Landscape Design Series 14

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Fire in Utah’s Wildland/Urban Interface

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Wildland/Urban Interface

- Between core urban and rural areas; also includes developed rural areas
- Popular for housing and recreation
- Increased pressure throughout the West
- Problems with wildlife, water quality, fire
- 374,000 acres in Utah
Popularity Leads to Problems

- Attractive natural vegetation
- Fire often natural part of landscape
- Access and infrastructure problems
- Minor fires become major disasters
- Fires cost 8-10x more to fight in WUI
Spokane Area Fires

- Spokane County Washington
- October 16-22, 1991
- 92 wildfires kill one person and burn 114 homes
Spokane area
Oakland/Berkeley Hills Fire

- Berkeley Hills area in Oakland, California
- October 20-23, 1991
- 25 people killed, 3,354 homes and 456 apartments destroyed
- 790 homes in first hour
- Damages in excess of $1,000,000,000
- Also 1923 – 584 homes & $10M, 1970 – 38 homes & $3.5M
Berkeley Hills before
Berkeley Hills after
Berkeley Hills rebuilding, 2/93
Los Alamos (Cerro Grande) Fire

- Prescribed fire in Bandelier NM
- May 2000
- 220 structures & 43,000 acres burned
- $100 million to $800 million in losses
Los Alamos, Cerro Grande fire
Utah WUI Fires

• 1990-1992
  – 153 interface fires
  – 24 counties
  – $1.6 million property damage
  – $31.4 million threatened property

• 2001 -- At least 823 WUI fires

• Over 400 communities “at risk”
Wasatch Mountain Fire

- Wasatch County, Midway area
- August 1990
- Two firefighters killed
- $1.2 million property damage
- Twenty homes burned
Wasatch Mountain area; oak-maple
Wasatch Mountain area; oak-maple
Wasatch Mountain fire
Utah WUI At-risk Areas

- Wasatch Front
- Wasatch Back
- Southwest Utah
- Moab Face
- Others
Wasatch Front; Salt Lake City
Wasatch Front; Bountiful
Southwest Utah; Duck Creek
Castle Valley; P-J, oak
Castle Valley; oak, P-J
Moab Face; oak, conifers
Moab Face; oak, P-J, ponderosa pine
Moab Face
Solutions

- Community level
- Development level
- Individual level
Community Level

- Planning and zoning
- Infrastructure requirements
  - Fire department
  - Road widths, grades, curves, etc.
  - Water supply
- Demonstration homes, landscapes
- Ordinances
Planning (SE of Cedar City, UT)
MAPLE HILLS SUBDIVISION NO. 4
Final Phase!
FROM 1/2 to 8 ACRES
MARKETED BY
MAPLE HILLS REALTY
298-3275
RONN MARSHALL 573-1178 • GREG CALL 298-6387

DEVELOPED BY:
THE MADISON CO. • RON FERRIN 364-7151

Planning (Bountiful, UT)
Fire station (Sundance, UT)
“WHEREAS, fire fighting assistance from Moab or Grand County would take at least forty-five (45) minutes to get from Moab to Castle Valley...”
Steep, poor road (Cedar Highlands, UT)
Dead-end street (Uintah, UT)
Water supply (Uintah, UT)
Hydrant (buried; Uintah, UT)
Utah County Ordinance #1993-07

- Building permit tied to fire safety permit
- Sets standards for roads, premises identification, water supplies, fire hydrants
- Requirements for sprinklers, maximum slopes, chimneys, driveways, roofs, landscaping
Development Level

- Development location, layout
- Fuel breaks
- Water supplies
- Buried utilities
- Street, home signs
- Covenants that help
- Education, awareness
Single road access (Bountiful, UT)
Possible water source (Uintah, UT)
Buried utilities (Uintah, UT)
Powerlines (Bountiful, UT)
Road sign (Cedar Highlands, UT)
No road signs (Midway, UT)
Wood roof, oak brush (Uintah, UT)
Individual Level

- Building design
- Building placement, access
- Landscaping, maintenance
- Water supply
- Readiness
Building Design

- Non-flammable roof
- Non-flammable siding
- Short, boxed eaves
- Decks
- Screened openings, chimneys
- Down-slope windows
- Sprinkler systems in and out
Wood roof (Uintah, UT)
Class A roof, boxed eaves (Uintah, UT)
Screened chimney (Uintah, UT)
Fire trouble spots

1. Untreated wood shake roof
2. Home located on a slope
3. Wood deck facing slope
4. Large glass windows facing slope
5. Unprotected louvres in front
6. Firewood stored too close to home
7. Inadequate weed clearance
8. Tree limbs overhanging roof
9. Chimney spark arrester missing
10. No access for emergency vehicles
Building Placement, Access

- Slope location, steepness
- Driveway design
- Fire department access to all parts of property
Homes on steep slope, oak (Midway, UT)
Fire burns uphill faster than downhill.

Clearance alone is not enough.
Wind 50 MPH

Pre-planning for Fire Safety

Stucco house
Roof slightly pitched, fire resistant
Wall to deflect heat
Fuel reduced, some plants for stability
Trees trimmed in distinct groups

Set-back from top of hill
Structure to deflect fire

Modifications for Fire Safety

- Short overhang
- Deck and wall to deflect heat
- Fuel reduced, some plants retained for slope stability
- Trees trimmed at edge of property

Wind 50 MPH
Long driveway (Uintah, UT)
Driveway & vegetation (Uintah, UT)
Access gate (key?)
Propane tank away from house
Landscaping, Maintenance

- Defensible space
- Pruning, thinning
- Mowing
- Firewood storage
- Debris disposal
- Monthly check
- Fire-resistant (firewise) plants
Defensible space; zones

- **Zone One (Near Area)**
  - Fire-retardant foundation plantings

- **Zone Two (Mid Area)**
  - Low plants to 18" high act as fuel break

- **Zone Three (Far Area)**
  - Trim and thin fringe areas
Defensible Space

- Clearance for firefighters to stay, work safely
- Clearance in case firefighters aren’t available
- Zone 1 (near) – well tended, neat, clean-up litter, firewise plants, Class A roof
- Zone 2 (mid) – low growing plants; few or no trees, shrubs; step fire down
- Zone 3 (far) – managed native vegetation, thinned, pruned, cleaned-up
Defensible Space

• As little as 60-100 feet of clearance can save a home, even with an intense crown fire
• More clearance is better
• Litter and wood roofs ignited by brands/embers burns many buildings
• www.firelab.org/fbp/fbresearch/wui/home.htm for info on fire behavior and building ignition
Removing ladder fuels

- Tree branches growing down to shrubs
- Masses of shrubs
- Flammable Groundcover
- Fire ladder
- Shrubs in distinct groups
- Fire resistant Groundcover
- Tree overhanging Roof and chimney
- Tree trimmed
- Well maintained landscape
Landscape maintenance, near zone

Do not overthin the upper canopy

Mow grasses and weeds

Trim bottom up 6 feet

Regular maintenance to reduce fuel
House in oak (Uintah, UT)
House in oak (Uintah, UT)
Contrasting landscapes (Uintah, UT)
Good landscape; appropriate?
Debris near house (Midway, UT)
Debris along road (Uintah, UT)
Firewood under wood deck
Firewood near house
Clean litter away from structure
Home Protection Guidelines*

- Eliminate all flammable materials within 10’ of house
- Consider wood roof as flammable; wet frequently
- Remove flammable materials from decks, boardwalks
- Remove pine needles from gutters and roof.
- Staple metal screen over openings or gaps
- If possible, wet around house; especially within 60’
- Reduce or eliminate surface fuel within 100’ of house; prune lower limbs of trees at least 8’ above ground
- Remove fuel from around propane tanks

* See www.firelab.org/fbp/fbresearch/wui/home.htm
Fire Resistant or Firewise (not Fire-proof) Plants

- Mowed grasses
- Clover, alfalfa
- Well-pruned shrubs like lilac, elderberry, snowberry, sand cherry
- Many broadleaved trees
- Avoid conifers
Firewise Plant Characteristics

- *No plant is fireproof. All will burn in intense fire.*
- Firewise plants have one or more of these traits:
  - contain more moisture, esp. during fire season
  - don’t contain readily flammable oils, chemicals
  - low fuel -- produce less litter or stay small
  - compact or low to the ground; can be used in landscape to interrupt fire pathways.
- Firewise plants generally low to ground, compact, stay green and healthy with low maintenance and minimal water.

Interrupt at least one leg of the fire triangle.
Firewise Plant Characteristics & Management

- Trees provide large amounts of fuel; carefully place and maintain.
- Broadleaved trees generally less flammable than conifers (pines, firs, spruces, junipers).
- Most do well in sunny areas typical of some fire-prone sites.
- Some need minimal or no irrigation; over-irrigation can harm or cause fast growth. Some require irrigation.
- Some can be weedy in certain circumstances.
- Consider plant availability and cold-hardiness.
Water Supply

• Supplemental water supply – pool, stream, lake
• Stand-pipe away from building
• Is supplemental power needed?
Readiness

• Affected by attitude, awareness
• Need for education
• Escape plan
• Tools, equipment
• Communication with neighbors
Sources of Assistance

• Local fire department
• County Fire Marshal
• Utah Division of Forestry, Fire & State Lands
• State Fire Marshal
• USU Cooperative Extension
  – extension.usu.edu/forestry
• USDA Forest Service; BLM
• www.firewise.org
• www.firelab.org/fbp/fbresearch/wui/home.htm