a 10-year study by NRSC and U.S. Geological survey, in cooperation with state and local entities, began that examined the effects of brush management on water supply and water quality. The area studied was 560 acres of Hill Country land in and adjacent to Honey Creek State Natural Area in Comal County. Honey Creek is located in the Edwards Aquifer catchment area.

After 10 years of collecting rainfall, stream flow, evapotranspiration and water quality data, it was observed that brush management and the subsequent reestablishment of native grasses decreased evapotranspiration. The reduction of evapotranspiration resulted in an increase in the potential amount of water that could go into groundwater. In addition, a reduction in suspended-sediment in the stream flow was observed in the treated watershed, as compared to the untreated watershed, following brush management and the reestablishment of grasses.[89]

**State of Texas' Water Supply Enhancement Program**

In 2004, the House Committee on Agriculture & Livestock was assigned, as one of its interim charges, to assess the state's brush control efforts to ensure that available programs and funding are utilized to fulfill their maximum potential and also examine the impact of invasive aquatic plants (hydrilla, water hyacinth, etc.) and animals (zebra mussels, etc.). Full text of that report can be found here at the Legislative Reference Library of Texas' website: http://www.lrl.state.tx.us/scanned/interim/78/AG86.pdf. What follows is an update on most of the projects discussed in the report. Facts and figures from this section and the following subsections can be found in the TSSWCB's Water Supply Enhancement Program Annual 2011 Report: http://www.tsswcb.texas.gov/files/docs/Annual_Report_2011_FINAL.pdf.

As a result of Sunset Commission legislation continuing the TSSWCB during the 81st Regular Session, the State Brush Control Program is now known as the Water Supply Enhancement Program. The goal of the Water Supply Enhancement Program is to increase available surface water and groundwater through:

- Selective control, removal, or reduction of noxious brush species that are detrimental to water conservation; and
- Re-vegetation of land on which noxious brush has been controlled, removed, or reduced.

For each fiscal years 2012 and 2013, the program received $2,135,413 of General Revenue. By comparison, in each fiscal years 2010 and 2011, the program received $4,503,641 of General Revenue.

From 2000-2011, the Water Supply Enhancement Program treated 773,341.39 acres.

Project Updates

In prioritizing projects, the TSSWCB must consider:

- The need for conservation of water resources within the territory of the project, based on the state water plan adopted under Section 16.051, Water Code;
- Projected water yield of areas of the project, based on soil, slope, land use, types and distribution of trees, brush, and other vegetative matter, and proximity of trees, brush, and other vegetative matter to rivers, streams, and channels;
- Any method the project may use to control brush;
- Cost-sharing contract rates within the territory of the project;
- The location and size of the project;

- The budget of the project and any associated requests for grant funds submitted under this title;
- The implementation schedule of the project; and
- The administrative capacities of the board and the entity that will manage the project.

*Twin Buttes Reservoir/Lake Nasworthy Projects*

Twin Buttes Reservoir is used to maintain water levels in Lake Nasworthy which serves as a water supply for San Angelo. Three water supply enhancement projects were initiated in September 2002 to improve the amount of water flowing into the Twin Buttes Reservoir/Lake Nasworthy complex. Based on water needs and the result of feasibility studies, TSSWCB has allocated $11.3 million for cost-share water supply enhancement. Last year, the water level in Twin Buttes Reservoir fell to critical levels. Additional funding is needed to complete the treatment of the more than 555,000 acres of eligible brush in the Twin Buttes Sub-basins. As of December 2011, over 229,739.2 acres of brush have been treated, with a projected water yield to be 176,458.34 acre feet over the life of the project.

*Canadian River Project*

In August 2005, a salt cedar project was initiated to improve water quantity and quality on the Canadian River above Lake Meredith. As of December 2011, over 16,850 acres have been treated.

*Pedernales River Project*

In September 2002, a water supply enhancement project was initiated to boost the amount of water flowing from the Pedernales River Watershed into Lake Travis, a water supply for Austin. The Pedernales River Watershed has been allocated over $4.8 million for cost-share. As of December 2011, 72,242 acres have been treated, with a projected water yield to be 482,846.8 acre feet over the life of the project.

*Nueces River Project*

In September 2006, the McMullen County Soil and Water Conservation District (SWCD) began spraying mesquite along the Nueces River which flows into Lake Corpus Christi. As of December 2011, a total of $685,717.01 has been allocated to the project. 17,482.52 acres have been sprayed, and projected water yield is estimated to be 39,195.90 acre feet over the life of the project.

*Frio River Project*

In 2009, TSSWCB allocated $330,999.51 to the Frio, La Salle and McMullen County SWCDs to spray mesquite trees in sub-basins along the Frio River, which flows into the Nueces River system through Choke Canyon Reservoir. Choke Canyon Reservoir and Lake Corpus Christi, as a system, are operated by Corpus Christi. To date, 12,707.1 acres have been treated.

*Wichita River Project*

Beginning in September 2006, Archer County SWCD began spraying mesquite trees along the Wichita River. The Wichita River flows through Archer, Wichita and Clay counties, and feeds into the Lake Arrowhead Reservoir, the water supply for Wichita Falls. $909,476.30 has been allocated to the project and 34,024.3 acres have been treated in Archer and Clay counties. Projected water yield is estimated to be 169,191.67 acre feet over the life of the project.

*Lake Brownwood Project*

In March 2008, the Pecan Bayou SWCD began treating Mesquite and Juniper in the Lake Brownwood Watershed. Lake Brownwood is a major water supplier for Brownwood and the surrounding area for industrial, agriculture and municipal uses. $671,835.15 has been allocated to the project and concentrated efforts in the Pecan Bayou area located in 2 sub-basins north of the lake have resulted in the treatment of 1,322.8 acres. 3,884.81 acre feet of water will be yielded in these sub-basins over the life of the project.

*Guadalupe River Project*

In November 2011, $879,715.50 was allocated to the Guadalupe River Project to treat Juniper in the Guadalupe Watershed. Targeted areas in Kerr, Comal, and Kendall counties show to be the highest water-yielding areas in the watershed. There have been 5,329.75 acres treated in the counties and water yield is comparable to yield at the Pedernales River Watershed (482,846.8 acre feet).

*Edwards Aquifer Project*

The Bandera SWCD began treating Juniper in March 2009. Brush management is increasing the retention of water, thus improving spring and stream flows within Bandera County. Additionally, all of the watersheds within Bandera County (Medina River, Verde Creeks, Hondo Creek, Seco Creek, and the Sabinal River) provide direct recharge into the Edwards Aquifer which is the primary source of water for the San Antonio Metropolitan area. $508,727.21 has been allocated to the project TSSWCB and 2,050 acres have been treated.

*O.C. Fisher Project*

O.C. Fisher Lake is located in west-central Texas on the North Concho River. The lake sits 6.3 miles above the river's confluence with the South Concho River and approximately 65 miles above its confluence with the Colorado River.

The O.C. Fisher Project will enhance water yield from brush work already completed in the watershed. The recommended plan would restore approximately 11,759 acres of transitional habitat, 3,778 acres of lake habitat, 52 acres of riverine habitat, 10 acres of intermittent riverine, and 250 acres of bottomland hardwoods. The quality of the terrestrial and aquatic habitats within the project area would benefit through the removal and control of exotic/non-native, water-

loving plant species. The project was allocated $140,000 to treat Salt cedar in the lake basin. 2,555 acres have been treated.

*Bosque County Project*

In September 2011, TSSWCB allocated $299,850.00 for brush control in riparian areas around Steele Creek which flows directly into Lake Whitney in Northern Bosque County. As of December 2011, 1,288 acres have been treated.

*Carrizo-Wilcox Aquifer*

The Carrizo-Wilcox Aquifer provides drinking water for the citizens of Gonzales, Cibolo, Schertz and Sequin. Recently, growth in population in these counties will cause an increase demand on the water supply. Since September 2009, TSSWCB has allocated $199,261.5 to be utilized in the Carrizo-Wilcox outcrop areas. 177.1 acres have been treated. (Texas Tech University began conducting a feasibility study in Gonzales County to predict water yield.)

*Lower Guadalupe River*

Over the past 50 years, much of the Guadalupe River Watershed has been invaded by woody brush species that consume large amounts of groundwater. In September 2011, TSSWCB allocated $104,646.50 to the Lower Guadalupe Project. From September to December 2011, this allocation helped treat 1,000 acres.

*Water Yielded from Brush Control*

Table 1. Water Yielded from Brush Control illustrates water yield expectations from watershed projects from 2000-2011. Cost-share grants from 2000-2011 total $38,271,140. Landowner contributions from 2000-2011 total $19,000,000.

**Table 1. Water Yielded from Brush Control**

| Watershed Project | State Cost Per Treated Acre | Treated Acres | Gallons/Acre/ Year | Gallons/Year Based on Treated Acres | Total Water Yield for Life of the Project |
|---|---|---|---|---|---|
| Lake Ballinger (completed) | $45.00 | 7,799.70 | 55,354 | 431,744,593.80 | 4,317,445,938 |
| Oak Creek Lake (completed) | $47.00 | 16,224 | 47,225 | 766,178,400.00 | 7,661,784,000 |
| Lake Champion (completed) | $43.00 | 14,993.50 | 31,535 | 472,820,022.50 | 4,728,200,225 |
| Mountain Creek (completed) | $49.00 | 1,440 | 46,389 | 66,800,160.00 | 668,001,600 |
| Greenbelt Reservoir (completed) | $87.50 | 571 | 977,553 | 558,182,763.00 | 2,232,731,052 |
| Hubbard Creek (completed) | $ 58.75 | 506 | 977,553 | 494,641,818.00 | 1,978,567,272 |

| | | | | | |
|---|---|---|---|---|---|
| Pecos/Upper Colorado (completed) | $ 70.78 | 10,580.12 | 1,450,037 | 15,341,564,935.43 | 61,366,259,742 |
| North Concho River (completed) | $45.50 | 327,000 | 26,068.08 | 8,524,262,160.00 | 85,242,621,600 |
| Lake Brownwood | $146.34 | 1,322.8 | 95,696.25 | 126,586,999.5 | 1,265,869,995 |
| Bosque River | $162.50 | 1,288 | 26,068.08 | 33,575,687.04 | 335,756,870.4 |
| Wichita River | $20.92 | 34,024.3 | 162,035 | 5,513,127,450.5 | 55,131,274,505 |
| Nueces River | $27.65 | 17,482.52 | 73,056 | 1,277,202,981.12 | 12,772,029,811.2 |
| Frio River | $24.22 | 12,707.1 | 73,056 | 928,329,897.6 | 9,283,298,976 |
| Canadian River | $92.49 | 16,850 | 817,651 | 13,777,419,350.00 | 55,109,677,400 |
| Pedernales River | $72.00 | 72,242 | 217,790 | 15,733,585,180 | 157,335,851,800 |
| Upper Guadalupe | $123.71 | 5,329.75 | 217,790 | 1,160,766,252.5 | 11,607,662,525 |
| Edwards Aquifer | $155.75 | 2,050 | 217,790 | 446,469,500 | 4,464,695,000 |
| Twin Buttes | $68.03 | 229,739.2 | 25,028 | 5,749,912,697.6 | 57,499,126,976 |
| Fort Phantom Hill Reservoir | $164.50 | 860 | 103,460 | 88,975,600 | 889,756,000 |
| Palo Pinto Reservoir | $139.48 | 206.2 | 195,454.5 | 40,302,717.9 | 403,027,179 |
| Carrizo-Wilcox Aquifer | $226.54 | 177.10 | - | - | - |
| O.C. Fisher Reservoir | $104.98 | 1300 | 26,068.08 | 33,888,504 | 338,885,040 |
| Lower Guadalupe | $111.69 | 1,000 | - | - | - |
| **TOTAL** | | **773,341.39 ac.** | | **71,566,337,670.49 gals 219,629 ac./ft.** | **534,632,523,507 gals** |

Source: Texas State Soil and Water Conservation Board, Water Supply Enhancement Program 2011 Annual Report

## Recommendations

1. Efforts to encourage water enhancement through cedar eradication should continue.
2. Funding should be maintained for current water supply enhancement programs across the state.
3. Where possible, the TSSWCB should maximize the use of federal funding sources.

## ENDNOTES

Interim Charge #1

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