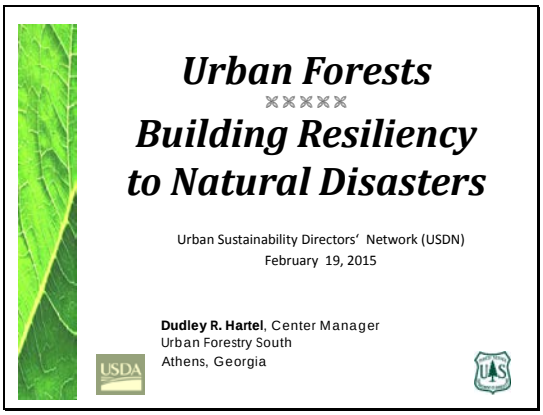
Slide 1



Urban Sustainability Directors' Network (USDN) – Group Call

Thursday, February 19, 2015 – 2:00pm

The call in information is below:

Dial In Number (US): 877-273-4202
Participant Access Code: 14-60-574

Urban Forests: Building Resiliency to Natural Disasters

This presentation is designed for municipal managers in a wide range of professional disciplines. The presentation will discuss the key elements to urban forest resiliency and mitigation that can occur pre-storm or during recovery.

Some ideas, concepts, and slides presented are attributed to Rachel Barker (formally with Central Alabama Regional Planning and Development Commission) who is now a utility arborist with ArborMetrics Solutions (transmission and distribution vegetation management services) based on work she did from 2010-2013 and earlier as Deputy Director of Public Works in Columbus, Georgia. This included the Vegetation Risk Management Plan (VRMP) and the Urban Tree Risk Index (UTRI) GIS tool.

Dudley Hartel – Center Manager of Urban Forestry South in Athens ,Georgia.

Urban Forestry South is the Southern Region's urban & community forestry Technology Transfer Center which supports U&CF programs through state agencies and municipalities.

This entire presentation with my notes are available for download from wwwUrbanForestrySouth.org.

•2015 USDN Urban Forests - Resiliency and Response to Natural Disasters (18Feb15 v1.0).pdf

In the 'search site' box (base of page header on the right) type USDN for a list of downloads related to my presentation.

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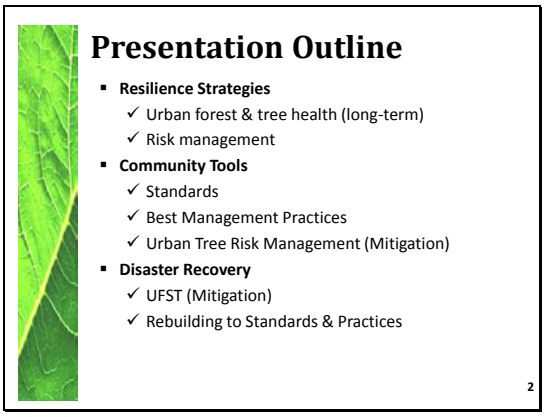
Slide 2



The overarching elements of this presentation are the concepts of long-term urban forest (and tree) health, and management of tree risk.

I will outline and discuss professional standards and practices that are available to any community; and then outline urban forest risk management and tree risk management.

Next, I'll introduce you to the Urban Forestry Strike Team (UFST) program and how it can play an important role for your community during disaster recovery.

And finally, a few closing words on re-establishing your community's urban forest based on the standards and practices discussed earlier.

Slide 3

Community strategies to increase urban forest resiliency should "flow" from:

- The detailed end result (healthy trees)
- Supported by practices developed from arboricultural standards
- That are defined in the management plan(s)

Slide 4

Developed and current (green text), under development (blue text), and being revised (red text).

Visit: http://www.tcia.org/business/ansi-a300-standards for descriptions and status

Of greatest importance, day-to-day, are Parts 1, 2, 6, & 9.

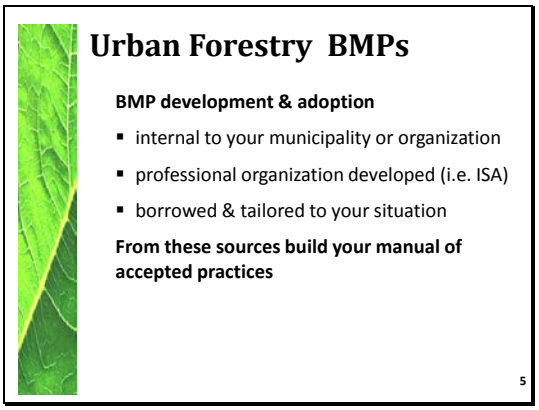
Disaster Preparedness Impact:

- Immediate – 9 – Tree Risk (Pre & post-storm Mitigation) (red star)
- Short-term – 1 (mature tree and young tree structural) – Tree Structure (strength) (dark blue star)
- Longer-term – 1 (young tree structural), 2 & 6 - Tree Health (Strength & Vigor)(light blue stars)

Adopt needed and appropriate standards to support disaster planning, preparedness, and mitigation.

From http://tcia.org/business/ansi-a300-standards/current-projects (02Oct2014)

Slide 5



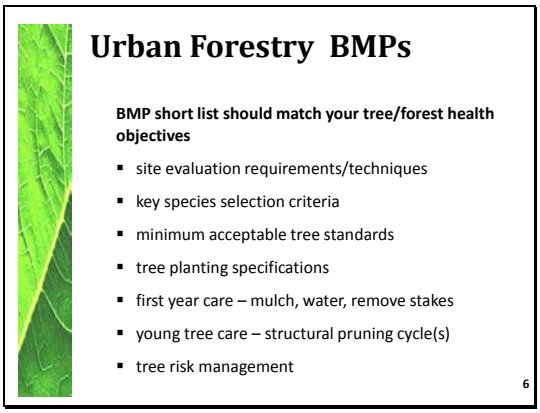
From the standards, specifications and practices are developed.

Focus can be on disaster; practices that support long-term healthy urban forests will support disaster preparedness.

Every community (and urban forest manager) should have a basic set of specifications developed from the standards.

ISA is the International Society of Arboriculture

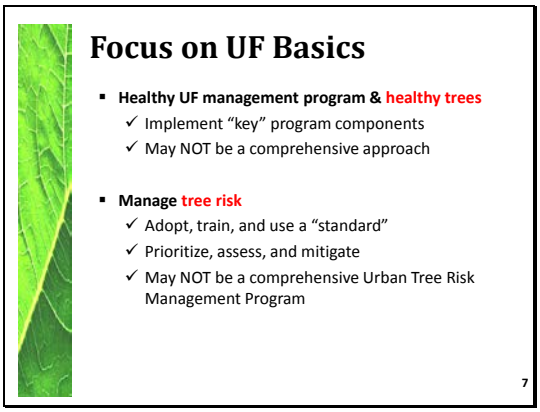
Slide 6



The essential BMPs and specifications to develop from standards and professional resources.

To develop a long-term strategy for resilient & sustainable urban forests.

Slide 7



To be effective…

- arborists need to focus on urban forestry & arboricultural basics that can positively affect disaster outcomes,

  because…

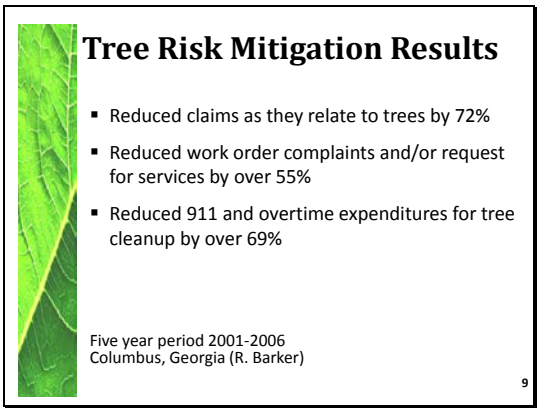
- disaster planning & preparedness for your community is a huge task, and
- involvement of a range of professionals is critical.

Healthy trees and identification and mitigation of tree risk are the essential components related to disaster preparedness.

Slide 8

Applying our arboricultural background and interest to benefit our community viz a viz disasters.

Slide 9



Measured results from an aggressive tree risk management program in Columbus, Georgia (from Rachel Barker).

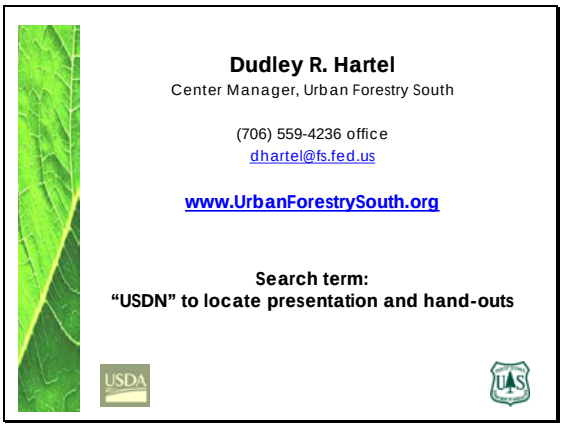
Slide 10

Urban Forest Strike Teams (UFST) – Overview elements. An evolution since 2007.

Slide 11

Urban Forest Strike Teams (UFST)

Slide 12



Please feel free to contact me with questions or comments.

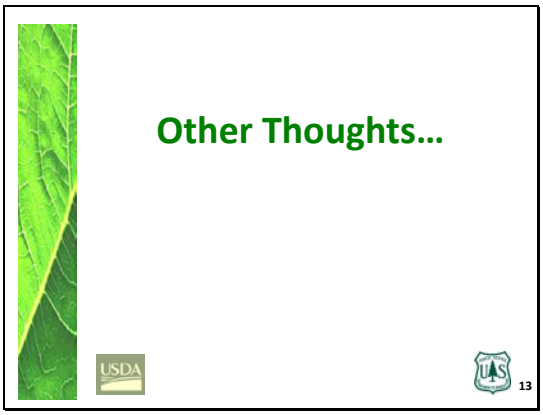
This entire presentation with my notes is available for download from wwwUrbanForestrySout.h.org.

- 2015 USDN Urban Forests - Resiliency and Response to Natural Disasters (18Feb15 v1.0).pdf

In the 'search site' box (base of page header on the right) type **USDN** for a list of downloads related to my presentation.

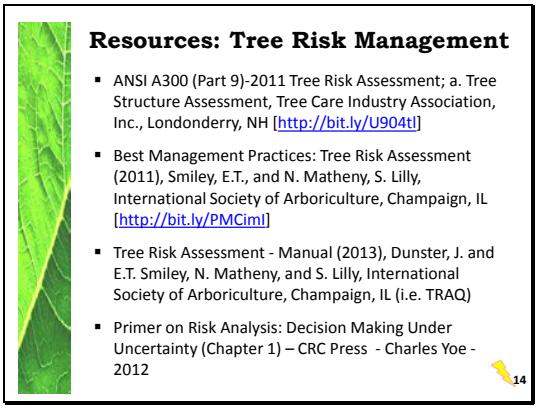
Extra, discussion slides follow…

Slide 13



The remaining slides may be used during extended questions and discussion

Slide 14



Use current arboricultural standards and BMPs when developing your urban tree risk management plan…

See handouts provided for this presentation.

Slide 15

Resources:

- Urban Tree Risk Management: A Community Guide to Program Design and Implementation

http://www.urbanforestrysouth.org/resources/library/ttresources/urban-tree-risk-management-a-community-guide-to-program-design-and-implementation/?searchterm=community%20guide%20pokorny

[An] illustrated, easy to read training manual for community leaders, administrators, city foresters, parks and public works staff, and private tree care practitioners. The manual is designed to assist communities with the design, adoption and implementation of tree risk management programs, and train field staff to detect, assess, and correct hazardous defects in urban trees. A team of experts in urban forestry, plant pathology and forest health collaborated to produce this manual. Consulting arborists, city foresters, and educators provided extensive review to ensure the information applies to communities of varying sizes and budgets. Examples of tree defects, risk rating systems, and species selection were chosen to depict tree species and conditions that occur in the Northeastern U.S." [from the Preface]

- Storms Over The Urban Forest: Planning, Responding, and Regreening--A Community Guide to Natural Disaster Relief

http://www.urbanforestrysouth.org/resources/library/ttresources/storms-over-the-urban-forest-planning-responding-and-regreening-a-community-guide-to-natural-disaster-relief/?searchterm=storms%20over%20the%20urban

Natural disasters that can occur in the United States include floods, hurricanes, tornadoes, and related high-velocity winds, as well as ice storms. Preparing for these natural disasters, which strike urban forests in large cities and small communities, should involve the cooperative effort of a wide array of municipal agencies, private arboricultural companies, utilities, and volunteers. Principles and

methods determining how to mitigate or minimize the impact of natural disasters are critical in determining the capability of communities to respond. Similarly, replanting the uprooted urban forest also requires a closely coordinated effort of key civic leaders, elected officials, community foresters, and managers of municipal agencies. This manual is intended to assist community leaders and governmental agencies to prepare for natural disasters, respond appropriately when these natural disasters occur, and recover from the subsequent loss of vegetation." (from the Executive Summary, Second Edition)

- Vegetation Risk Management Plan Template - with Attachment

http://www.urbanforestrysouth.org/resources/library/ttresources/vegetation-risk-management-plan-template-with-attachment/view

http://www.urbanforestrysouth.org/resources/library/ttresources/vrmp-and-utri-links-for-documents-archived-webinars

The Vegetation Risk Management Plan (VRMP) is developed as a tool to help increase public safety after a storm event, maintain optimum urban tree canopy, promote tree health, provide for effective emergency and arboricultural management, and decrease emergency management costs.

Following this plan will decrease emergency management costs, reduce the likelihood of damage from trees, reduce tree debris, and reduce the overall impact of major storms on the urban forest. Trees and the debris accumulated from their destruction is the number one cost to emergency management. The VRMP is a proactive approach to identifying and mitigating trees that are in need of pruning, removal, or inspection. This plan will establish a schedule for areas that are most prone to limit or block access to critical infrastructure located on or associated with major transportation routes, including areas with the highest population.

- Urban Forestry Emergency Operations Planning Guide for Storm Response

www.smarttreespacific.org

http://www.urbanforestrysouth.org/resources/library/ttresources/urban-forestry-emergency-operations-planning-guide-for-storm-response

Section 1: provides urban forestry professionals concrete approaches when preparing for natural disasters that impact the urban forest.

Section 2: describes the process used to develop the guide and includes information about the survey, the interviews, the expert meeting and next steps.

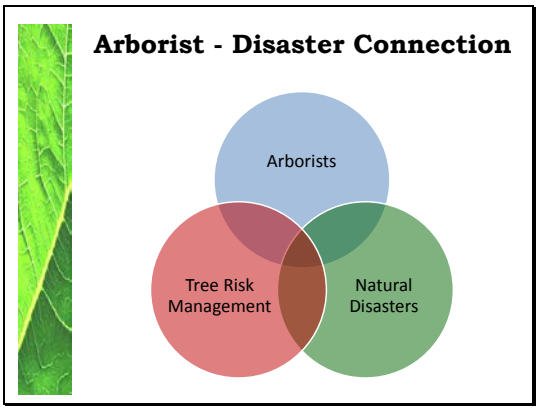
- Community Forest Storm Mitigation Planning for Georgia Communities

http://www.urbanforestrysouth.org/resources/library/ttresources/community-forest-storm-mitigation-planning-for-georgia-communities/?searchterm=Community%20Forest%20Storm%20Mitigation%20Planning%20for%20Georgia%20Communities

http://www.gatrees.org/community-forests/management/trees-storm-safety/

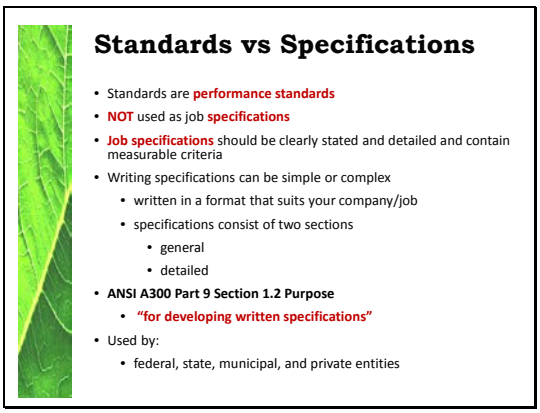
Workbook and template to guide community planning and preparation for urban tree mitigation prior to natural disasters. "This Community Forest Storm Mitigation Planning Workbook and the accompanying Community Forest Storm Mitigation Plan Template are intended as tools for Georgia communities to use in assessing their community forest storm readiness, mitigating tree risk and reducing tree-related storm damage, and developing a community forest storm mitigation plan. The workbook guides you through filling in the template, which serves as a basic framework for developing your Community Forest Storm Mitigation plan." [Workbook Introduction]

Slide 16



Tree risk management as the connection between professional arborists and natural disaster planning, response, and recovery.

Slide 17



The "standard" clearly identifies the performance standards used to develop arboricultural specifications specific to your job or contract and appropriate for all levels of ownership and consulting.

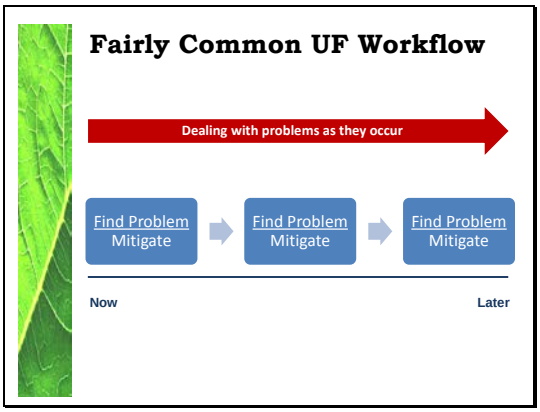
You should not say "Perform a tree risk assessment to the **ANSI A300 (Part 9)-2011 Tree Risk** standard" in an RFP, RFB, proposal, or quotation for professional services.

See Section 1.2 Purpose "for developing written specifications."

Developing and consistently using a risk specification based on the ANSI A300 Standard will:

- reduce misunderstandings related to the scope of the risk evaluation for a tree owner
- clearly define the qualifications of the arborists
- clearly define the assessment techniques to be used
- provide better contract compliance
- reduce the chance for misinterpretation of results (i.e. the written reports)
- help arborists become more consistent with their risk assessments and with colleagues assessments over time

Slide 18

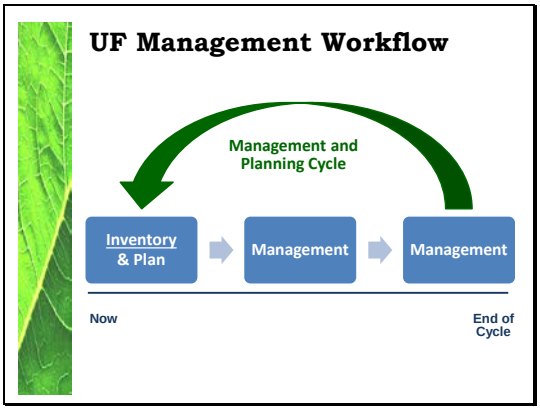


A common approach to urban forest management (workflow or timeline):

- deal with problems as they arise (i.e. "putting out fires")

May be appropriate for very small management areas or ownerships, or as the tree resource changes over time (i.e. there are ways to rationalize this approach!).

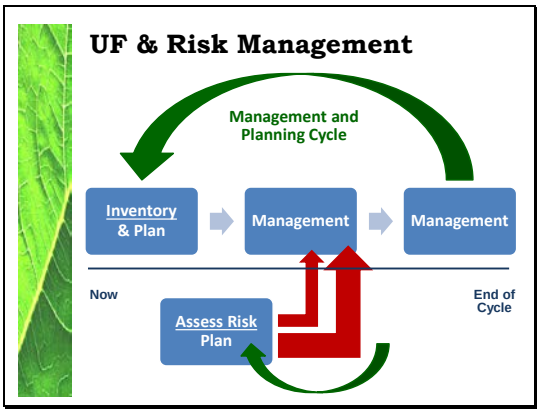
Slide 19



A recommended urban forest management workflow (or timeline):

- inventory the resource of interest (i.e. entire city, a park)
- develop a management plan
- with short-term action plan for a specific time period (i.e. cycle)
- plan will have long-term goals, objectives, and strategies
- manage your urban tree resource over the management/planning cycle
- tree planting
- mulching
- young tree pruning
- pruning mid-aged to mature trees
- removals (for a variety of reasons; problems (i.e. risk), construction, redesign)
- special areas or purposes (riparian areas, parks, watershed protection, carbon, pedestrian amenities)
- implies,,, goals, objectives, strategy, priorities (and budgets)

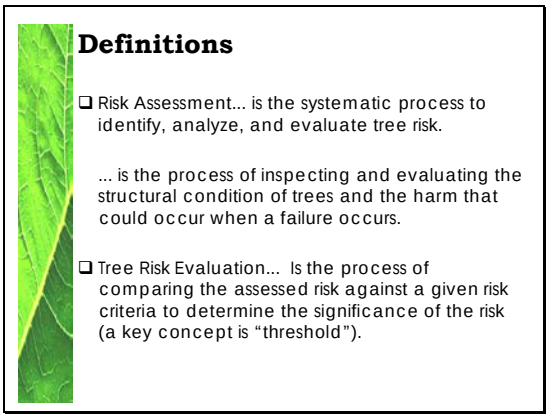
Slide 20



An urban forest management workflow (or timeline) that adds Urban Tree Risk Management:

- inventory the resource of interest (i.e. entire city, a park)
- develop a management plan
- with short-term action plan for a specific time period (i.e. cycle)
- plan will have long-term goals, objectives, and strategies
- manage your urban tree resource over the management/planning cycle
- tree planting
- mulching
- young tree pruning
- pruning mid-aged to mature trees
- removals (for a variety of reasons; problems (i.e. risk), construction, redesign)
- risk mitigation
- special areas or purposes (riparian areas, parks, watershed protection, carbon, pedestrian amenities)
- inventory and develop a separate risk management plan
- this feeds into your management cycle
- the risk management cycle may be shorter than your urban forest management cycle

Slide 21



Risk assessment is the "next" step after the urban tree risk management framework "sets the stage"…

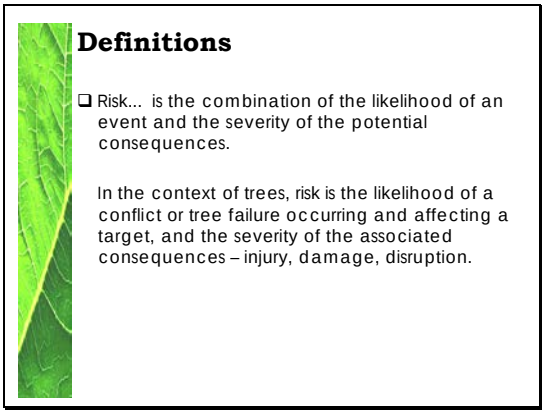
Assessment and evaluation (from ISA BMP: Tree Risk Assessment)…

- Systematic process
- Identify
- Analyze
- Evaluate
- There are standards (i.e. ANSI A300 Part 9) that should be followed when developing this assessment process

Risk Evaluation (from ISA BMP: Tree Risk Assessment)…

- Comparing the assessed risk to your experience and/or expectations (i.e. risk threshold; how much harm is acceptable to you)

Slide 22

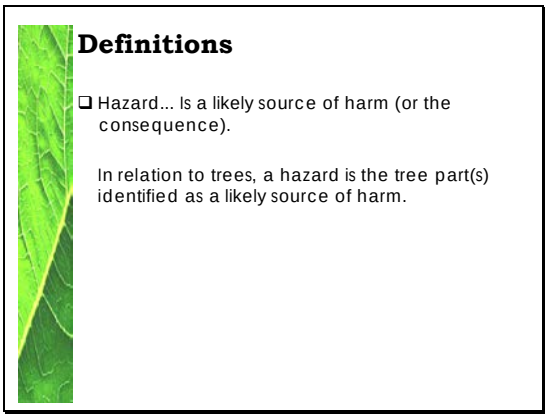


Risk (from ISA BMP: Tree Risk Assessment)…

- Probabilities involved
- An event
- Consequences (harm) with some level of severity (or concern)

Conflict… e.g. tree obstructs stop sign visibility at intersection, or tree limbs/branches touching power distribution lines

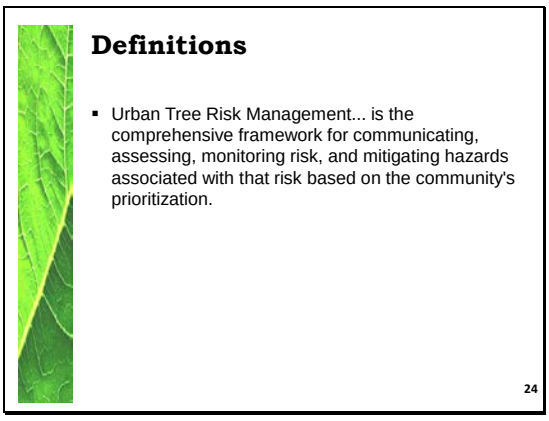
Slide 23



Hazard (from ISA BMP: Tree Risk Assessment)…

- What is the likely source (e.g. limb, branch, whole tree) of the assessed harm (i.e. consequence)

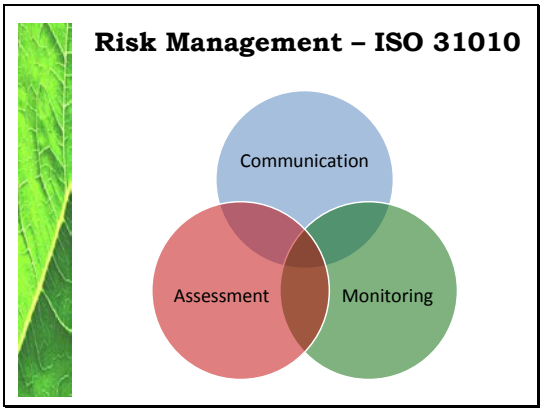
Slide 24



Urban Tree Risk Management defined (drh 2012)…

- comprehensive "framework" (i.e. steps to follow, the recipe)
- communication of risk (to managers, public)
- tree risk assessment by qualified, trained, and experienced arborists or urban foresters (ISA BMP & TRAQ)
- monitoring risk (i.e. temporal, repetitive, observant)
- evaluating hazards (to your threshold) and mitigating those hazards (prioritization)

Slide 25



Current standards for tree risk assessment and management are based on ISO 31010 components:

- Communication and consultation
- Risk assessment
- Monitoring and review

For arboriculture these include:

- ANSI A300 (Part 9)-2011 Tree Risk Assessment; a. Tree Structure Assessment, Tree Care Industry Association, Inc., Londonderry, NH
- Best Management Practices: Tree Risk Assessment (2011), Smiley, E.T., and N. Matheny, S. Lilly, International Society of Arboriculture, Champaign, IL
- Tree Risk Assessment - Manual (2013), Dunster, J. and E.T. Smiley, N. Matheny, and S. Lilly, International Society of Arboriculture, Champaign, IL (i.e. TRAQ)

The ANSI A300, Part Tree Risk Standard also standardizes the language of risk used by risk management professions; see Primer on Risk Analysis: Decision Making Under Uncertainty (Chapter 1) – Charles Yoe .

Slide 26

Take care of trees (i.e. management) on your own schedule…

- Budget implications
- Workforce scheduling implications

Slide 27

Even without property or personal damage, storm damage affects environmental services.

The reason we plan for and manage urban trees.

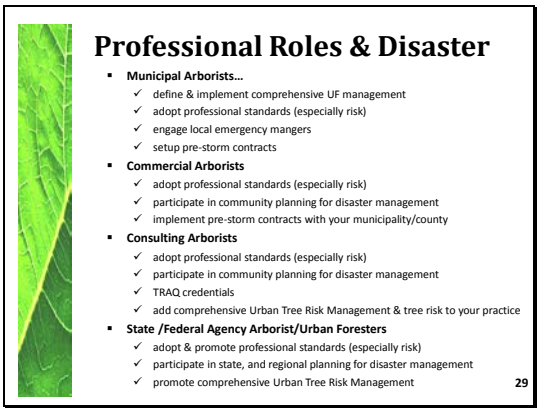
Slide 28

Assess and mitigate to avoid consequences…

- Damage (to property)
- Interruption (of services like electricity, emergency response, water, communications)
- Injury (or death) to people

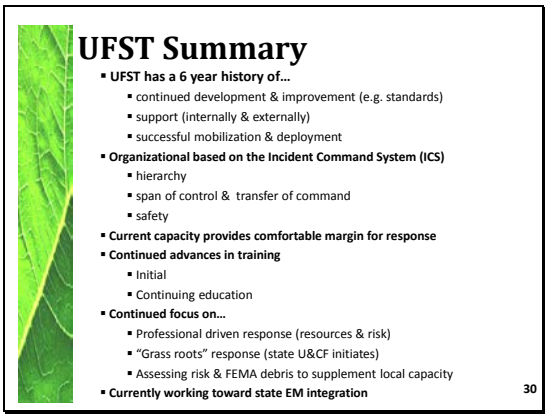
This is the risk connection to disaster.

Slide 29



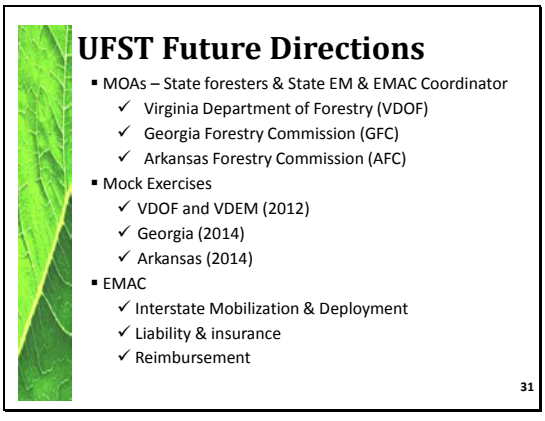
What are specific roles for professional arborists…

Slide 30



- A summary:
- UFST has successful six year history: development, support, and deployments
- Solidly based on the ICS that early trainees were familiar with (wildfire)
- Our current capacity gives us some assurance that we can adequately respond to natural disasters to supplement local capacity
- We continue to improve training opportunities
- Our primary focus continues to be:
- Responses are driven by arboricultural professionals
- Which includes an emphasis on retaining tree canopy
- Responses are initialed at the local level through the state/commonwealth U&CF program (i.e. U&CF Coordinator and State Forester)
- Task Specialists assess tree risk and FEMA debris classification and make recommendations accordingly
- Risk assessment specifications to ANSI A300 standard and ISA BMP are being developed
- Public safety is the overriding concern
- Community recovery is an important component (functional tree canopy, disaster clean-up to normalcy)

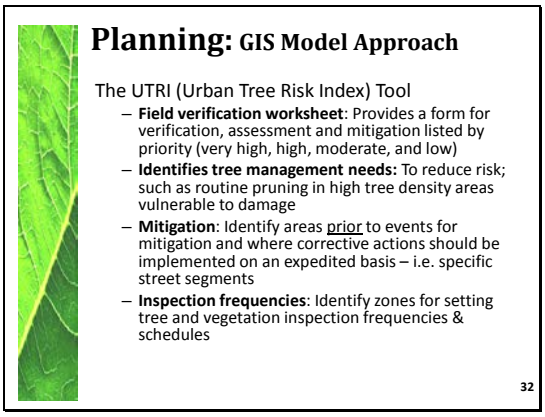
Slide 31



Currently UFST is pursuing the following:

- Providing "mock disaster" exercises in conjunction with state EM
- Stronger partnership development with state MOAs
- Participation with EMAC through state EMAC Coordinators
- Continued talks with FEMA
- UFST role
- Debris standards (e.g. root plate disturbance)
- www.UFST.org improvements (2013)

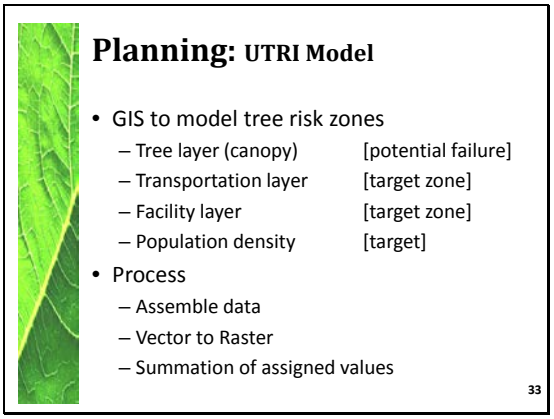
Slide 32



How the UTRI GIS model is implemented:

- The model assessment (via GIS layers) locates the areas of "concern" (potential risk)
- Specific site level inspections identify needs – field verification
- Principal management actions are tree pruning and removal
- Mitigation is prioritized based on UTRI rating
- The street segments with UTRI rating also establish the reinspection frequency and scheduling

Slide 33



The Urban Tree Risk Index (UTRI) model is based on an urban tree canopy (UTC) layer.

UTRI is a component (GIS model) of the Vegetative Risk Management Plan that uses tree canopy and other readily available data to develop a prioritization scheme for ANSI A300 Level 1 assessments.

GIS models work with layers, and we assembled readily available data from local, regional, state & national sources.

The UTRI model does not use a tree risk rating system like that needed for a comprehensive risk management program.

However, the GIS layers function as surrogates for rating street segments as "potential" areas of concern, inspection, and subsequent prioritized mitigation.

UTC provides the locations of possible risk trees.

The transportation layer (since our analysis is primarily response oriented) and the facility layers establish the "target zones" when trees are present.

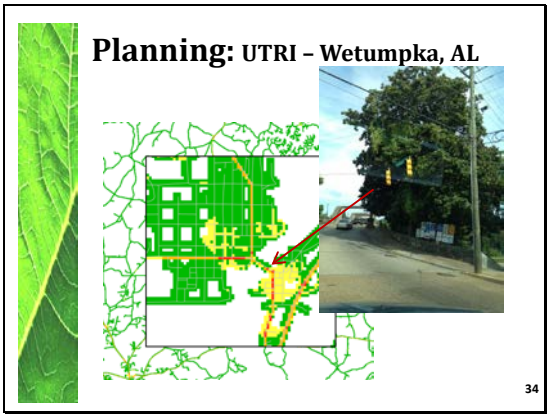
Population density is a surrogate for (target) occupancy; that is, the higher the population density the more frequently people (as pedestrians, vehicle operators, or in some type of gathering – think park, school) will be in proximity to the trees (before, during and after a disaster).

For any area, you use data available; as the scale becomes more "local" the data should become more detailed and has a finer resolution; and also should be more current:

- canopy
- block tree counts
- individual trees (locations)

The process is the summation of individual layers into a composite rating (for each street segment). Simple!

Slide 34



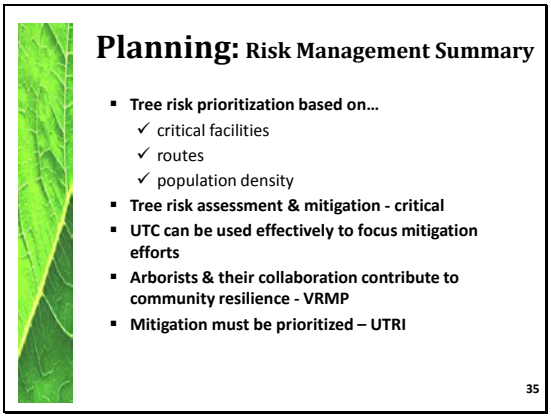
The downtown Wetumpka area with site verification photo on the south end of the bridge.The red "dot" in the final UTRI index layer from GIS prompts a "drive-by" (a Level 1 tree risk inspection under ANSI A300 Part 9) to verify,

Some "drive-bys" result in Level 2 inspections,

Some Level 2's lead to mitigation.

UTRI is used to quickly locate the street segments of greatest concern for failure during disasters.

Slide 35



The first half of this relationship.

Professional arborists

The second half of this relationship.

when planning & preparing for disasters, critical facilities, routes, and population density determine priorities…

while tree health is a primary concern of urban forest managers & arborists, tree risk assessment & mitigation is the most important short-term contribution to disaster preparedness

professional arborists contribute to community resilience with other professionals, and community characteristics (social, cultural, economic, education)

tree risk mitigation should be prioritized unless budgets are unlimited!

urban tree canopy (UTC) can be used to locate priority areas