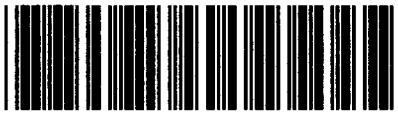
Control Number: 32182



Item Number: 212

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LCRA
ENERGY • WATER • COMMUNITY SERVICES

LCRA TRANSMISSION SERVICES CORPORATION

November 26, 2008

David Featherston, Director
Infrastructure Reliability Division
Public Utility Commission
P. O. Box 13326
1701 N. Congress Ave.
Austin, TX 78711-3326

Re: Project No. 32182 – *Investigation of Methods to Improve Electric and Telecomm Infrastructure that will Minimize Long Term Outages and Restoration Costs*

Dear Mr. Featherston:

Pursuant to your memo of October 15, 2008, please find attached LCRA Transmission Services Corporation's (LCRA TSC) Electric Transmission Line Right-of-Way Management Plan in response to your request that each utility update the October 2006 filings made on programs related to vegetation management and ground-based inspections for overhead facilities. Section 4.0 of the Electric Transmission Line Right-of-Way Management Plan addresses Maintenance Requirements and should answer any questions regarding overhead facilities.

If you have additional questions regarding this filing, please feel free to contact me.

Sincerely yours,

Fernando Rodriguez

Fernando Rodriguez
Associate General Counsel

c: Ross Phillips
Bob Peck
Steve Zoromsky

PUC Project No. 32182 - PUC Investigation of Methods to Improve Electric and Telecommunications Infrastructure to Minimize Long Term Outages and Restoration Costs Associated With Gulf Coast Hurricanes

LCRA TSC Facilities Within 50 Miles of the Coast

Circuit Number	Line Name	Voltage	Total Circuit Length (miles)	Length within 10 miles	Length within 10 to 50 miles	Total within 50 miles	Structure Type
T134	Flatonia - Yoakum	69	27.74		0.4	0.4	Wood Pole / H
T140	Halletsville - Yoakum	138	15.99		6.7	6.7	Wood Pole / H
T198	Yoakum - Cuero	138	13.8		13.8	13.8	Wood Pole / H
T226	Gonzalez - Cuero	138	31.93		3	3	Lattice Steel
T391	Hockley - Macedonia	138	13.7		13.7	13.7	Concrete Pole
T433	Coleto - Pawnee	345	53.9		30.4	30.4	Lattice Steel
T434	Nueces Bay - Citgo NOP	138	0.7	0.7		0.7	Underground Cable
T435	Highway 9 - Citgo NOP	138	1.8	1.8		1.8	Steel Pole
T436	Citgo NOP - Valero	138	1.8	1.8		1.8	Steel Pole
T437	Lon Hill - Nueces Bay	138	17.2	17.2		17.2	Steel Pole
T473	Rincon - Rockport	138	15.1	15.1		15.1	Concrete Pole
T474	Rockport - Fulton	69	7.3	7.3		7.3	Concrete Pole
T475	Airline - Laguna - Naval Base	69	9.4	9.4		9.4	Steel Pole/Wood H
T476	Airline - Naval Base	69	8.0	8.0		8	Steel Pole
T477	N. Padre - Pt. Aransas	69	20.1	20.1		20.1	Concrete Pole
T479	Pharr - Weslaco Sw	138	10.4		6.9	6.9	Steel Pole
T480	Weslaco Sw - Harlingen Sw	138	20.1		20.1	20.1	Steel Pole
T509	Valero -Weil Tract	138	3.6	3.6		3.6	Steel Pole
T522	Weil Tract - Lon Hill	138	10.0	10.0		10	Steel Pole
T541	Kenedy Switch - Cuero	69	45.0		6.3	6.3	Wood Pole / H
T542	Cuero - Cuero Hydro	69	2.9		2.9	2.9	Wood Pole / H
T543	Cuero - Luling City	69	52.0		3	3	Wood Pole / H
T545	Altair - El Campo	69	31.65		23.1	23.1	Wood Pole / H
T548	Eagle Lake - El Campo	69	39		29.4	29.4	Wood Pole / H
			453.12	95	159.7	254.7	

Electric Transmission Line Right of Way Management Plan

This document was prepared by:

Lower Colorado River Authority

Austin, Texas

Established September 2006

This guideline is updated every three years or as needed according to the most recent industry standards. The last revision to this document occurred on January 10, 2008.

Table of Contents

1.0 Purpose, Scope and Background

1.01 Purpose

1.01 Purpose

The purpose of this right-of-way (ROW) management plan is to provide guidance to Lower Colorado River Authority (LCRA) staff responsible for managing the transmission ROW owned by the LCRA Transmission Services Corporation (LCRA TSC*) in such a manner to ensure a safe and reliable electric system in a cost-effective and environmentally sensitive manner. This plan also will be used when LCRA performs similar work for external customers.

(Note - LCRA TSC was created in 2002 to separate LCRA's generation and transmission assets in accordance with Senate Bill 7. As part of this requirement, all transmission and transformation assets were transferred from LCRA to LCRA TSC. The LCRA TSC has no employees; therefore, all maintenance work required on LCRA TSC assets is performed through a service agreement with LCRA).*

1.02 Scope

The scope of this plan applies to any LCRA department and all LCRA workers responsible for conducting LCRA business at an LCRA TSC facility or similar work for an LCRA external customer.

1.03 Background

Ever since LCRA constructed its first transmission line nearly 70 years ago, it has been responsible for providing safe and reliable electric transmission service within Central Texas. Now LCRA TSC owns and operates over 3,500 miles of electric transmission lines in Texas. To make sure its expanding system remains safe and reliable, LCRA must perform a variety of work on a regular basis. Such work includes scheduled inspections, ROW maintenance including vegetation management and line overhauls.

In the past, the entire vegetation management effort was done by line workers. Trees also were removed with dozers or other equipment that would disturb the land. "Clear cutting" was common, with no concern for the native vegetation or species that inhabited the area. The workers of the past were not trained in the correct way of trimming trees or making the proper cuts. Their goal was simply to clear the line of any and all branches or remove any trees under and around the lines.

Clear cutting was the basic methodology used through the 1960s and into the 1970s. In the 1980s, more formal programs were established on how ROWs should be maintained. This still included clear cutting, but also included periodic trimming with dedicated tree-trimming crews. From the early practices of clear cutting to establish and maintain ROWs, to the current practice of integrated vegetation management, LCRA and the utility industry as a whole recognized the need for mandatory, industry-specific, ecologically friendly, and cost-effective ways to manage vegetation along ROWs.

Establishing an integrated vegetation management plan has actually proven to be an effective way to manage diverse aspects of vegetation maintenance, including endangered species habitat, safety, reliability and cost.

1.04 Industry Trends

In the 1990s many utilities, including LCRA, adopted an Integrated Vegetation Management (IVM) plan. This plan involved eradicating species that had the potential to grow into the danger zone of a transmission line, while preserving the native species that could never impact the operation of the transmission system. This IVM plan used herbicides to selectively eliminate certain trees while cultivating more desirable native grasses, shrubs and even trees that would never grow into the danger zone. This process of removing all species that have the potential of growing into the danger zone is still in practice today.

1.05 Content

This ROW Management Plan incorporates the best practices of LCRA's existing IVM plan and several related aspects of managing transmission ROWs, including public involvement, environmental standards, public education and land development options.

1.06 Responsibilities

The following lists the responsibilities for each LCRA department participating in this ROW Management Plan.

1.06.01 Line Operations (LO)

LO's primary responsibility is to properly maintain LCRA TSC's transmission system, including all transmission lines and associated ROWs. LO is made up of certified arborists, TDA-licensed herbicide applicators and others that are experienced in vegetation management practices for electric utilities. LO also is responsible for developing the maintenance requirements listed in Section 4.0 of this ROW Management Plan.

1.06.02 Safety, Environmental and Training (SET)

SET is responsible for developing all related environmental and safety procedures listed in Section 5.0 of this ROW Management Plan. SET also is responsible for performing the natural resource assessments prior to field activities, providing consultations, and obtaining permits when necessary.

1.06.03 Real Estate Services (RES)

This group supports LO activities relative to land and landowner issues and is primarily responsible for developing and adhering to the processes listed in Section 3.0 of the ROW Management Plan.

1.06.04 Community Services

This group is responsible for developing and supporting Section 6.0 on public education and Section 7.0 on land development options. This group will perform various tasks listed in these sections in support of properly managing LCRA TSC's ROWs.

1.06.05 Transmission Operations Public Policy (TOPP)

This group is responsible for reviewing all potential ROW maintenance-related issues that could impact the public. In addition, this group is responsible for making recommendations to management concerning each identified issue this group reviews. With management approval, this group may be responsible for developing action plans, media plans, public meetings or other related public forums to resolve or mitigate the identified issues.

1.06.06 Management Oversight Committee (MOC)

The MOC is comprised of managers from each department within Transmission Services. This committee is responsible for reviewing and approving revisions or updates to the ROW Management Plan.

2.0 Operational Requirements

2.01 Public Safety

Preventing electrical contacts and fires related to vegetation contact with power lines is in the best interest of the public.

As the owner/operator of more than 3,000 miles of high-voltage electric transmission lines, LCRA TSC is committed to protecting the safety of the public, its customers and its workers. In that 3,000 miles of transmission lines, there are more than 2,500 miles of ROW that LCRA manages for LCRA TSC.

Transmission lines can sag several feet during hot weather or when carrying heavy electrical loads.

Electricity can arc or "flashover" from wires to nearby trees without actual contact being made, causing electric current to flow through the tree to ground. When this happens, it can endanger the public's safety, possibly causing injury or death to anyone near the tree. Flashover also can cause fires that could damage property and trees or other objects that are in the "danger zone" of an energized transmission line. Because of the extreme risks associated with power line arcing to trees or other objects, LCRA's program to remove all trees or objects that have the potential to come in contact with or cause an arc from a transmission line is our highest priority.

Texas, like most states, has adopted the National Electrical Safety Code (NESC). The NESC establishes minimum clearances between tree limbs and power lines to ensure safety to people and property.

2.01.01 Electrical Contact

Trees conduct electricity and create potential safety hazards when branches grow too close to power lines and come into contact with the wires. When this happens, electricity travels through the tree to the ground, thus energizing the tree and the ground around the base of the tree, endangering anyone in or around the tree. For example, an unsuspecting child could climb an overgrown tree, come in contact with a live power line and risk electrocution.

2.01.02 Electrical Fires

Arcing between any part of a tree and a transmission line has the potential to start a fire. Arcing distances vary based on factors such as voltage and ambient temperatures.

While not as common as a power outage, issues surrounding brush fires caused by tree-to-power-line arcing or contacts are another reason that electric utilities strive to maintain the distances between power lines and other things. Whether

by a direct contact or through an arcing event, vegetation can easily become ignited, resulting in a very dangerous situation for people, animals and property.

Factors surrounding arcing events can vary based on atmospheric conditions and the condition of the system. During summer, when fires are more likely to occur, demand for energy is highest. With more energy being transferred through an electrical line, the heat and load of the line cause it to dip or "sag." Couple that with atmospheric conditions such as humidity (water vapor is an excellent source for conduction) and/or wind, and you find yourself with a situation that can lead to loss of power or fire or both.

All these factors can lead up to an event that can be mitigated with the proper vegetation maintenance procedures.

2.02 System Reliability

The reliability of the LCRA TSC transmission system is vital to the power grid integrity for Texas as well as to our customers. One of the major impacts to reliability of an electrical system is contact with vegetation. Therefore, the course of action is to remove the threat of vegetation contacting the power lines. Other impacts to reliability are encroachments that have the potential to create access or safety problems. These can be addressed by a program that routinely identifies issues and deals with them effectively.

2.03 Overview of Easement Rights

An easement gives LCRA TSC specific rights on public or private property. Generally, this agreement provides the right to construct, maintain and operate a transmission line. Each easement must be reviewed to determine what LCRA TSC's rights are prior to any activities that impact private property. Once this has been done, the appropriate action should be followed.

2.04 Joint Ownership Coordination Process

Jointly owned or joint-use facilities that are located on the same structure or within the same ROW should have an executed agreement that specifies which utilities are responsible for the ROW management. It is beneficial for both utilities to discuss the most cost-effective way to maintain these facilities as well as those that run parallel to each other. Even though some of these assignments are identified in older joint agreements, license agreements or other appropriate agreements should be set up with all utilities involved in joint-use facilities to identify which party is responsible for managing the ROW.

3.0 Public Involvement Requirement

The following identifies the measures used when performing maintenance on the right of ways to achieve sufficient clearances for the protection of the transmission facilities.

3.01 Landowner Communication

In its efforts to ensure a safe and reliable transmission system, LCRA staff attempts to minimize disruptions to individuals and businesses as much as possible while maintaining the ROW.

LCRA encourages the public to contact staff with any questions or concerns about its activities. When members of the public inquire about LCRA TSC maintenance projects, they should receive full and open disclosure of LCRA TSC maintenance plans, data, and environmental information.

LCRA believes that public involvement builds a positive relationship with landowners and other stakeholders who are affected by transmission facilities. Actively informing and involving the public builds credibility and maintains our reputation as a good neighbor.

Some of LCRA TSC activities, particularly the construction and maintenance of transmission facilities, may impact landowners and the general public. To help avoid costly delays and minimize inconvenience to landowners, LCRA provides mail notice of transmission activities to owners of land that are crossed by or adjacent to LCRA TSC facilities. The purpose of the notice is to provide information about the project, why the work is necessary, and how to contact LCRA with questions or ask for assistance.

3.02 Oversight and Authority

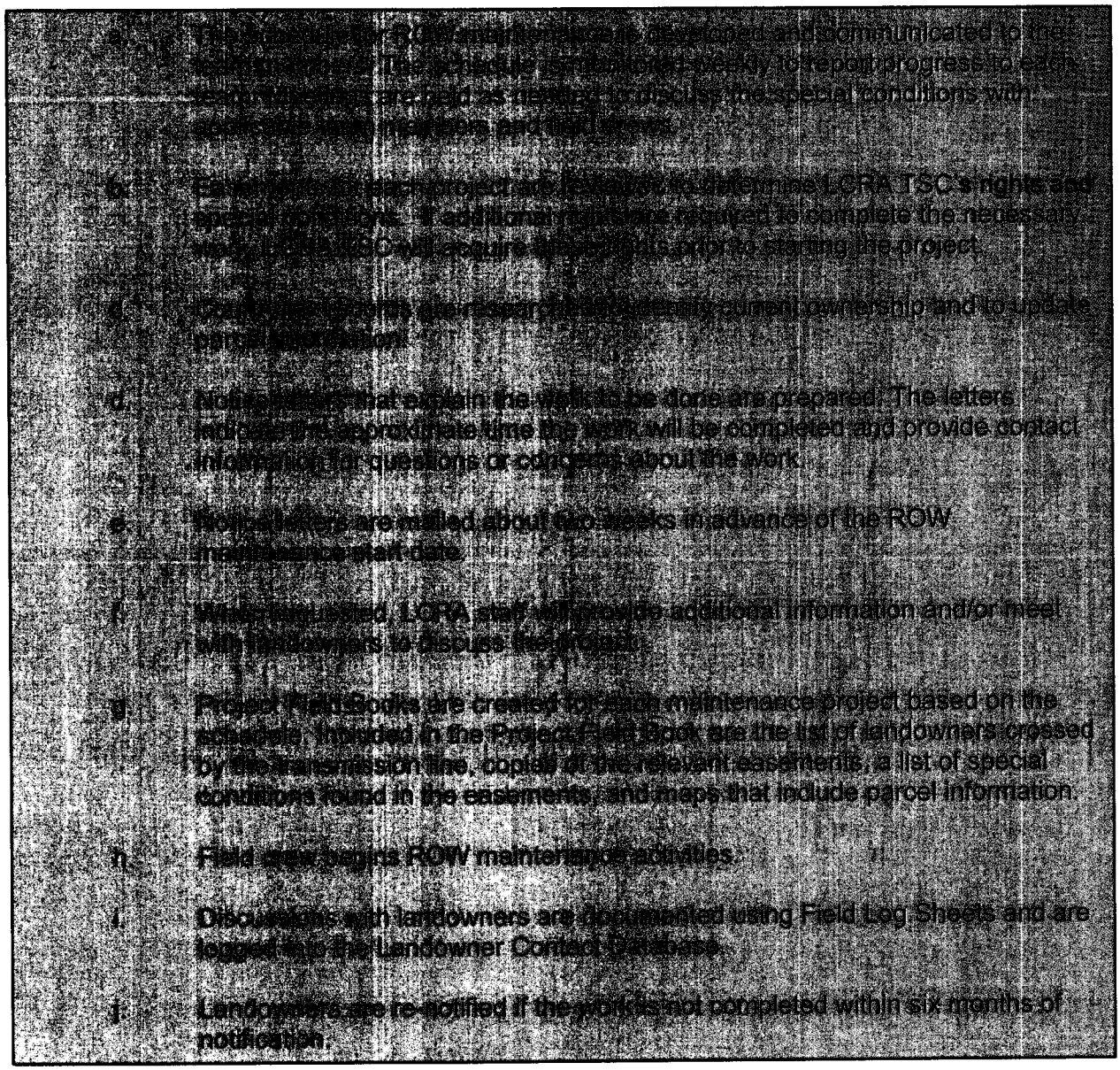
LCRA / LCRA TSC Board Policies

LCRA staff adheres to the following LCRA and LCRA TSC Board policies when working with the public on ROW maintenance projects:

1. LCRA Board Policy - Ethics
2. LCRA TSC Board Policy - Authority and Responsibilities
3. LCRA TSC Board Policy - Financial Policy
4. LCRA TSC Board Policy – Financial Planning
5. LCRA TSC Board Policy - Land Resources
6. LCRA TSC Board Policy - Property Rights
7. LCRA TSC Board Policy – Transmission and Transformation Service

3.03 Notification Process

LCRA provides notice to landowners prior to entering the ROW for regularly scheduled inspections that include heavy equipment, vegetation clearing, and transmission line overhauls. Notification to landowners is coordinated through the Real Estate Services (RES) department. Working with LO, the Safety, Environmental and Training departments, and GIS, RES schedules, coordinates and oversees tasks associated with notification for maintenance projects. The process to notify affected landowners is further described below:



A Field Log Sheet is listed as Attachment A.

3.04 Permission for Herbicide Use

The notification process outlined above also is used when notifying the landowners about herbicide applications on ROWs. Herbicides are used on spot locations such as around structures, gates, fences or on tree stumps after removal. If the right is not already granted in the easement, written permission must be obtained from the property owner prior to broadcast herbicide application, using cut-stubble treatment or selective foliar herbicide.

LCRA includes permission letters in the mail notices requesting landowners to authorize the application of herbicide in the ROWs by way of signature agreement. Signed permission letters are maintained by RES permanently after herbicides have been applied. In some instances, easements may be amended to include the rights to apply herbicides in the future.

The Standard Notice Letter is listed as Attachment B.

The Herbicide Permission Letter is listed as Attachment C.

3.05 External Customer Projects

When performing work on distribution and transmission systems owned by other utilities, LCRA staff will adhere to its public involvement practices and policies as stated in this ROW Management Plan.

3.06 Emergency ROW Clearing

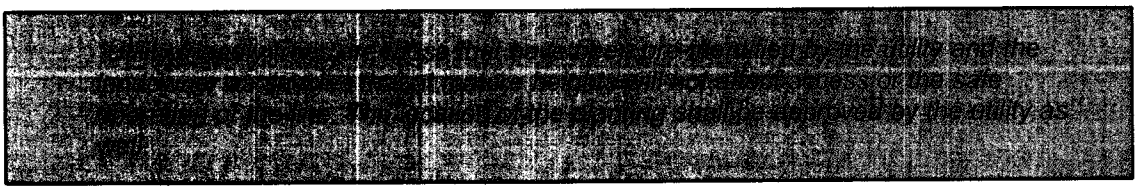
In the event of an emergency situation where vegetation is dangerously close to transmission facilities and the safety of the line or the public is at risk, the dangerous vegetation is removed immediately without advance notification. Verbal and/or written communication with landowners is accomplished as soon as possible after the clearing is complete and safety is restored.

Safety issues are always addressed and remedied. Vegetation that poses a danger to transmission facilities or the public will be, at a minimum, cleared to the ANSI Z133.1 minimum clearances (see Section 4.06 Clearance Standards for distances) taking into account ultimate sag and swing of the line.

The Emergency Notification Letter is listed as Attachment D.

3.07 Tree-Removal Concerns

Where easements cross portions of land that has been identified as endangered species habitat or potential habitat, or is maintained as part of a recreational area, a greenbelt, a trail system, or the like, LCRA staff will work directly with affected landowners and stakeholder groups. The mitigation process is to resolve issues and concerns about the removal or trimming of trees in the ROW while ensuring that safety clearance requirements are maintained. We encourage the planting of utility friendly trees in the ROW.*

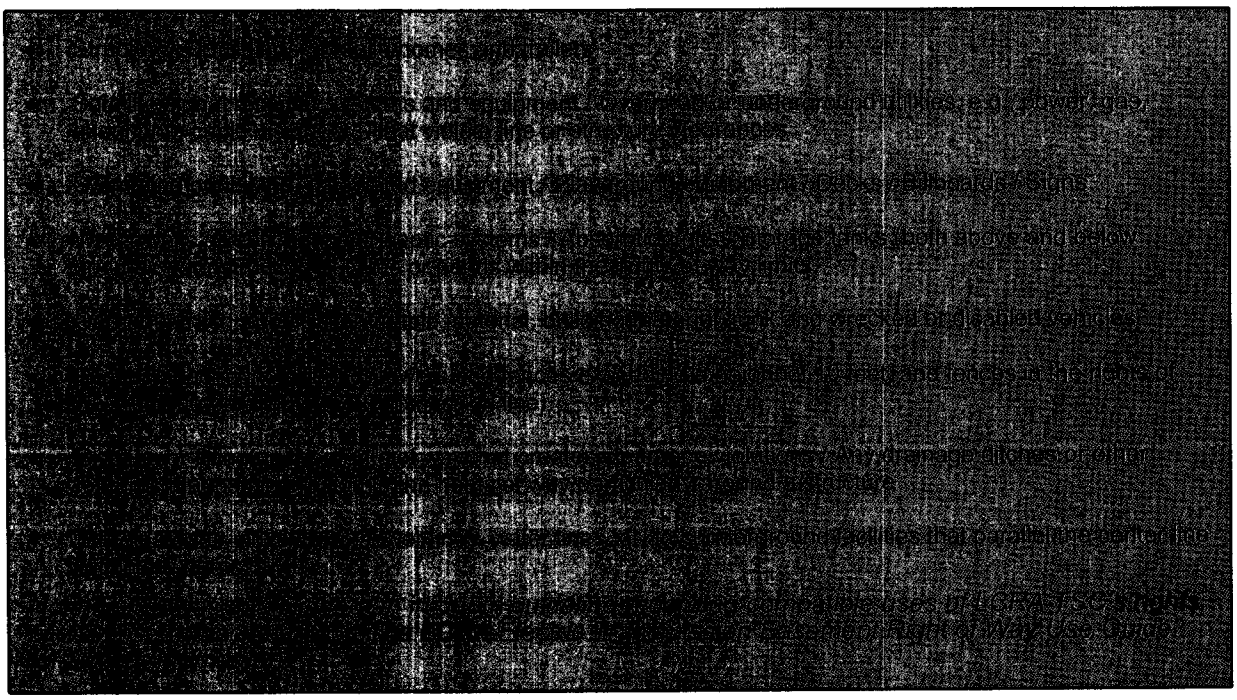


3.08 Encroachments

Encroachment identification and tracking is primarily the responsibility of LCRA's Transmission Services district operators and RES. However, ROW maintenance crews as well as other LCRA staff may identify encroachments during routine activities. The first step in addressing encroachments is to know what constitutes an encroachment and, once identified, what process to follow in documenting and communicating all pertinent information. LCRA evaluates the presence of encroachments when inspecting or evaluating transmission facilities for maintenance, upgrades, rebuilds, etc.

3.08.01 Identifying Encroachments

An encroachment is something within the easement that creates access problems or jeopardizes the safe and reliable operation of the line. Encroachments can be listed in two main categories: Safety and Access. The following are examples of potential encroachments:



3.08.02 Identification and Communication Process for Existing Encroachments

1. Encroachments are identified and categorized as safety or access encroachments.

2. Encroachments are documented by taking photographs and by noting a description and the location of the encroachment.

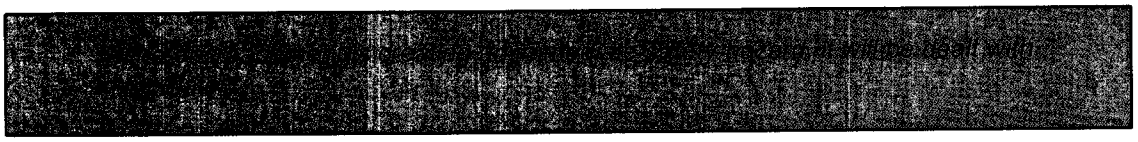
3. The information is logged into the encroachment database.

4. An initial course of action is determined. Actions could include the following:

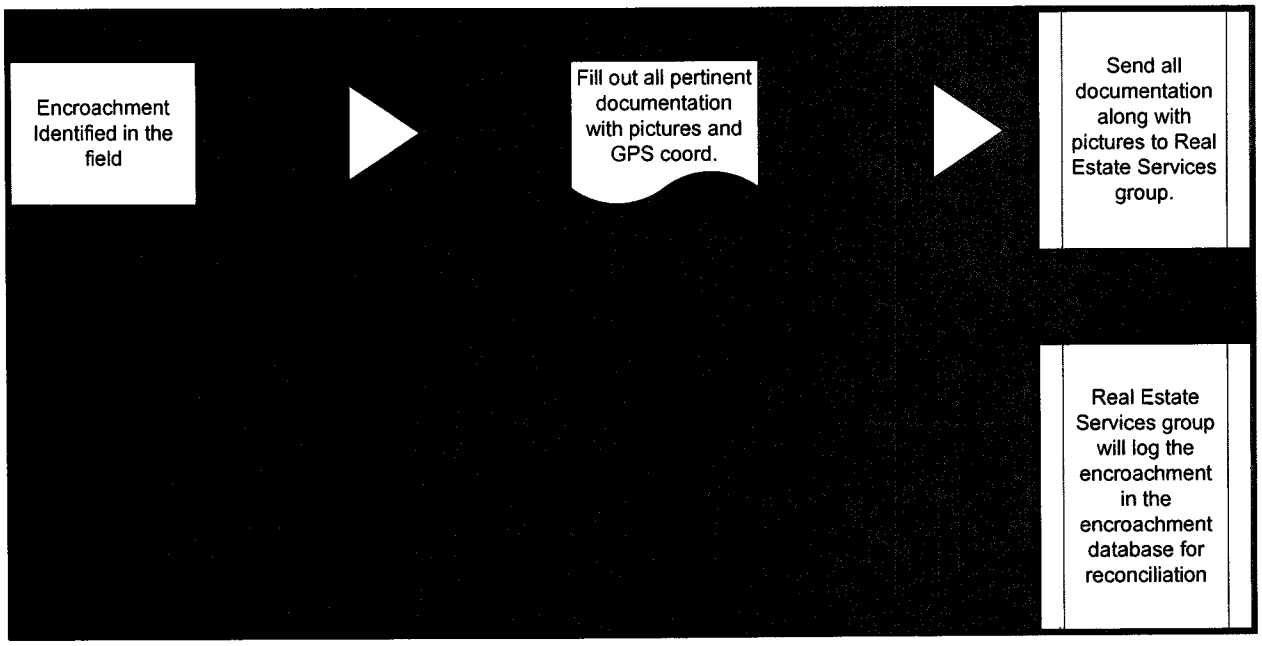
   a. Contact landowner by letter or phone notifying them that a possible safety or access issue has been identified in the ROW; or

   b. Meet with the landowner to discuss issue; or

   c. Other options depending on the situation, as management determines based on additional review.*



Below is the flowchart to follow when an encroachment has been identified:



3.08.03 Dealing With Violations

When encroachments are identified, LCRA staff will review all available information and consider alternative courses of action to assure the safe and reliable operation of the line. When possible, selected options to handle encroachments will be negotiated with the landowners.

3.08.03(a) Facility Redesign

Depending on the nature of the encroachment, LCRA staff may review the design of the existing and/or proposed transmission structures to determine if redesigning the facilities within the existing easement corridor would be feasible to correct the encroachment issue.

3.08.03(b) Special Conditions

LCRA staff will review the existing easements to determine if any existing special restrictions or special conditions could preclude LCRA TSC from eliminating the encroachment situation. Amending the easements, and/or considering other options to remove the encroachment situation will be reviewed.

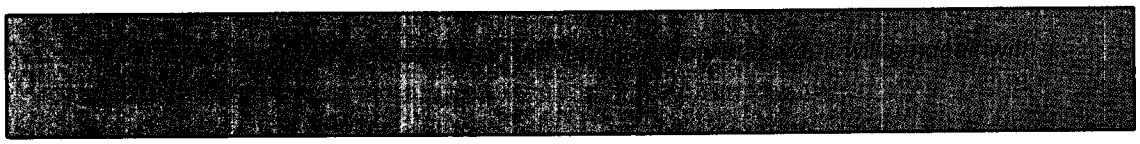
Once all the available information has been reviewed, a course of action will be determined. Actions could include the following:

a. Send a letter or call the landowner requesting that the encroachment be removed or appropriately addressed so that safety and access is restored;

b. Meet with the landowner to discuss encroachment and explain how it is affecting our ability to safely operate and maintain the transmission line, discuss alternatives for resolution

c. Follow up inspection to make sure encroachment has been removed

d. If landowner is unresponsive, forward issue to TOPP for guidance and resolution*



3.08.04 Permission Process

LCRA TSC does not allow its easements and the area under the transmission line to be used for activities that will limit access or create unsafe situations. Therefore, LCRA requires that plans using LCRA TSC ROW be submitted to RES for review. The review process will include the following:

1. The individual or business wanting to construct inside the easement submits its plan to RES.

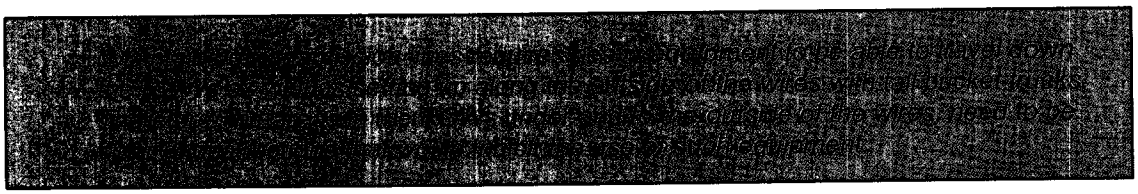
2. RES will gather and review the easement, the plan and profile and any other information pertaining to the location of the proposed construction.

3. All of the information is reviewed by Line Engineering and LO departments.

   a. Line Engineering will review the proposed construction to determine if it would violate electrical clearance requirements or create other safety issues.

   b. LO will review the request to see if the obstruction would create an access, reliability or potential safety problem in the future.*

4. Once the plan has been reviewed and a decision has been made about the compatibility of the site plan with LCRA TSC's easement and facilities, RES will follow up with a response letter to the requestor.



The LCRA Electric Transmission Easement Right-of-Way User Guide is listed as Attachment E.

3.09 ROW Maintenance Media Plan

All calls or requests from the media are forwarded to Corporate Communications for response. Responding to media requests about maintenance projects will be coordinated by Corporate Communications. Each project will be reviewed on a case-by-case basis. The communication plan will address history, messaging, audience, time line and print materials needed to support the plan. This includes any press releases or media statements needed for the project.

4.0 Maintenance Requirements

The objective of a maintenance program is to implement a cost-effective program that will minimize the instances of public safety hazards and maximize service reliability.

4.01 Maintenance Management System (MMS)

The MMS is a management-approved LCRA document that includes all the processes and procedures used to maintain LCRA TSC's transmission and transformation system assets, including all transmission lines, structures, power transformers, and other related substation equipment. However, the MMS does not address ROW maintenance requirements. Because of the many special requirements associated with ROW management work, a separate ROW Management Plan was created. Collectively, the MMS and the ROW Management Plan make up the maintenance philosophy used by LCRA to maintain all of LCRA TSC's transmission and transformation assets. These two documents are linked to assure that all related safety and environmental practices are consistent. The MMS can be found at:

http://insidetransmission.lcra.org/maintenance/policy_procedures.htm

4.02 Coordination on Capital Improvement Projects (CIPs)

Coordination and input into development of CIP line projects by the LO group is beneficial to the overall cost-effectiveness and efficiency of the vegetation maintenance program. By being included in the process at the beginning, LO has a stake in the project and can ensure that the maintenance specifications are identified and documented for completion. The existing CIP process includes this provision as part of the planning efforts and Conceptual Design Documents (CDD).

4.03 ROW Requirements

4.03.01 Concept Design Documents (CDD) Input Process

ROW clearing and maintenance considerations are included in engineering's CDD for new and rebuilt transmission projects. Such considerations outline ROW clearing and maintenance practices for removing vegetation prior to line construction and for keeping the ROW free of any vegetation that may potentially interfere with the safe operation of the line.

4.03.02 Easement Development Process

As part of the Certificate of Convenience and Necessity (CCN) process required by the Public Utility Commission of Texas (PUCT) on all proposed new

transmission lines, LCRA's Legal, Real Estate Services, and LO departments work together to develop language used on each transmission line easement. This language is typically based on the transmission line requirements in the CDD. This language states the easement widths and rights needed to properly construct, operate and maintain LCRA TSC assets and the ROWs. Specific language may be included to address vegetation maintenance requirements, including specific requirements in environmentally sensitive areas and/or the use of herbicides, access rights needed to allow equipment to travel along the ROWs, etc.

4.03.03 Environmental Assessment (EA) Process

An EA is performed before route selection in support of LCRA TSC's application for a CCN. The EA is intended to provide information on certain environmental and land use factors contained in Section 37.056(c)(4) of the Texas Utilities Code, as well as address relevant questions in the CCN application to the PUC. The EA may be used in support of any other local, state, or federal permitting requirements, if necessary.

After approval of an application for an amendment to LCRA TSC's CCN, and prior to construction, a detailed Cultural Resource Assessment and Natural Resource Assessment will be performed on the approved transmission line route. Depending on the results of these assessments, permits or regulatory approvals also may be required from the Texas Historical Commission (cultural resources), U.S. Army Corps of Engineers (wetlands), and U.S. Fish and Wildlife Service (endangered and threatened species).

Cultural Resources and Natural Resources assessments are performed before scheduled ROW maintenance work (Refer to Section 5.0).

4.03.04 Right of Way Maintenance Assessment (MA) Process

An MA is performed by LO workers at the beginning stages of CIP and maintenance projects. These assessments are intended to identify work that has been completed on CIP projects or will be done on future maintenance projects to make sure that the ROWs are consistent and meet the current standards included in this ROW Management Plan. MAs are documented using a standard MA form that will be used to develop a budget for each project. The same documentation process will be utilized for each type of project (CIP or Maintenance).

The LCRA T/L Right of Way Maintenance Assessment Form is listed as Attachment F.

4.03.04 (a) CIP Projects:

1. LO workers will visit the proposed line route prior to completion of the design and prior to land acquisition to identify potential vegetation issues. This type of information can be useful to the engineer who will specify clearing requirements in construction documents and can be provided to ROW agent in the easement acquisition process.

2. Pre-Construction Meeting – At this time, a representative from LO can be on hand to explain the expectations of what work is specified in the engineers' design and required in the ROW to construct and eventually maintain the ROW.

3. Post-Construction Critique Visit – LO workers will visit the project site, and all discrepancies (missing keys, hardware problems, unfinished work, work not to standards, etc.) will be identified and documented pertaining to both the ROW itself and the transmission line assets. The list of discrepancies will be reported to the LCRA project manager. All discrepancies will need to be resolved before LO accepts the project as complete.

4.03.04 (b) Maintenance Projects:

1. Prior to the budget development process, LO workers will visit all ROWs scheduled to be maintained in the next fiscal year and perform an MA. During this annual MA, all maintenance tasks and materials will be identified and documented. Any potential sensitive or environmental areas also will be noted.

2. Once the annual MA is complete, the documentation is given to the LO supervisor or reliability coordinator. The LO supervisor and the reliability coordinator will use the assessment to develop a cost and time estimate of what is needed to complete the identified work. This information will be included in the LO annual budget for the next fiscal year, pending management's approval.

3. Any potential sensitive or environmental issues identified during these assessments will start the RES planning process. Depending on the level of sensitivity, a media plan also may be developed at this time (see Section 3.09).

4.03.04 (c) Documentation Process:

1. The documentation process will consist of using the information collected on the MA log to add comments or specific instructions directly onto the engineering plan and profile document. The engineering plan and profile document includes all the engineering specifics of the assets (i.e. transmission towers, footings, conductor sag and swing, etc). Once all the information from the MA log is documented on the engineering plan and profile, it will become the official record used to carry out the scheduled ROW maintenance work.

4.03.05 Pre-Work Study

The Pre-Work Study is the process that is performed just prior to any scheduled work on the ROW. This final research and issue identification process allows LCRA to assure that all the information collected is accurate. This process consists of the following elements:

4.03.05(a) Landowner Special Conditions

Before any scheduled field work starts, a final review of all the identified current landowner(s) and documented special conditions is performed by the LO and RES departments. This review makes sure that all restrictions or practices regarding the site are identified. Special conditions may be issues on ROW that have been documented from recent contact with landowners. This may include anything from wanting to be called before a worker enters the ROW to special directions of accessing the transmission line. Special conditions or requests are maintained by the RES department and this information is located in the Landowner Database (http://sycorax/landowner)

4.03.05(b) Environmental Conditions

A final review of the environmental assessments and summaries are conducted before any scheduled field work is performed. Every summary that SET has completed for Maintenance projects can be found on Line Maintenance's Intranet site at the following address:
http://insidetransmission.lcra.org/maintenance/line_services/line_services.htm
Click on Environmental Assessments.

4.03.05(c) Line Specifications and Characteristics

Identification of all conditions or features pertinent to the site, such as ROW dimensions, site access restrictions, existing structures, etc. is performed prior to any scheduled work on the ROW. This is achieved by reviewing the final engineering plan and profile documents and the MA to make sure all of the information was properly recorded.

4.03.05(d) Pre-Work Study Documentation Form

A Pre-Work Checklist that contains the above information along with other actions that require attention must be completed by the person in charge of the work before the scheduled work begins. In addition SET will provide an Environmental Summary and a marked plan and profile identifying environmentally sensitive areas, and best management practices to minimize potential impacts. This completed document is provided to the appropriate LO supervisor and once approved, work can begin as scheduled.

The Pre-Work Study Checklist is listed as Attachment G.

4.04 System Patrols

Line patrols consist of traveling down each transmission line, identifying and documenting all discrepancies (patrol discrepancies include but are not limited to the following: trees getting close to the wires, to inadequate clearance between vegetation and electrical conductors, eroded or damaged creek crossings, rotten or woodpecker-damaged poles, contaminated insulators, etc., etc.) on the line and ROW that might threaten the reliability of the line. These patrols can be done either by ground, aerially or both. Patrols are completed on all LCRA TSC transmission lines in the system and the intervals are identified in the *Standards for Inspection and Maintenance of LCRA Transmission Services Corporation Equipment and Facilities.* The interval depends upon the criticality of the line to the system, anticipated growth of vegetation, etc. These intervals are flexible and can be adjusted if for instance there are areas of fast growing vegetation that may jeopardize clearances to the conductors. The current schedule of patrols can be found in MAXIMO.

***Immediate communication process of imminent threats to the public or system:**

1. **Imminent threats to the public or transmission system are identified in the field**

2. **The person identifying the issue shall notify SOCC immediately.**
3. **Depending on the type of threat, the appropriate action such as a temporary reduction in line rating, switching line out of service, dispatching of maintenance crews, etc. may be required.**

The Line Patrol Report is listed as Attachment H.

4.05 Maintenance Cycles

Maintenance cycles are established based on industry best practices. Utilities establish these cycles based on several criteria. The criteria used to establish a maintenance cycle for vegetation vs. line assets differ. To establish a meaningful cycle to maintain vegetation, utilities typically look at the vegetation growth rates for species in the region, monitor average rainfall, and other variables specific to the ROWs being managed. To establish a meaningful maintenance cycle for transmission line assets, utilities typically consider criticality of the circuit, asset age, equipment failure rates, planned upgrades and other variables specific to the assets being managed. However, both cycles are influenced by the criticality of the circuit being maintained and the available funding needed to complete the work. Cycles may be different per ROW or per line, depending on the variables that exist.

4.05.01 Right- of-Way (ROW) and Line Maintenance Process

Scheduled ROW and Line maintenance intervals on all LCRA TSC owned facilities are identified in the ***Standards for Inspection and Maintenance of LCRA Transmission Services Corporation Equipment and Facilities***

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4.06 Clearance Standards

Development of optimal clearance standards of transmission lines from vegetation factors are based on worker and public safety, conductor sag and wind displacement due to projected loading and/or ambient temperature, environmental sensitivity (as addressed in Section 4.08.05 (b)), effect of the target vegetation on electric service reliability, vegetation density and growth rates, site access requirements, cost effectiveness, and aesthetics. Below are several Codes and Regulatory agencies that LCRA TSC follows in the management of vegetation on the transmission ROWs.

4.06.01 Texas Utilities Code (TUC)

Section 38.004 of the TUC requires that "a transmission or distribution line owned by an electric utility or an electric cooperative must be constructed,

operated, and maintained, as to clearances, in the manner described by the National Electrical Safety Code Standard ANSI (c)(2), as adopted by the American National Safety Institute and in effect at the time of construction."

4.06.02 National Electrical Safety Code (NESC)

Link to NESC: http://standards.ieee.org/nesc/

Considered by many in the electric utility industry to be the most widely accepted guideline for vegetation maintenance work, Rule 218 of the NESC states that the purpose of its rules is the safeguarding of persons during the installation, operation, or maintenance of electric supply and communication lines and associated equipment. Furthermore, the NESC states that these rules contain the basic provisions that are considered necessary for the safety of employees and the public under specified conditions and that this code is not intended as a design specification or as an instruction manual.

NESC Rule 218 specifically states the following regarding vegetation maintenance:

"Trees that may interfere with ungrounded supply conductors should be trimmed or removed. Note: Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage, and sagging of conductors at elevated temperatures are among the factors to be considered in determining the extent of trimming required."

This rule also states:

"At Line Crossings, Railroad Crossings, and Limited-Access Highway Crossings. The crossing span and the adjoining span on each side of the crossing should be kept free from over-hanging or decayed trees or limbs that otherwise might fall into the line."

The rule does state when trees need to be trimmed or removed, but does not give any definite clearance distances for vegetation.

4.06.03 North American Electric Reliability Council (NERC)

NERC's mission is to ensure that the bulk electric system in North America is reliable, adequate and secure.

On February 7, 2006 the NERC Board of Trustees adopted Standard FAC-003-1 the Transmission Vegetation Management Program. The purpose of this standard is to improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission ROWs and minimizing outages from vegetation located adjacent to ROW, maintaining

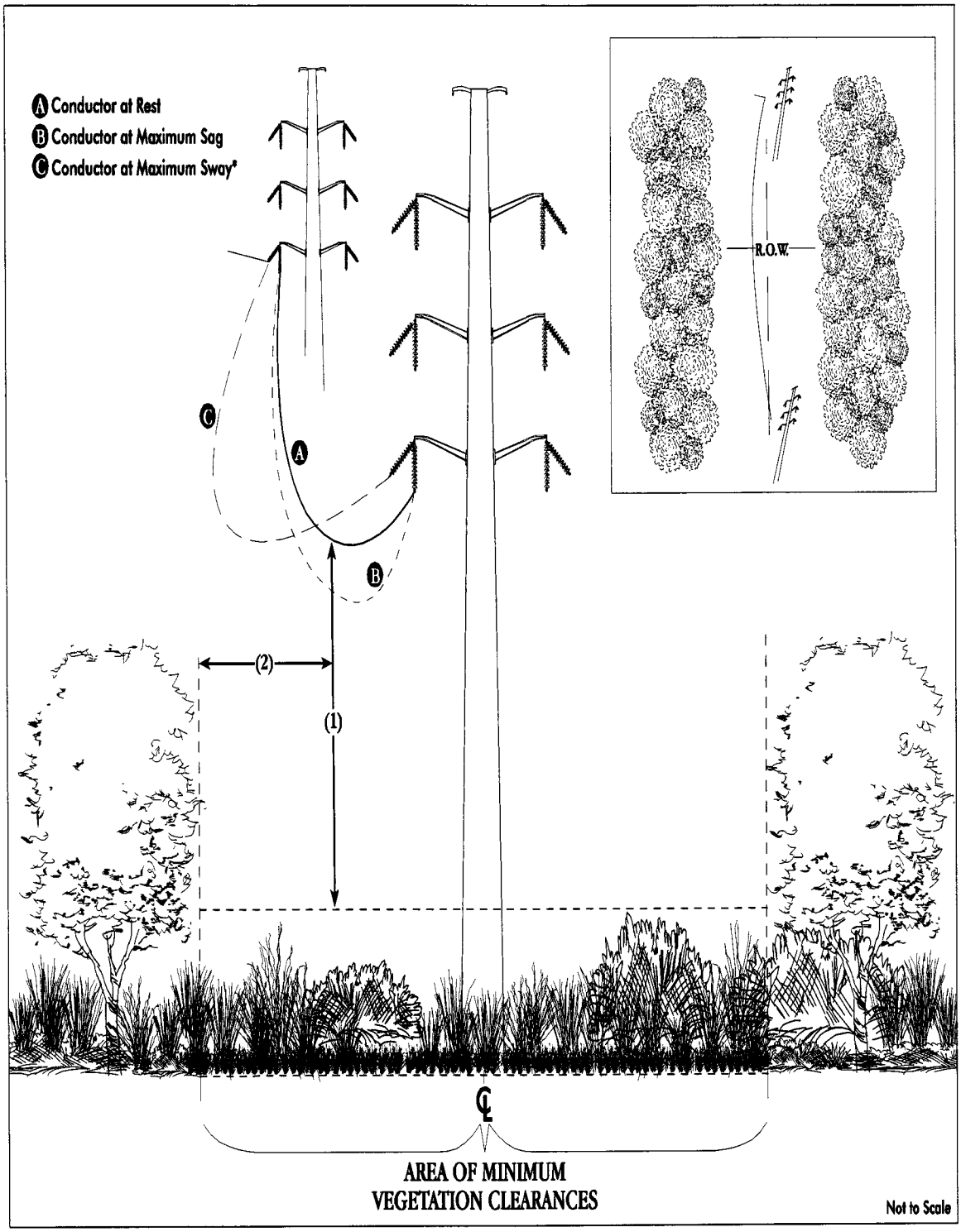
clearances between transmission lines and vegetation on and along transmission ROW, and reporting (see 4.18) vegetation related outages of the transmission systems to the respective Regional Reliability Organizations (RRO) which is the Electric Reliability Council of Texas (ERCOT) in Texas along with NERC.

One of the requirements of this standard pertaining to clearances requires the Transmission Owner to establish clearances to be achieved at the time of vegetation management work as Clearance 1 (see Table 1 (a) below). In addition, the Transmission Owner shall also establish and maintain a set of clearances identified as Clearance 2 (see Table 1 (c) below) to prevent flashover between vegetation and overhead ungrounded supply conductors.

4.06.04 American National Standards Institute (ANSI)

ANSI standards are widely used in the vegetation management industry. These are standards that are developed and published by the International Society of Arboriculture. LO uses several of these in the management of vegetation on the ROWs. One is ANSI A300 (Part 1) – 2001 "Standard Practices (Pruning) which identifies the proper pruning techniques for trees (see 4.09). The other is ANSI Z133.1 "Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush-Safety Requirements" which in Table 1(b) identifies the minimum approach distances from energized conductors for unqualified line-clearance workers. In order to ensure safe distances around energized conductors, the clearance distances on the various voltages used by LO to identify the "Danger Zone" (see 4.07.03) around the conductors at their normal rest position listed in Figure 1, Table1(b) below. Figure 2 shows an example of a typical minimum clearance distance for 138kV ROW Tree Clearing Area.

Figure 1:



*AREA OF POTENTIAL BLOWOUT IS DETERMINED BY SEVERAL FACTORS INCLUDING BUT NOT LIMITED TO WIND SPEED, STRUCTURE DEFLECTION, TEMPERATURE, AND LENGTH OF TRANSMISSION LINE

Note: Dimensions marked are as shown in columns 1 and 2 of table below.

Table 1 (a):

Nominal Voltage	*Minimum vegetation clearances from the conductor required at the time of vegetation management work to achieve a 5-year cycle *(NERC Clearance 1)*	
	1	*2*
	Vertical Dimension	*Horizontal Dimension*
69 kV	25'	25'
138 kV	28'	28'
345 kV	35'	35'

For all voltages—The space vertically above the transmission line must be kept clear of vegetation at all times.

*Additional clearance may be needed in order to meet NERC Clearance 1 requirements *(clearance requirements for critical infrastructure)* based on sag and sway calculations as designed by the Engineer and specified in construction documents and as-builts.

Clearance Note: NERC Clearance 1 *(see 4.06.03)* = NERC Clearance 2 (minimum)+ Tree Growth + Conductor Sag and Sway. For NERC Clearance 2, see Table 1 (c).

Environmental *Note: Clearing vegetation per standards referenced above that is in potential habitat for endangered species will be managed by SET on a case by case basis .Clearing will be limited to the minimum required by the standard, will be conducted outside of the breeding season for the identified species, and will be done in consultation with U.S. Fish and Wildlife Service.*

Table 1 (b):

Nominal Voltage	*The arborist clearance distances below identify the safety area that surrounds the energized wires of a transmission line which compromise a portion of the Danger Zone (see 4.07.03):*	
	1	*2*
	Vertical Dimension	*Horizontal Dimension*
69 kV	10'9"	10'9"
138 kV	13'2"	13'2"
345 kV	20'5"	20'5"

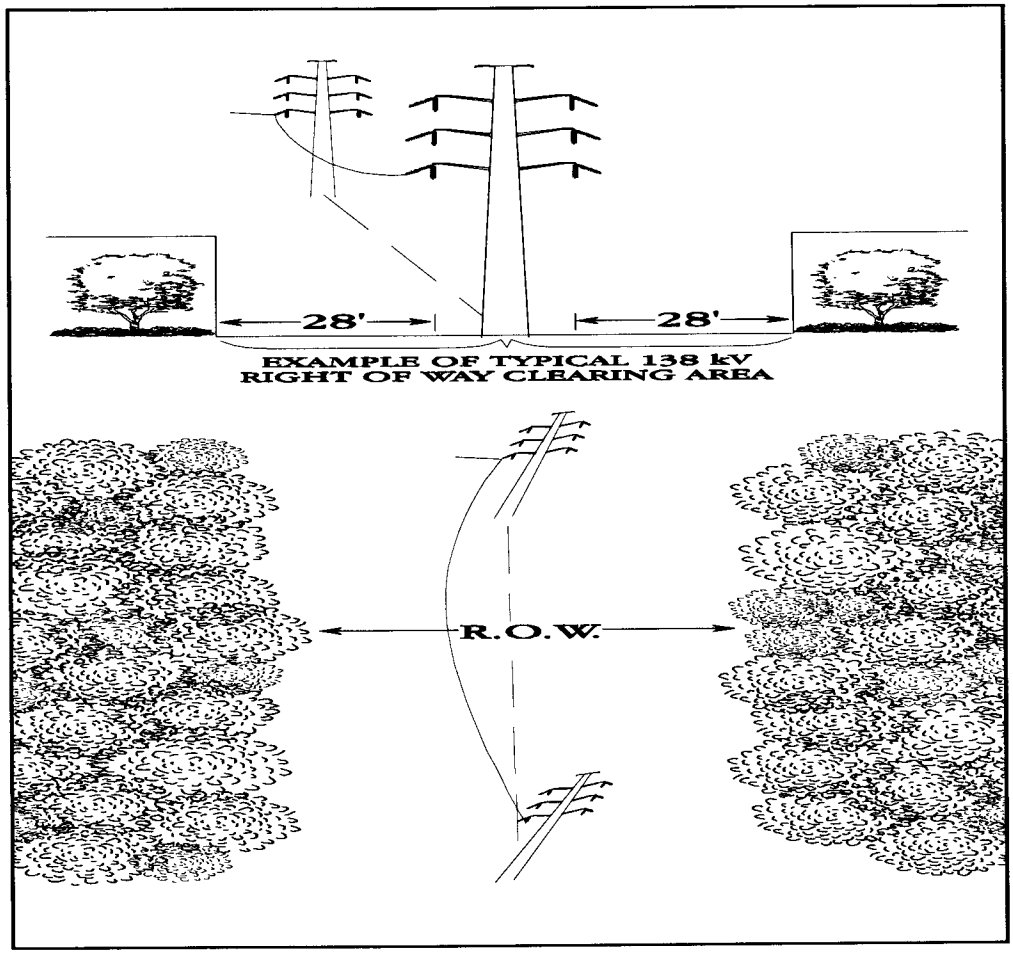
Note: Vegetation encroaching into this area is identified and priorities for action are noted in the work management system. Conductor sag and sway under high winds plus electrical clearance requirements may exceed these values. Thus, vegetation management should not be performed under these high wind conditions.

Table 1 (c):

Nominal Voltage	NERC Clearance 2 : (see 4.06.03)	
	1	*2*
	Vertical Dimension	*Horizontal Dimension*
69 kV	1.3'	1.3'
138 kV	3.0'	3.0'
345 kV	9.5'	9.5'

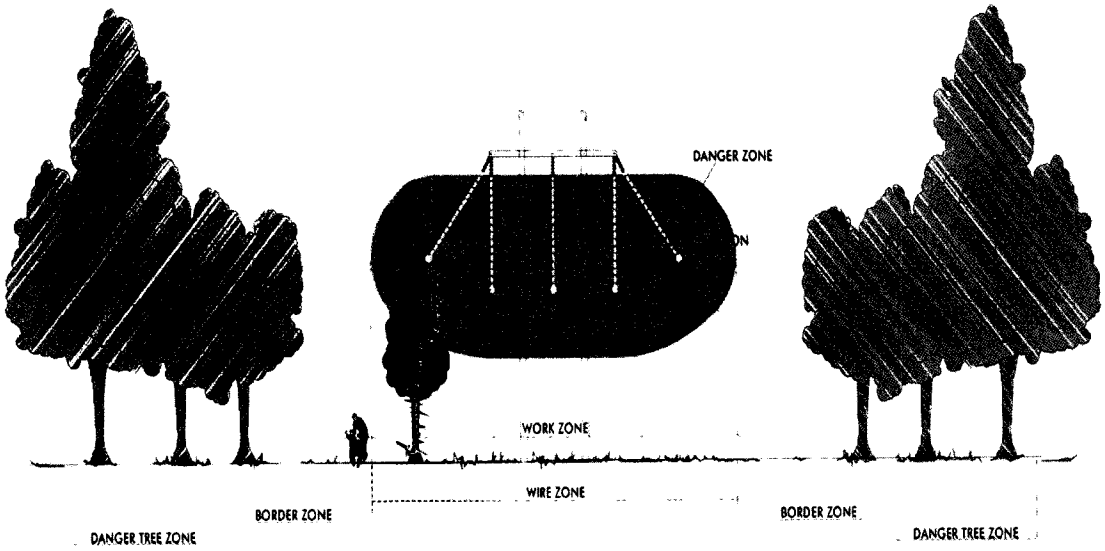
Note: prevent flashover between vegetation and overhead ungrounded supply conductors Vegetation encroaching close to this area is identified and priorities for action are noted in the work management system. *NERC Clearance 2 distances are based on IEEE Standard 516-2003 Guide for Maintenance Methods on Energized Power Lines, Section 4.2.2.3 Table 5 and Table D.3 when system transient overvoltage factors are not known).*

Figure 2
(example of a typical 138kV ROW Tree Clearing Area)
(Minimum clearance distance for 138kV)



4.07 Defined Zones

Several identified zones around transmission lines and structures are commonly used throughout the industry in vegetation management. The following graphic illustrates the various zones defined in this section.



Note –This diagram is for illustration purposes only. This illustration reflects the various defined zones around a transmission line. The Danger, Wire, Work, Border and Danger Tree zones will vary from line to line depending on such things as type of structures, voltage, ROW width, span lengths, conductor sway, easement restrictions, and sensitive environmental areas that contain endangered, threatened, or rare species and/or their habitats.

4.07.01 Border Zone

The Border Zone is defined as the area from the outermost conductors at their ultimate sway position to the edge of the easement. Vegetation of low to medium shrubs, forbs and grasses are desired in this zone due to the fact that this area needs to be accessible by large equipment in the performance of maintenance and emergency activities on the lines.

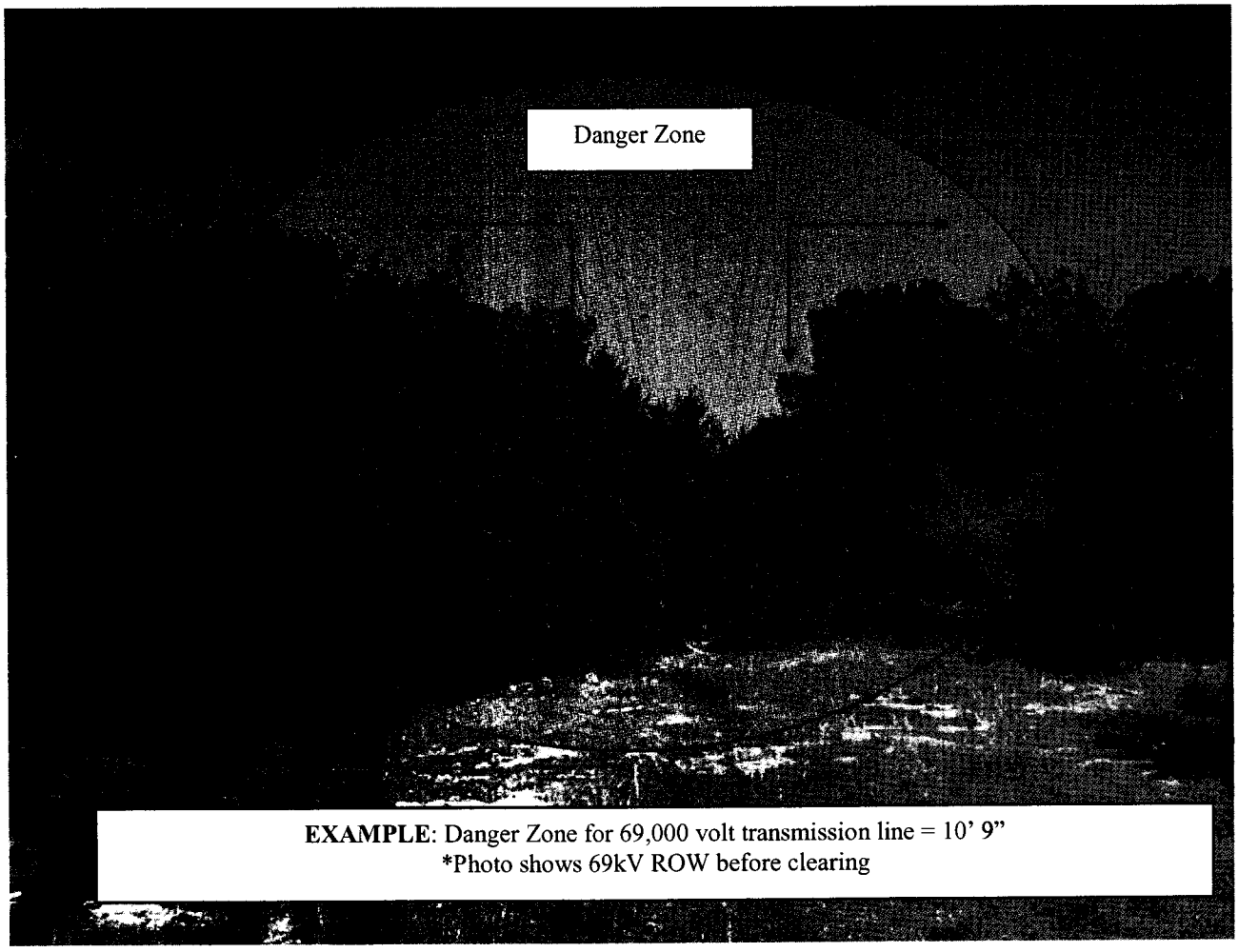
4.07.02 Danger Tree Zone

The Danger Tree Zone is defined as the area outside the Border Zone which is usually outside the easement that has vegetation growing tall enough to where if

it fell it would come into contact with the line (see more information in Section 4.10.04 Off Easement).

4.07.03 Danger Zone

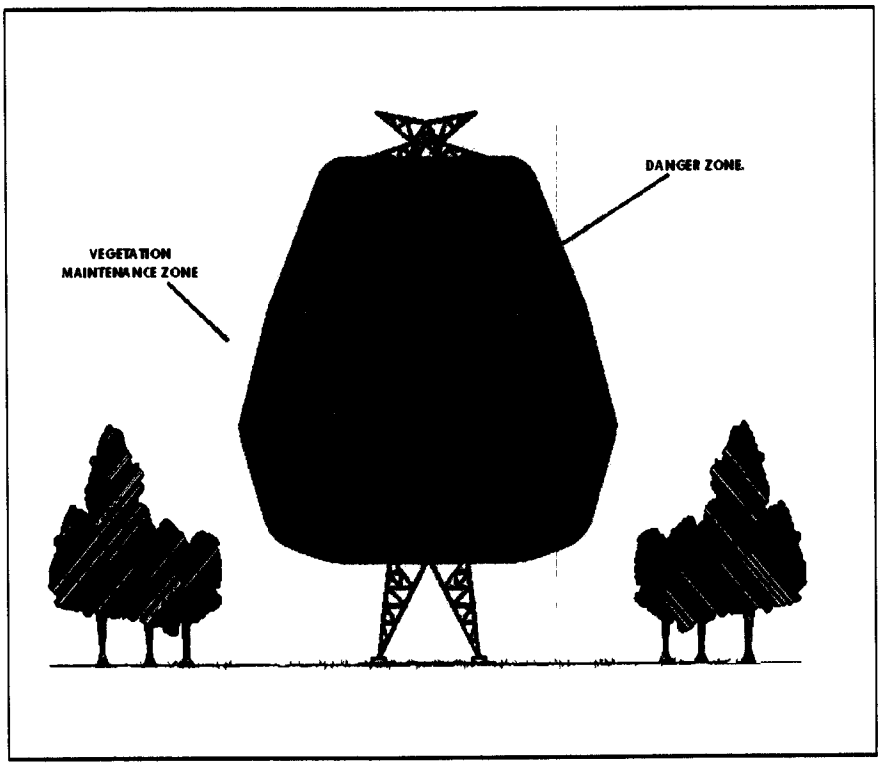
The Danger Zone is defined as the safety clearance area that surrounds the energized wires of a transmission line. This area is based on ANSI Z133.1 arborist clearances applied to the voltage of the line at rest. An example of a Danger Zone is below.



EXAMPLE: Danger Zone for 69,000 volt transmission line = 10' 9"
*Photo shows 69kV ROW before clearing

4.07.04 Vegetation Maintenance Zone

The Vegetation Maintenance Zone is the area that surrounds the Danger Zone to assure that no vegetation grows into the Danger Zone over the defined maintenance cycle (see Table (a) above). The following diagram shows the Vegetation Maintenance Zone in relation to the Danger Zone.



4.07.05 Wire Zone

The Wire Zone is defined as the space occupied by the transmission line including conductor sag and sway.

4.07.06 Work Zone

The Work Zone is defined as the area within the easement around the structure and along the lines where equipment could be set up to perform maintenance or emergency work. The width on each side is determined by the larger of the following two values: 25 feet from the outside phase conductor, and 30 feet from the center line of the pole or tower leg/foundation for 69-kV and 138-kV lines. The distances for 345-kV lines are 40 feet from the outside phase conductor, and 50 feet from the center line of the pole or tower leg/foundation. Vegetation of low to medium shrubs, forbs and grasses are desired in this zone due to the fact that

this area needs to be accessible by large equipment in the performance of maintenance and emergency activities on the lines.

4.07.07 Tower and Guy Wire Zones

The Tower and Guy Wire zones are defined as the areas around each structure footing and around each guy wire. All woody vegetation and vines around structure footings, poles, and guy wires will be controlled or removed as necessary to permit safe access.

4.08 Integrated Vegetation Management (IVM) Plan Objective

LCRA first developed an IVM program in 1997. The ultimate objective of an IVM program is to integrate all methods of vegetation control (manual, mechanical, chemical, cultural and biological) to not only achieve a transmission system that is operated in a safe, reliable manner, but also to produce a long-term biologically controlled, economic approach of maintaining the ROW that benefits wildlife by allowing native species to flourish.

4.08.01 Control Methods

Control options used by the LO to manage vegetation will include cultural, biological, mechanical, manual, and chemical options. LO will make a diligent effort to work collaboratively with property owners to implement cultural or biological controls. This will provide property owners the option of using those sites in a manner that will eliminate or minimize the need for future vegetation management. (See section 6.0 Land Use Options)

4.08.01(a) Cultural Control

Cultural control consists of grazing livestock, planting and/or cultivation of compatible vegetation, crops, or other uses that will not interfere with the construction, operation, maintenance, inspection, or repair of electric transmission facilities. (Refer to 6.0 Land Use Options)

4.08.01(b) Biological Control

Biological control consists of the use and/or encouragement of low-growing, uncultivated desirable vegetation to manage undesirable vegetation. It is the optimal method for vegetation control on otherwise unmanaged sites. Communities of such desirable vegetation will compete with encroaching undesirable vegetation for space, light, moisture, and nutrients. This competition will inhibit the ability of the undesirable vegetation to become established or spread, and will minimize the need for future vegetation management.

4.08.01(c) Manual Control

Manual control consists of the use of hand tools, primarily chain saws and brush saws, to cut target vegetation. Manual control quickly and cleanly removes target vegetation, but it is not a preferred method because the target vegetation root system is left intact and will vigorously re-sprout. The result is typically a quick-growing, dense, impenetrable thicket of stems on invasive vegetation species. Periodic removal or control of this dense thicket is then required. This results in significant site disruption and obstructive debris that may create a negative aesthetic impact, a potential impediment to future site access, and possible erosion problems. Manual control, therefore, will not be used unless other forms of control are not practical. Some situations that would require manual control are in areas of high visibility, buffer zones, steep slopes, creek sides, sensitive areas or areas where mechanical methods are not practical or possible.

4.08.01(d) Mechanical Control

Mechanical control consists of the use of heavy equipment, primarily mowing machines, to cut and mulch the target vegetation. Mechanical control quickly removes and satisfactorily disposes of target vegetation, but (used alone) it is not a preferred method because the target vegetation root system is left intact and will vigorously re-sprout. The result is typically a quick-growing, dense, impenetrable thicket of stems on invasive vegetation species. Periodic removal or control of this dense thicket is then required. This results in significant site disruption that may create a negative aesthetic impact, a potential impediment to future site access, and possible erosion problems. Mechanical control followed by chemical control will help achieve the preferred biological method of vegetation control.

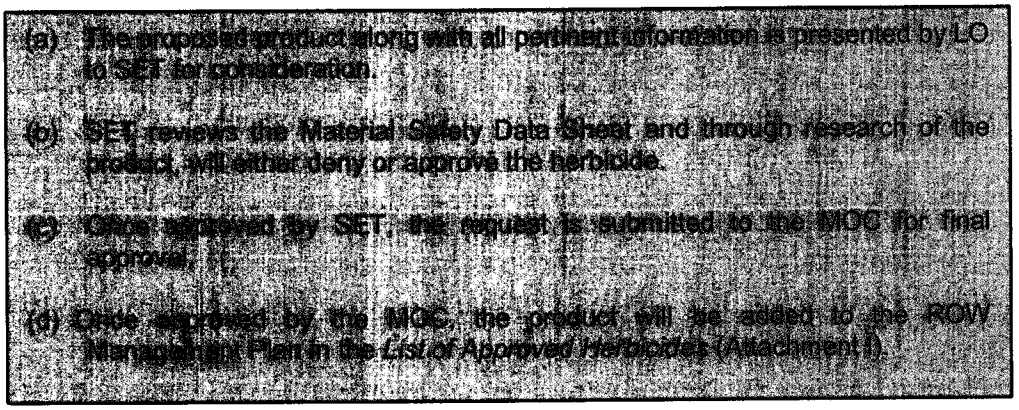
4.08.01(e) Chemical Control

Chemical control will consist of the selective application of herbicides directly to the target vegetation; widespread broadcast spraying of herbicides will be prohibited (except for low-level boom applications not to exceed 4 feet above ground level). As used by the LO, herbicides will provide total control of the target vegetation, including the root system, to prevent re-sprouting or spreading. The LO will use herbicides on a site only if the site is not designated environmentally sensitive (e.g. endangered or rare species habitat) for the application, no standing water or wetlands are present, and no measurable precipitation is falling or imminent. To minimize the impact on surrounding non-target vegetation during foliar applications, the LO, will use low-drift agents, set a maximum target height limit of 12 feet, and avoid applications during high winds as defined in the Commercial Herbicide Applicators Laws and Regulations Manual published by the Texas Department of Agriculture. The use of herbicides is a practical, environmentally sound means of totally controlling undesirable vegetation on many sites. Total control of the target vegetation allows slow-growing native

plants to become established and dominate the site. The subsequent periodic application of herbicides (as needed) will provide ongoing control of any additional undesirable vegetation sprouting on the site, and thus will promote the health and vigor of the remaining desirable and native plants. Selective use of herbicides, therefore, will provide the LO with the ability to pursue the ultimate goal of using biological control methods (see 4.08.01(b)) whenever possible. Even if total biological site control is not achievable, herbicide use will limit the amount of undesirable vegetation present. This, in turn, will lengthen maintenance cycle durations, reduce the future amounts of herbicides required, and minimize the physical and environmental impacts. The current Herbicide Management Procedure in the Environmental & Safety Management System (E&SMS) can be found at the following location: http://insidetransmission.lcra.org/env/ManagementSystems/operational%20control/env.%20programs/Program%20Elements%20CIP/Herbicide%20management%20Procedure%20-%20JAN.doc

4.08.02 Herbicide Approval Process

When needing to update the approved list with new products, the approval process will consist of the following:



The List of Approved Herbicides is listed as Attachment I.

4.08.03 Herbicide Prescription Process

The herbicide prescription will be performed at the same time as the MA (Maintenance Assessment). The prescription consists of identifying all vegetation on the ROW that will require an herbicide application. During this process, the type of herbicide also will be identified for each targeted species. The documentation process will consist of identifying the type of applications at the different locations on the engineering plan and profile documents as part of the MA process listed in Section 4.03.04.

4.08.04 Treatment Methods

The four different treatment methods that the LO will use to apply herbicides are cut-stump treatment, basal bark treatment, cut-stubble treatment, and selective foliar application. Since cut-stump treatment and basal bark treatment incorporate the manual application of herbicides to small areas at or near ground level, the LO will use these methods, when appropriate, without obtaining prior written landowner consent.

However, because cut-stubble treatment and selective foliar application incorporate controlled, but possibly more widespread, application of herbicides, the LO will not use these methods without obtaining prior written landowner consent unless the application is limited to areas immediately adjacent to gates, fences on the ROW, cut stumps or the base of transmission structures and guy wires. The ESMS Herbicide Management Procedure can be found at: **http://insidetransmission.lcra.org/env/ManagementSystems/operational%20conrol/env.%20programs/Program%20Elements%20Transmission/Transmission.htm**

4.08.04(a) Cut-Stump Treatment

Cut-stump treatment consists of manually removing target vegetation, followed by an immediate manual application of herbicide to the cut surface of the remaining stump. It controls re-sprouting, inhibits and minimizes the re-invasion of undesirable target vegetation, reduces competition to desirable vegetation, and permits desirable vegetation to flourish and dominate the site. Cut-stump treatment will be used only if target species coverage is low or medium and maximum selective control is desirable.

4.08.04(b) Basal Bark Treatment

Basal bark treatment consists of manually applying herbicide to the lower portion of the stem (trunk) of trees and brush. The herbicide will be absorbed through the outer surface of the stem, destroying the root system and killing the plant. The plant may then be removed. The benefits are similar to those obtained by cut stump treatment. Basal bark treatment will be used only if the area is not visually sensitive and target species coverage is low or medium.

4.08.04(c) Cut-Stubble Treatment

Cut-stubble treatment consists of mechanically mowing target vegetation followed by an immediate application of herbicide to the cut surface and root zone of the remaining stubble. The herbicide may be applied during mowing by ground-directed spray equipment mounted on the mower, or with portable sprayers after mowing has been completed. Either method of application directs

the herbicide spray downward toward the target and minimizes the impact on surrounding desirable vegetation. The benefits are similar to those obtained by cut-stump treatment. Cut-stubble treatment will be used only if the terrain and vegetation are suitable for mowing.

4.08.04(d) Selective Foliar Treatment

Selective foliar application consists of ground-based application of herbicides directly onto the foliage of targeted undesirable vegetation. The application will be done with portable sprayers. Broadcast foliar application of herbicides will not be used so that the impact on any surrounding desirable vegetation on the site will be minimized. Selective foliar application will be used only if target vegetation is less than 12 feet in height, the site is not visually sensitive to the resulting foliar brownout, and there are no winds to cause the herbicide to drift.

4.08.05 Protective Buffers

4.08.05(a) Orchards, Crops and Gardens

Protective buffers of at least 10 feet should be established around croplands, pastures, and gardens; larger buffers may be used if appropriate, depending on factors affecting herbicide runoff that are listed in Section 5.2.1. Within the buffer, no foliar application of herbicides should be made, and vegetation management should be restricted to manual or mechanical clearing and cut-stump treatment, if required. When buffers are required, no vegetation in the buffer shall impact the safe and reliable operation of the LCRA TSC facility.

No herbicides should be applied within the buffer in a manner that would harm any crops, cultivated vegetation or livestock. Topical herbicides having no soil activity should be used in areas where susceptible crops or cultivated vegetation may have roots encroaching upon the treatment area.

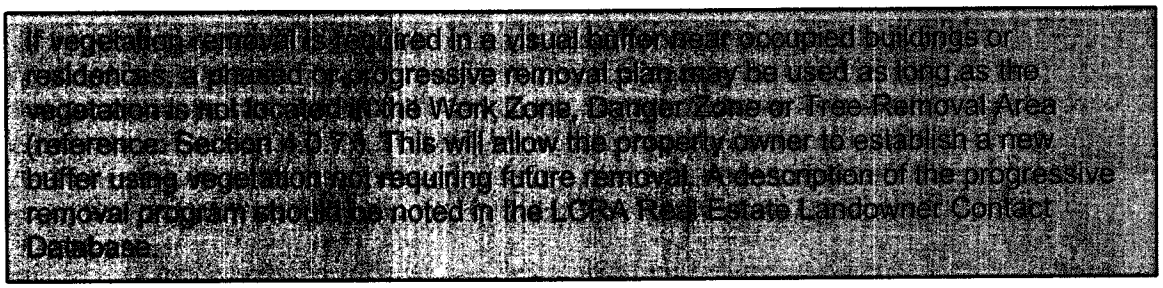
4.08.05(b) Sensitive Areas

Sensitive areas are sites that are subject to vegetation management and contain endangered species and/or their habitat; bodies of surface water, including wetlands, potable water wells and reservoirs; croplands; gardens; occupied buildings; residences; and significant environmental features. Sites subject to vegetation management that are directly visible from occupied buildings, residences, or public roadways and lands also may be considered sensitive areas. The use of herbicides within sensitive areas will require property owner permission. Additionally, SET staff must be contacted to identify environmentally sensitive areas, if needed. Buffers are zones adjacent to sensitive areas within

which more stringent vegetation management practices will be used to minimize the impact on the sensitive areas.

4.08.05(c) Visual Buffers

If possible, visual buffers should be created between ROWs subject to herbicide application and occupied buildings, residences, and public roadways and lands. Buffers should consist of zones within which vegetation is uncleared or partially cleared. An appropriate size for visual buffers should be determined prior to the start of work on the ROW. Visual buffers will be marked as such on ROW maps and described on ROW restriction lists. Vegetation management methods within visual buffers should be restricted to manual clearing or cut-stump treatment.



4.08.05(d) Protective Buffers

Protective buffers shield sensitive areas from unreasonable exposure to herbicides. Sensitive areas requiring protective buffers include sites containing endangered species and/or their habitat; near bodies of surface water, including wetlands, potable water wells and reservoirs; croplands; pastures; gardens; occupied buildings; residences; and significant environmental features.

Sensitive areas will be identified before the start of work and appropriate protective buffers will be determined. Sensitive areas and buffers will be marked on the ROW (plan and profile) maps.

4.08.05(e) Bodies of Surface Water

Appropriate protective buffers of at least 50 feet shall be established around all bodies of surface water or wetlands. Buffers of shorter distances may be used depending on herbicide solubility, antecedent rainfall conditions, herbicide half-life, soil permeability, herbicide toxicity to aquatic life, vegetation coverage within the buffer, vegetation type in buffer, slope, minimal distances listed on the herbicide container, and other factors affecting the potential for herbicides to runoff after application. Within the buffer, no foliar application of herbicides should be made, and vegetation management should be restricted to manual or mechanical clearing and cut-stump treatment, if required.

In all cases, herbicides should not be applied to vegetation in standing water or in areas indicative of having contained standing water for long periods of time (i.e. wetlands). Wetlands means those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes and bogs. For official determination as to whether an area is classified as a wetland, the person in charge of the work should contact the SET staff and the U.S. Army Corps of Engineers.

Outside of buffers around bodies of surface water, any foliar application of herbicides should be made so that no herbicide directly enters the water.

When buffers are required, no vegetation in the buffer shall impact the safe and reliable operation of the LCRA TSC facility.

4.08.05(f) Potable Water Wells and Reservoirs

Protective buffers of at least 100 feet should be established around all identified potable water wells and reservoirs; larger buffers may be used if appropriate. Within the buffer, no application of herbicides should be made, and vegetation management should be restricted to manual clearing or herbicide applications outside buffers should be made so that no herbicides directly enter or could reasonably be expected to wash into potable water supplies.
When buffers are required, no vegetation in the buffer shall impact the safe and reliable operation of the LCRA TSC facility.

4.08.06 Buffer Zone Criteria

The criteria that must be considered when determining if the buffer needs to be increased or, in some cases, decreased are as follows:

4.08.06(a) Soil Porosity

The level of soil porosity (i.e. sandy soils, sandy-loam soils, clay soils, etc.) will help determine whether or not soil-active products should be used in certain areas due to the risk of an herbicide leaching through the soils and potentially off site. Sandy soils are more porous than clay soils; therefore, the risk of an herbicide leaching off site is much greater in sandy soils. Therefore, in sandy soils, more conservative measures must be considered, and buffer distances will be increased.

4.08.06(b) Ground Slope

The level of ground slope also must be evaluated. In certain areas, the ground may slope downward toward non-target vegetation or a sensitive area (i.e.

croplands, bodies of water, etc.). The degree of slope coupled with the level of soil porosity will help determine the potential that an herbicide may leach off site. In cases with high slope, buffer zones will be increased.

4.08.06(c) Nearby, Non-Targeted Species

Susceptible non-targeted species also will affect the size of a buffer zone. When applying products near non-targeted species that are highly susceptible to the herbicides being used, some options must be considered. A longer buffer zone may be appropriate. Changing to another herbicide or another type of herbicide application (foliar vs. basal bark or stump treatment) that will be less harmful to the non-targeted vegetation also may be a solution, as well as using mechanical methods of control.

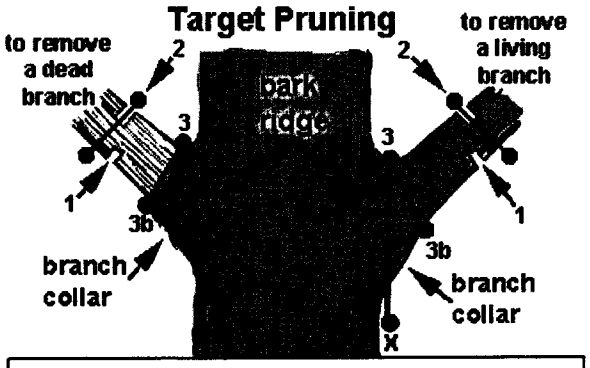
4.08.06(d) Weather

Weather must always be considered when determining the size of a buffer zone. An ample rain-free period must be allowed for the plant and soil to adequately absorb the herbicide before rainfall. A respectable minimum rain-free period to follow is about one hour from the time the application ends to the initial period of rainfall. Wind speed and wind direction also must be considered when determining the length of a buffer zone. Any applications made upwind from a non-targeted area must be carefully evaluated for herbicide drift potential. The buffer zone will be increased if there is a chance for significant herbicide drift due to wind. Sensitive areas and buffers will be identified on LCRA TSC ROW maps and restriction lists.

4.09 Pruning Standards / Specifications

In cases where tree removal cannot be achieved, trees that may grow into the lines must be directionally pruned to eliminate the likelihood of contact. The work specifications identified in ANSI A300 as well as "Pruning Trees Near Electric Utility Lines: A Field Pocket Guide For Qualified Line-Clearance Tree Workers" by Dr. Alex L. Shigo shall be used. If more than 25% of a tree's foliage is needed to be removed during any one growing season to gain the required clearance, the tree should be removed.

Diagram Illustrating the Principal of Natural Target Pruning and Basic Three-Cut Branch Removal



1st cut – undercut at 1 to notch limb
2nd cut – cut branch 2 until branch falls off
3rd cut – cut from bark ridge 3 to branch collar 3b
- never cut off branch flush from 3 to x

4.10 Tree Removal

Prior to starting tree removals on any property, the LO, working with RES, shall communicate the need for the removals to the property owner or his or her designee as stated in section 3.03 (Notification Process) unless it is an emergency (See section 4.10.02 for emergency criteria).

4.10.01 Tree-Removal Criteria

Trees that have the potential of growing into the defined Danger Zone of a line shall be considered for removal subject to easement rights. Some examples of conditions of when trees should be considered for removal are as follows:

(1) Trees located in schoolyards, playgrounds, parks, construction areas, orchards, gardens or other areas in which children could easily climb and contact overhead conductors.
(2) Trees that have been topped under low-level transmission circuits with no chance for a reasonable, natural development.
(3) Trees along the right of way that have the potential of growing into the Danger Zone.
(4) Trees, both live and dead, that are leaning toward the line in the Border Zone and could strike the line when falling.

Note: Trees in habitat and avoidance areas may require trimming only. SET will coordinate with LO on best management practice to minimize impacts. (see Note on Table 1 in Section 4.06 "Clearance Standards."

4.10.02 Tree-Removal Process

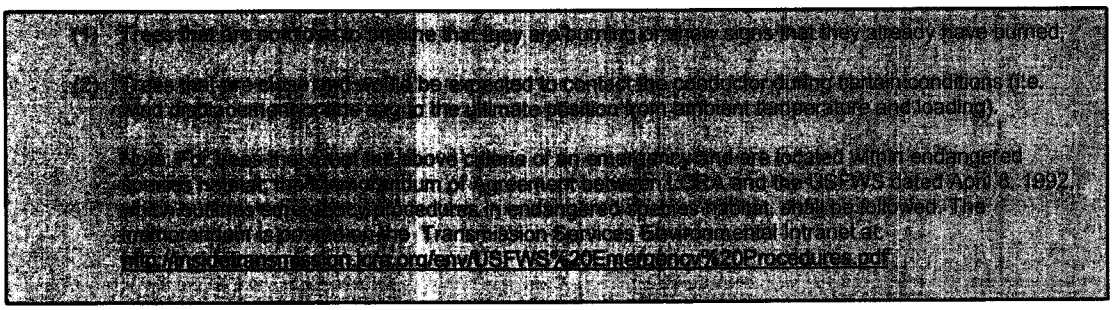
LO will document the needed information on a Tree Survey that will be used to justify the removal. LO and RES staff will then check the engineering plan and profiles and the Landowner Contact Database to see if there are any notations or special instructions on the line in question pertaining to the vegetation, access,

landowner requests, etc. LO staff also will work with RES and Legal to confirm that the existing easements permit tree removals. If the easement allows removals and the trees in question meet one of the criteria listed in this section, the landowner will be notified and the trees will be removed.

The timing of tree-removal activities may vary in areas in which there is endangered or rare species habitat. LO will consult with LCRA TS SET staff prior to any tree removal activities in habitat areas.

The exception to this process will be if the trees are considered an emergency. In these cases, the trees will be removed for the safety of the public and the reliability of the line.

Trees that meet the following criteria will be identified as emergency removals:



4.10.03 Within Easement

Trees and other vegetation within the easement that need to be addressed, will follow the process above in Section 4.10.02.

4.10.04 Off-Easement

LO will inspect all trees adjacent to transmission line easements outside the Border Zone (which is usually the edge of the easement). This area is commonly referred to as the Danger Tree Zone (refer to Section 4.07 Defined Zones). In this area, trees with limbs overhanging or growing into the transmission line facilities and easements will be identified and targeted for action.

These inspections will also identify trees capable of growing into the Danger Zone, as well as trees (such as those that are structurally weak, dead or dying) that might reasonably be expected to fall into the Danger Zone in the future. No trees or limbs, on or off the ROW, will be permitted to overhang or grow into the Danger Zone. Weak, dead or dying trees presenting a potential hazard to public safety and system reliability will be removed or trimmed as appropriate after communication with the landowner has been made and either easement rights allow the removal or landowner approval has otherwise been received.

The Line Operations Tree Survey is listed as Attachment J.

4.11 Diseased Vegetation

LCRA Corporate Environmental has developed a company-wide Policy titled Oak Wilt Prevention. The information in this section is taken out of that policy.

The purpose of the Oak Wilt Prevention Policy is to document measures LCRA staff and contractors will take to prevent the spread of oak wilt while handling oak trees. LCRA Corporate Environmental Oak Wilt Prevention Policy can be found at the following link:
http://insidetransmission.lcra.org/env/whats_new/what%27s%20new.htm

LCRA Corporate Environmental Oak Wilt Prevention Policy is listed as Attachment K.

4.12 Roadways

If vehicular access to a ROW is required but does not exist, a usable pathway or road will be created with the landowner's concurrence, and if necessary, an access easement will be acquired. All vegetation that would restrict or impede access along pathways or roads will be removed or controlled as required to maintain usable vehicular access to the easement at all times. The width of the usable pathway and the clearing of vegetation may vary in environmentally sensitive areas. LO will consult with SET prior to any vegetation removal in environmentally sensitive areas..

4.13 Railroad Crossings

When working within or over a railroad easement, the appropriate railroad company shall be contacted and the work plan communicated to them. Depending on the nature of the work, it may require a flagger from the railroad company to assist with the execution of the project.

4.14 Post-Work Property Condition

Any time work is performed on a ROW, it will be the responsibility of the person or crew performing the work to make sure the area is left in as good a condition or better than before the work started.

4.14.01 Stump Height

Within the cleared portions of easements, trees and brush will be cut as close to the ground as practical such that the cut face of the remaining stump is parallel to the ground. Stumps shall be cleared to ground level unless the terrain, fences, or other landscape features restrict or prohibit cutting to this level.

4.14.02 Debris Disposal

Disposal of all debris from cutting operations should be accomplished by dicing, piling or chipping the material. No debris shall be left in waterways or wetlands, or on landscaped properties, trails, roads or within 10 feet of poles, structures or guy wires. Also, no debris from cutting operations should be left in such a manner that would permit it to wash or roll into these areas.
The LO will not remove any chips, logs, limbs, branches or other debris generated by the vegetation management operations from a site unless such removal is requested and/or approved by the landowner or his or her designee.

When performing extensive clearing, for example, with construction of a new transmission line or access road, it is standard procedure to use mechanical controls, primarily mowing machines, whenever possible. In those cases, the process will be to shred the brush and leave it on the ROW. The shredded material, referred to as mulch, will be spread to a thickness of no more than three inches over the ROW to aid in vegetation control and to prevent soil erosion. If additional mulch remains, this mulch will be spread over the portion designated as the permanent access road (typically 15 feet in width) through the ROW and as shown on construction plans. In cases where this is not environmentally acceptable (e.g., karst terrain, etc.), where prohibited under the LCRA Storm Water Pollution Protection Plan, or where prohibited via landowner agreements, the mulch will be removed to an off-site facility approved by the LCRA TSC or to a permitted composting facility. The particle size of mulch left on the ROW shall be no longer than one foot and no wider than two inches in diameter.

4.15 Vehicular Access

If crossing property not covered by an appropriate easement, **standing permission** (defined in glossary) for use of a defined route through the property must be obtained from the property owner. No other route should be used without permission from the property owner. All such routes should be clearly marked and identified on the appropriate ROW maps (engineering plan and profile document).

Standing permission also must be obtained from landowners for the inclusion of LCRA Transmission Services locks on any gates, not on easements, through

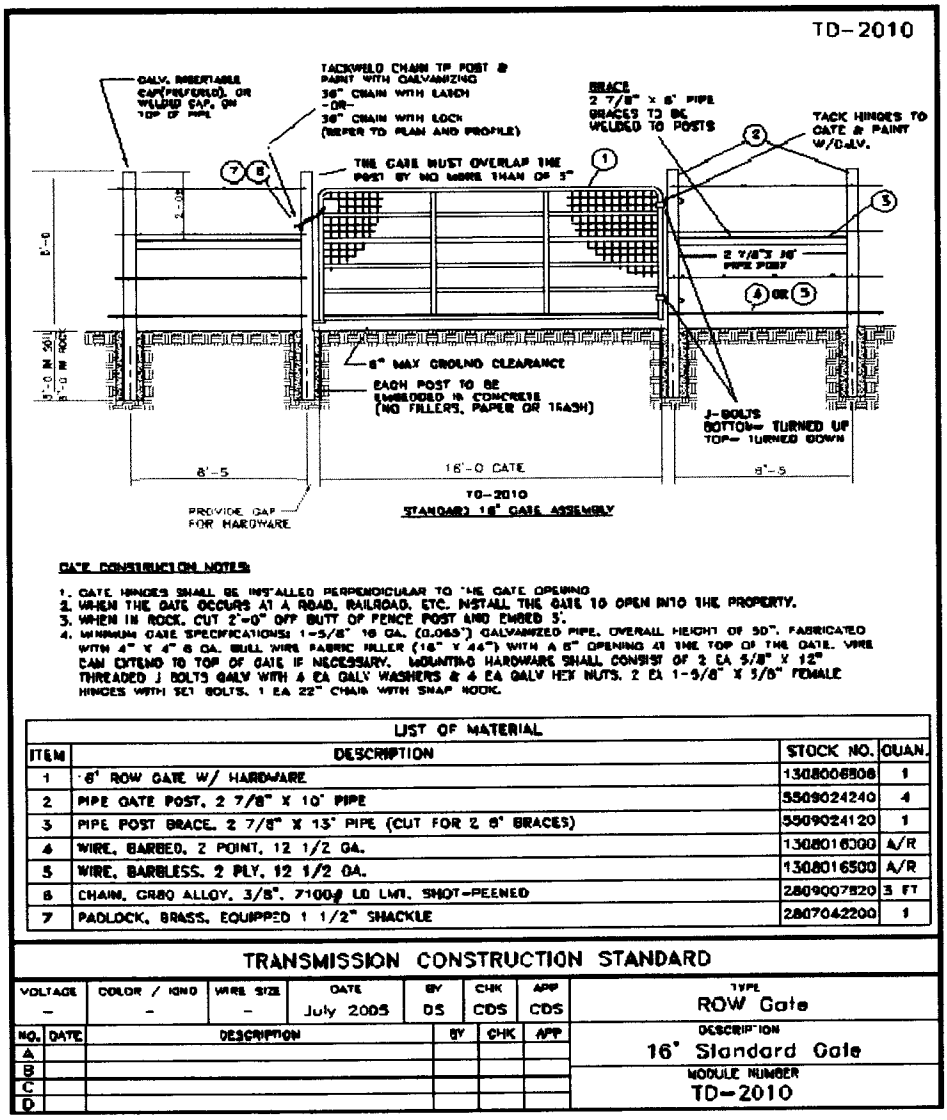
which LO workers must pass to access an ROW. All **standing permission** agreements will be documented and kept on file.

4.16 Gate Maintenance

Gates on ROWs provide access to LCRA workers and heavy equipment as well as landowners. These gates are maintained on a scheduled and reactive basis. Fences and gates near and under energized 138-kilovolt lines and greater shall be adequately grounded.

4.16.01 Typical ROW Gate

The following diagram shows typical ROW gate specifications:



GATE CONSTRUCTION NOTES:

1. GATE HINGES SHALL BE INSTALLED PERPENDICULAR TO THE GATE OPENING
2. WHEN THE GATE OCCURS AT A ROAD, RAILROAD, ETC. INSTALL THE GATE TO OPEN INTO THE PROPERTY.
3. WHEN IN ROCK, CUT 2'-0" OFF BUTT OF FENCE POST AND EMBED 5'.
4. MINIMUM GATE SPECIFICATIONS 1-5/8" 10 GA. (0.065") GALVANIZED PIPE. OVERALL HEIGHT OF 50". FABRICATED WITH 4" X 4" 6 GA. BULL WIRE FABRIC FILLER (16" X 44") WITH A 6" OPENING AT THE TOP OF THE GATE. WIRE CAN EXTEND TO TOP OF GATE IF NECESSARY. MOUNTING HARDWARE SHALL CONSIST OF 2 EA 5/8" X 12" THREADED J BOLTS GALV WITH 4 EA GALV WASHERS & 4 EA GALV HEX NUTS. 2 EA 1-5/8" X 5/8" FEMALE HINGES WITH SET BOLTS. 1 EA 22" CHAIN WITH SNAP HOOK.

LIST OF MATERIAL

ITEM	DESCRIPTION	STOCK NO.	QUAN.
1	16' ROW GATE W/ HARDWARE	1308006806	1
2	PIPE GATE POST, 2 7/8" X 10' PIPE	5509024240	4
3	PIPE POST BRACE, 2 7/8" X 13' PIPE (CUT FOR 2 8' BRACES)	5509024120	1
4	WIRE, BARBED, 2 POINT, 12 1/2 GA.	1308016300	A/R
5	WIRE, BARBLESS, 2 PLY, 12 1/2 GA.	1308016500	A/R
6	CHAIN, GR80 ALLOY, 3/8", 7100# LO LMT, SHOT-PEENED	2809007820	3 FT
7	PADLOCK, BRASS, EQUIPPED 1 1/2" SHACKLE	2807042200	1

TRANSMISSION CONSTRUCTION STANDARD

VOLTAGE	COLOR / IDNO	WIRE SIZE	DATE	BY	CHK	APP
-	-	-	July 2005	DS	CDS	CDS

NO.	DATE	DESCRIPTION	BY	CHK	APP
A					
B					
C					
D					

TYPE: ROW Gate
DESCRIPTION: 16' Standard Gate
MODULE NUMBER: TD-2010

Note: additional gate type specifications (i.e. double gate, game proof gate, etc.) can be obtained from LO.

4.17 Worker Qualifications

Since well-trained and licensed (where required) workers are essential to the implementation of a safe, cost-effective vegetation management program, the LO will use qualified, experienced, and trained workers who:

(1) Will comply with the LCRA Transmission Services safe working practices listed in the LCRA Transmission Services Safety Handbook, Environmental Safety Management System, Transmission Services Resource Management Plan, and the requirements of this document.
(2) Are properly trained and/or certified, if and as required by the State of Texas or this document for applying herbicides.
(3) Are knowledgeable about common vegetation species and growth characteristics.
(4) Have attended first aid, spill response, and CPR training, as required.
(5) Understand LO's IVM program structure, policies, and methodologies.
(6) Individuals overseeing tree trimming and removals are Certified Arborists.
*Review the latest LO org chart to identify individuals with licenses and certifications.

4.18 ERCOT / NERC Reporting Requirements

- As part of the National Electric Reliability Council's (NERC) blackout recommendations, all owners of 200-kilovolt lines and above and any lower voltage lines designated by the Regional Reliability Organizations (RRO) which in Texas is the Electric Reliability Council of Texas (ERCOT) as critical to the reliability of the electric system, are required to report monthly on vegetation-caused outages. This is now part of NERC's compliance program. Therefore, ERCOT requests that the monthly report be sent in to them by the 20th of each month. The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner. An outage shall be categorized as one of the following:

Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;
Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;
Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

ERCOT 345-kV Vegetation-Related Outage Report is listed as Attachment L.

4.19 Annual Work Plan

Every LCRA TSC owned transmission line is identified in the work management system. All maintenance tasks associated with these lines are set up in the work management system as stated in the *Line Maintenance Management Plan* which is located in the *Standards for Inspection and Maintenance of LCRA Transmission Services Corporation Equipment and Facilities Appendix E.* Some of the methods used in the annual plan for vegetation management are manual clearing, mechanical clearing, herbicide treatment, or other actions (see section 4.08 IVM). The plan provides flexibility for changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission system. Each year the annual plan includes scheduled and reactive work.

The scheduled work consists of the following:

The supporting information used to identify the specific details of the annual work plan for each line scheduled for the year is:

- The ROW Assessments from the prior year that will show the detailed work identified for the right of ways and the estimated time and equipment to do each task. This information is gathered one year before the actual work is performed. It is entered in the work management system.
- Any low-priority backlog still in the work management system for each line and ROW that will be completed during the year.

The reactive work consists of completing tasks that have been identified from patrol reports. The tree management (trimming and removals) work will primarily work from these reports throughout the year.

4.19.01 Adjusting the Annual Plan

The annual plan is such that it can be adjusted if needed depending on changing conditions on the right of way. All changes would be documented in the work management system.

4.19.02 Tracking the Annual Plan

Progress of the annual plan will be done through the work management system by viewing costs, schedule, etc. A follow up site visit on completed tasks will be conducted throughout the year to ensure work was completed according to work specifications