Firewise Landscaping

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Pave it?


DOONESBURY
BOOPSIE! WHAT HAPPENED? YOUR LINE WENT DEAD!
I'M SORRY, SID. THE HOUSE WAS FILLING UP WITH SMOKE.
11-10
WHAT? MALIBU'S ON FIRE AGAIN?
WELL, OUR NEIGHBOR'S BACKYARD IS. AND IT LOOKS LIKE OURS IS NEXT.
OF COURSE, IT'S NOT REALLY "OURS," IS IT? THE CHAPARRAL BELONGS TO NATURE, AND IT NEEDS THE FIRE TO RENEW ITSELF. IT'S ALL PART OF GOD'S PLAN!
WHAT FOOLS WE'VE BEEN...
HEY, DIDN'T I TELL YOU TO PAVE IT OVER? DIDN'T I?

No, but we can do better than…

Overview

- What's the problem?
- What are the solutions?
- Firewise landscaping
  - plants with firewise characteristics
  - appropriate placement
  - management, maintenance
- Firewise plant examples

WUI – Wildland/Urban Interface

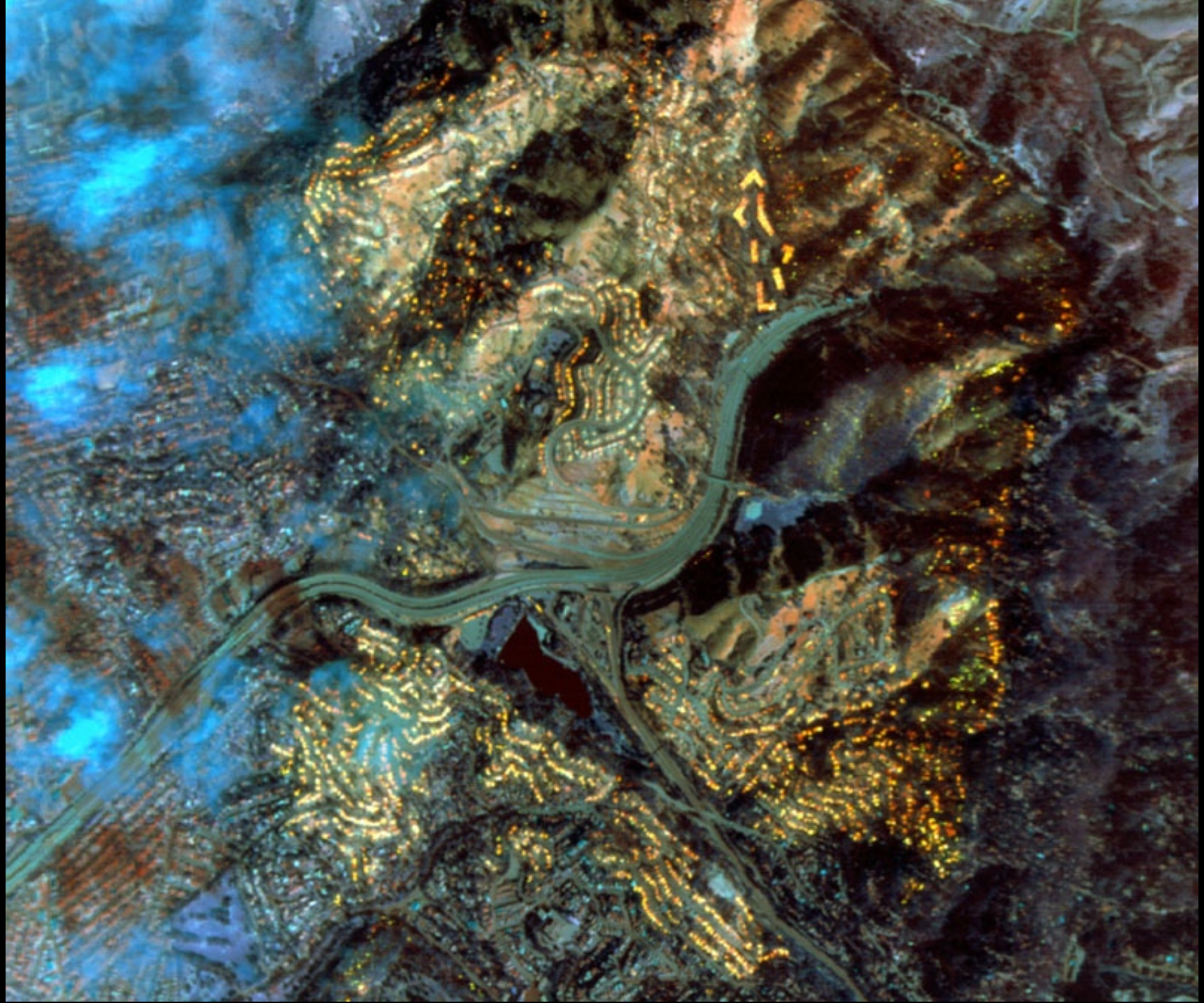
- Between core rural and urban areas
- Popular for housing and recreation
- Increasing pressure throughout the West
- Problems with wildlife, water quality, and fire

Popularity = Problems

- Attractive natural (and introduced) vegetation
- Fire often a natural part of landscape
- Access and infra-structure problems
- Minor fires become major concerns

Oakland/Berkeley Hills before; 1991

Oakland/Berkeley Hills after; 25 killed, 3,354 homes lost, $1B damage



Cerro Grande Fire, Los Alamos, 2000;
220 homes burned, up to $800M losses

Cedar/Old/etc. Fires, California, 2003;
3,640 homes burned; at least 15 fatalities

Witch/Grass Valley/etc. Fires, California, 2007; 2,180 homes burned

Solutions

- Community, Development, Individual

Community

- Planning & zoning*
- Infrastructure requirements
- Demonstration homes, landscapes*
- Ordinances*

*Affect/affected by plants & landscaping

Development

- Development location, layout*
- Access
- Fuel breaks*
- Water supplies
- Buried utilities
- Street, home signs
- Covenants*
- Education, awareness*

*Landscape related

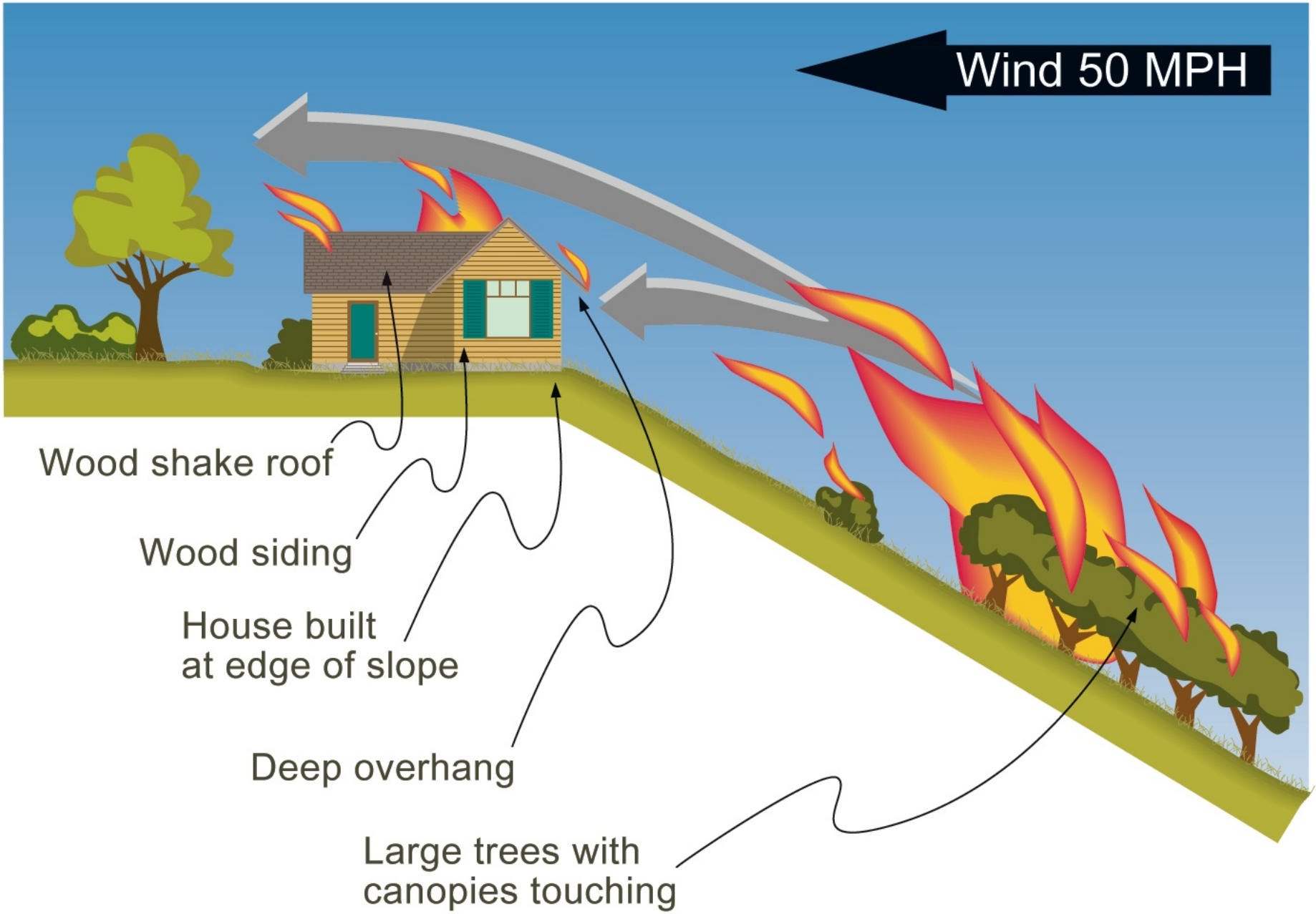
Individual

- Property selection*
- Building design, construction
- Water supply*
- Landscaping, maintenance*
- Readiness*

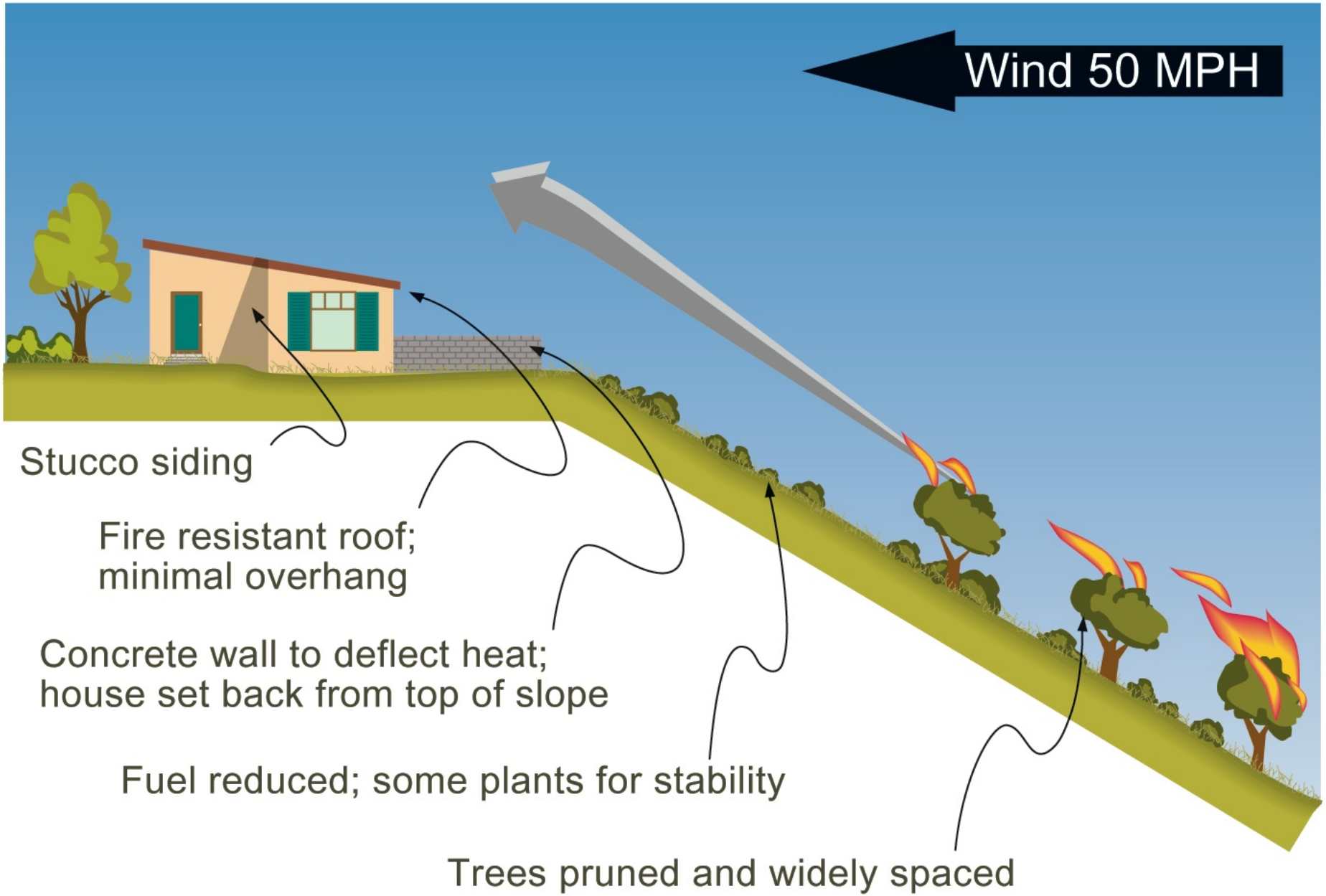
**Landscape related*

Property selection and construction

- Lot position – avoid ridge tops, canyons, steep slopes
- Ensure water availability
- Need vehicle access
- Small lots = more dependence on neighbors
- NO WOOD ROOFS!

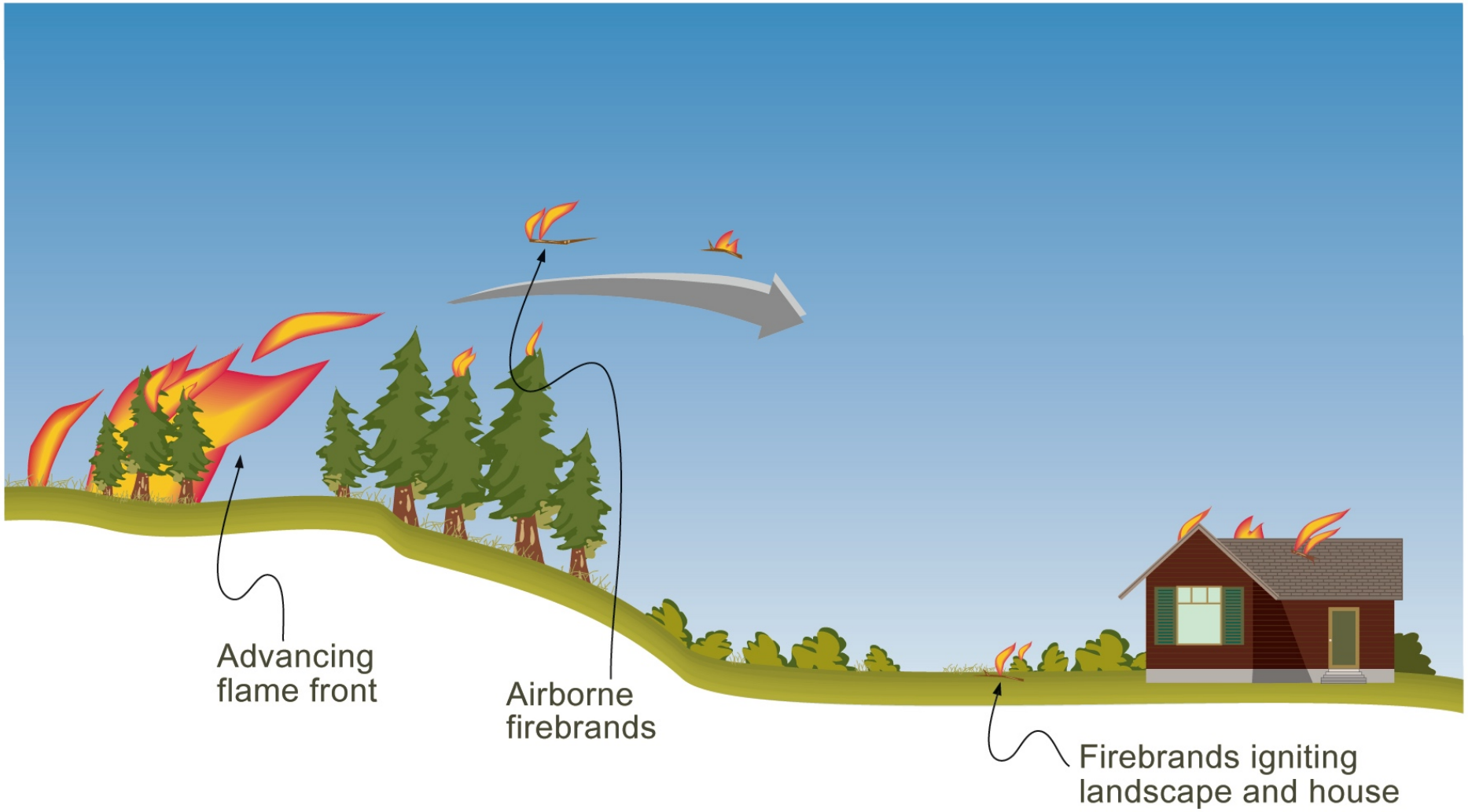


Fires burn fast and hot up hills and canyons


Wind 50 MPH
Stucco siding
Fire resistant roof;
minimal overhang
Concrete wall to deflect heat;
house set back from top of slope
Fuel reduced; some plants for stability
Trees pruned and widely spaced

Firewise landscaping

- Designing, installing, and maintaining landscapes to…
  - minimize fire hazard to structures, residents, and neighbors
  - maintain components of native ecosystems
  - achieve owner's goals
- Focus on the *Home Ignition Zone*



Fire advances by direct flame contact and by airborne firebrands or embers

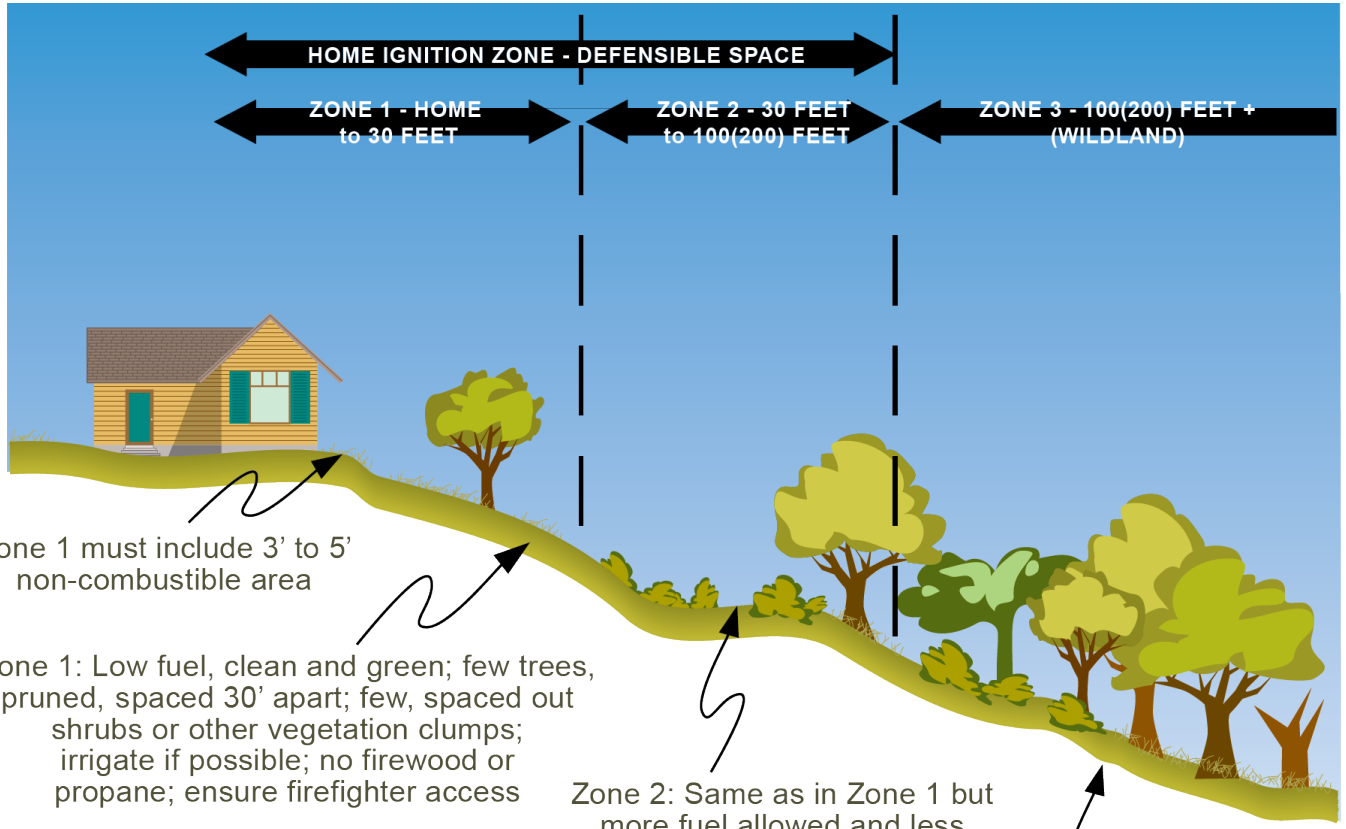
Firebrands

Home Ignition Zone (HIZ)*

- 100-200 foot radius area around a home that affects wildfire's ability to burn the home.
- Includes home, fences, decks, and landscape – all are fuel.
- Research shows that large flames must be within 30 feet to ignite a home.
- Fire moves into and through this zone by direct flame contact and firebrands.

**As conceived by Jack Cohen, U.S. Forest Service*

Home Ignition Zone, Defensible Space



Zone 1 must include 3' to 5' non-combustible area

Zone 1: Low fuel, clean and green; few trees, pruned, spaced 30' apart; few, spaced out shrubs or other vegetation clumps; irrigate if possible; no firewood or propane; ensure firefighter access

Zones 1 and 2: Create fuel breaks of pavement (patio, sidewalk, driveway), mowed lawn, or grazed pasture; prune trees up 8' to 15'; remove dead vegetation

Zone 2: Same as in Zone 1 but more fuel allowed and less intensive maintenance; clumps of 2-3 trees 30' apart; xeriscape

Zone 3: Prune and thin trees and shrubs

All zones: Vegetation amounts step down from maximum in wildland to none next to house

Firewise landscape design

- Zone 1 – Home, attached structures, and landscape out to 30’.
  - Home placement, design, construction, maintenance.
  - Non-combustible area 3’ from home.
  - Beyond 3’ use firewise plants; lean and green.
  - Space out groups of plants; prune trees.
  - Sidewalks, patios, grazed pasture
  - Intensive maintenance, irrigation.
  - Access for fire suppression equipment.
  - Also called defensible space; condition may effect firefighters’ willingness or ability to defend

Firewise landscape design

- Zone 2 – Low fuel landscape 30’ to 100’ out.
  - Same ideas as Zone 1, but less intensive modification and maintenance of landscape
  - Good place for xeriscape if water availability is a concern
  - Extend up to 200’ on steep slopes.

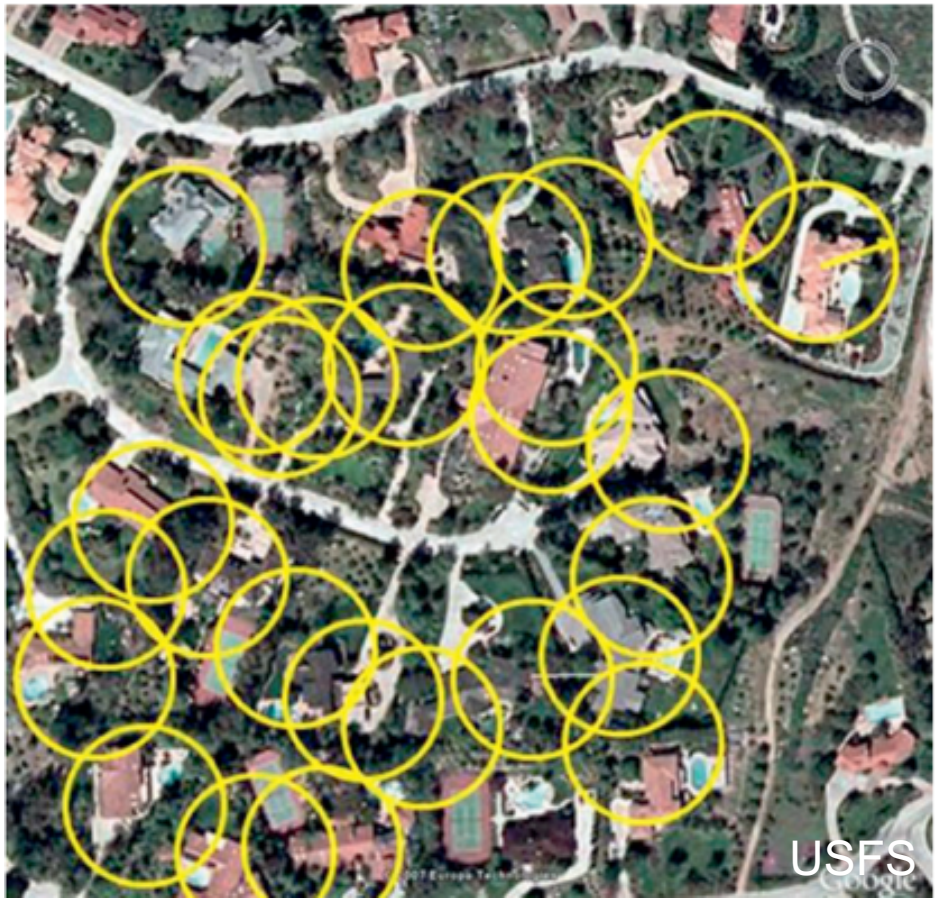
Firewise landscape design

- Zone 3 – Surrounding wildland.
  - Focus on thinning & pruning where feasible.
  - Don’t dump fuel here; remove.

Firewise landscape design

- Often parts of zone 2 and all of zone 3 are not yours – will need to work with neighbors.

Neighbors need to work together



100 foot radius around WUI homes

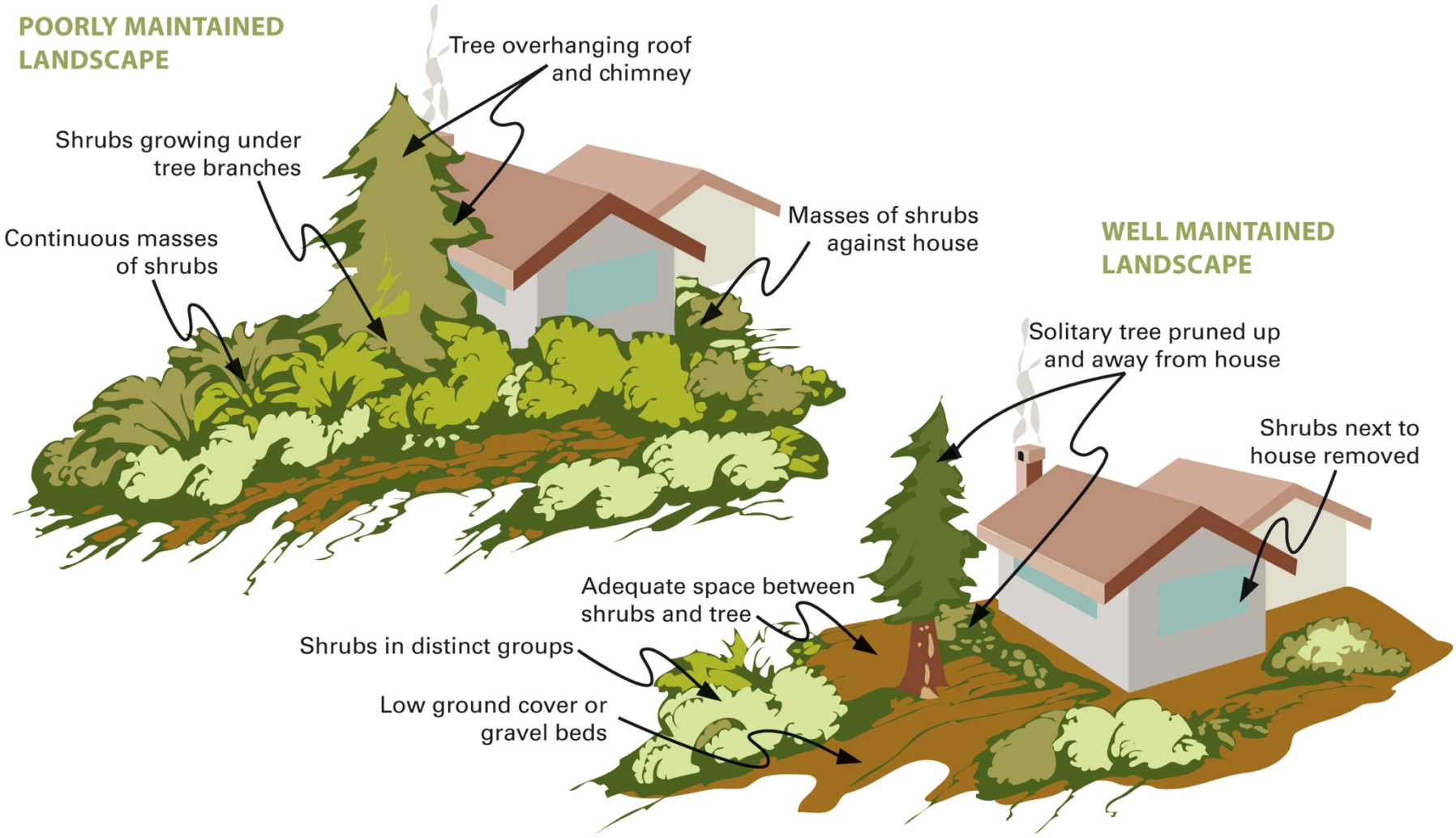
High quality firewise landscaping isn't easy

- Must know plant needs and habits so you can use and manage them appropriately.
- Good looking firewise landscapes aren't easy to design or maintain; takes considerable expertise.

Firewise landscape maintenance

- Irrigate appropriately to keep plants green & moist.
- Mow & water grass regularly according to its needs.
- Rake up and remove dead needles, leaf litter and other plants debris.
- Clean roof, gutters, home perimeter
- Remove tops of herbaceous plants that have gone to seed or become dry.
- Keep shrubs small by pruning back annually.
- Prune low tree branches to a height of 8’ to 15’.
- Don’t pile debris in zones 2 or 3; remove it.

Firewise Landscape Maintenance



Firewise plants and landscaping don’t guarantee fire safety

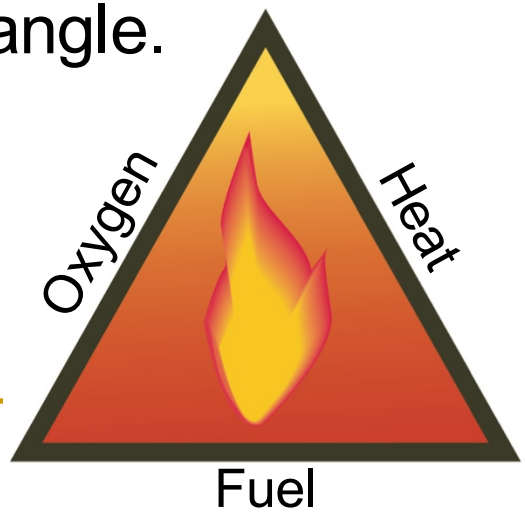
- But, firewise plants, good design, and maintenance help establish a defensible space and reduce fire intensity near structure

Firewise plant terminology

- Firewise
  - less likely to burn
  - or will burn less hot or for less time
  - may imply low maintenance, slow growth
- Don't use terms fire-safe or fireproof – *all plants will burn under extreme conditions*
- Fire resistant is OK

What makes a plant firewise?

- Firewise plants have one or more traits:
  - Tissues contain more moisture, especially during fire season.
  - Tissues contain low amounts of volatile oils and other readily flammable chemicals.
  - Provide less fuel, by producing less litter or by staying small.
  - Compact or low to the ground; can be used in landscape to interrupt fire pathways.
- Interrupt at least one leg of the fire triangle.



What makes a plant firewise?

- Firewise plants generally low to ground, compact, and stay green and healthy with low maintenance and minimal water.

Firewise plant characteristics and management

- Trees provide large amounts of fuel; carefully place and maintain.
- Broadleaved trees generally are 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.

Firewise plants – Grasses

- Most low growing
- Some need to be mowed or grazed
- Warm season/cool season

Crested Wheatgrass (*Agropyron cristatum*)

- Resists fire spread due to growth form

Photo: www.greatplains.org

Photo: clearwaterlandsapes.com

Western Wheatgrass (*Agropyron smithii*)

- Low fuel loads; regrows quickly after fire

Photo: www.rwrp.umt.edu

Buffalograss (*Buchloe dactyloides*)

- Low growing w/out mowing; moist through summer with minimal irrigation

Photo: nativeplantproject.tripod.com

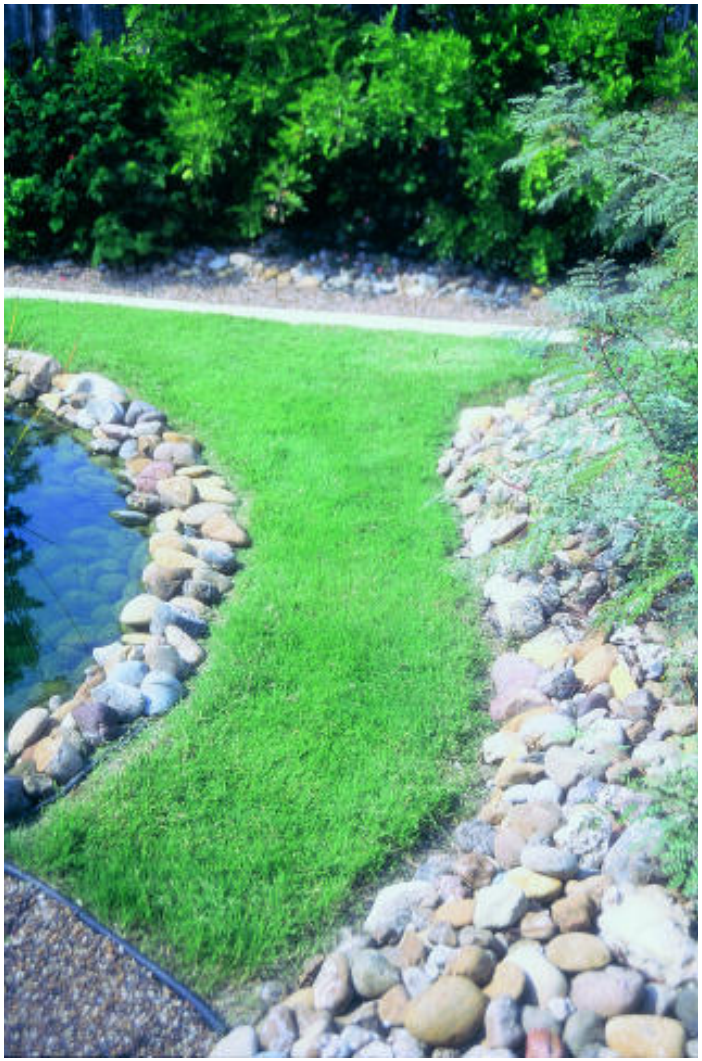


Photo: nativeplantproject.tripod.com

Orchardgrass (*Dactylis glomerata*)

- Mow or graze

Photo: aggie-turf.tamu.edu


Photo: forages.orst.edu

Blue Fescue (*Festuca cinerea* and others)

- Most low growing; may need to mow; stays moist w/ irrigation

Photo: Michigan St. Univ. Extension

Photo: www.ogrodnik.pl

Rye Grass (*Lolium* species)

- Green w/ less irrigation than some; mow or graze

Photo: www.agronomy.psu.edu/Extension/ Turf

Kentucky Bluegrass (*Poa pratensis*)

- Low growing; mow; moist with irrigation

Photo: www.oznet.ksu.edu/hfrr

Sandberg Bluegrass (*Poa secunda* or *sandbergii*)

- Low growing w/out mowing; low fuel loads

Photo: www.pnl.gov/ecology

Firewise plants – Herbaceous perennials

- Grow back from underground parts every year
- Not woody

Yarrow (*Achillea clavennae, A. filipendulina*, etc.)

- Good for dry sites; varying sizes; not all good

Photo: www2.arnes.si/~popsd1s/ilbi/botanika.html

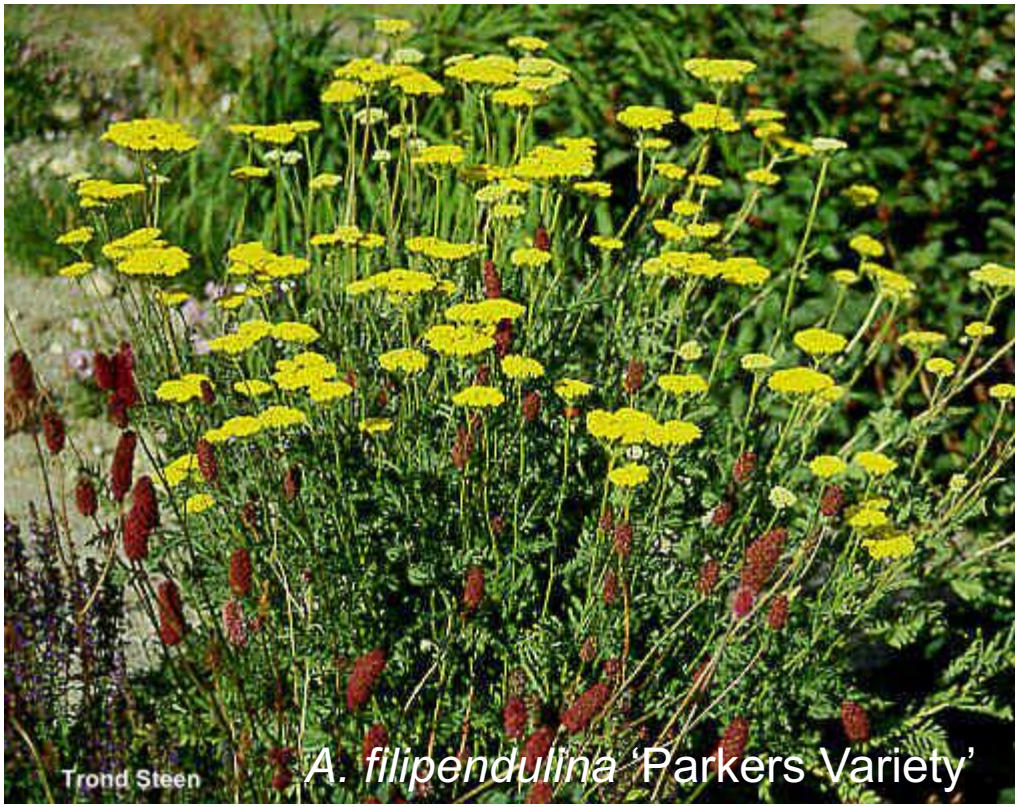


Photo: www.stauder.net/BILDEARKIVET.htm

Columbine (*Aquilegia* species, hybrids)

- Likes moisture & some shade

Photo: www3.sympatico.ca/vivaces

Sea Pink, Sea Thrift (*Armeria maritima*)

- Low growing; dry infertile sites only; salt tolerant

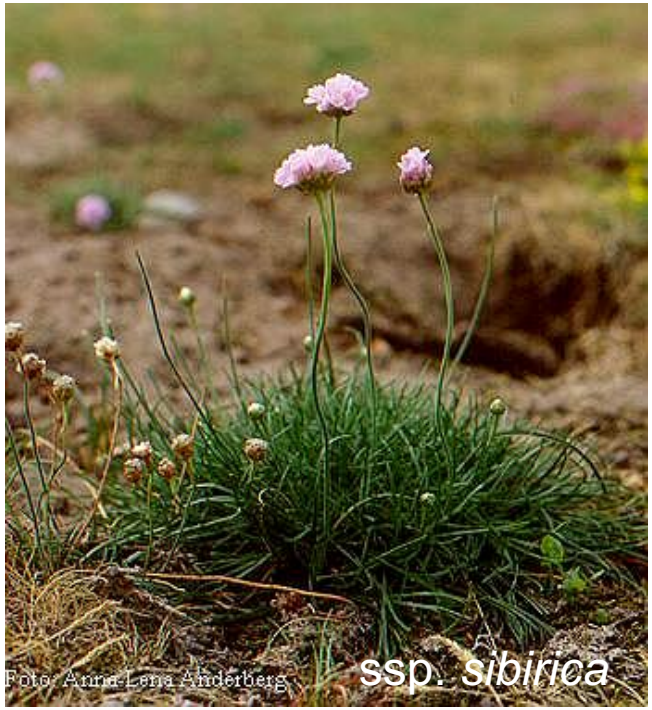


Photo: linnaeus.nrm.se/flora/di

Photo: www.stauder.net/BILDEARKIVET.htm

Beach Wormwood, Dusty Miller (*Artemisia stelleriana*)

- Very well-drained soil; moist in summer

Photo: www.stauder.net/BILDEARKIVET.htm

Bergenia (*Bergenia* species, hybrids)

- Moisture loving; medium sized; semi-evergreen

Photo: www.stauder.net/BILDEARKIVET.htm

Red Valerian, Jupiter's Beard (*Centranthus ruber*)

- Gets fairly large; moist in summer

Photo: homer.span.ch/~spaw6993

Snow-in-summer (*Cerastium tomentosum*)

- Low growing; moist in summer

Photo: www.ujf-grenoble.fr/JAL/visi/apennins/corps.htm

Coreopsis (perennial *Coreopsis* species)

- *C. auriculata* var. ‘Nana’ low growing, needs water; others larger, drought tolerant

Photo: www.extension.iastate.edu/warren/coreopsis.jpg

Photo: people.uis.edu/braeb1/uisprairieproject

Hardy Ice Plant (*Delosperma nubigenum*; also other hardy species)

- Very drought tolerant; low growing; some not cold hardy

Photo: bot-garden.uibk.ac.at

Photo: www.stauder.net/BILDEARKIVET.htm

Pinks (*Dianthus* species)

- Use perennials; need moisture; moist in summer

Photo: www.stauder.net/BILDEARKIVET.htm

Fleabane (*Erigeron* species, hybrids)

- Moist in summer

'Rosa Triumph'

Photo: www.stauder.net/BILDEARKIVET.htm

Photo: www.csdl.tamu.edu/FLORA

Blanket Flower (*Gaillardia* x *grandiflora*)

- Drought, heat tolerant; moist in summer; large

Photo: www.csu.org

Geranium (*Geranium* species)

- Most low-growing; need shade where hot; moist in summer; use perennials

Photo: www.stauder.net/BILDEARKIVET.htm

Photo: www.ext.nodak.edu/county/cass/horticulture.htm

Daylily (*Hemerocallis* species)

- Green and moist in summer

Photo: biology.smsu.edu/Herbarium

Photo: www.stauder.net/BILDEARKIVET.htm

Coral Bells, Alum Root (*Heuchera sanguinea*)

- Also other species, hybrids; low growing foliage

Photo: www.stauder.net/BILDEARKIVET.htm

Photo: www.stauder.net/BILDEARKIVET.htm

Evergreen Candytuft (*Iberis sempervirens*)

- Fairly low growing; evergreen

Photo: www.ingibjorg.is

Photo: home.onego.ru/~otsoppe

Iris (*Iris* species, hybrids)

- Green and moist in summer

Photo: www.stauder.net/BILDEARKIVET.htm

Photo: www.stauder.net/BILDEARKIVET.htm

Red-hot Poker (*Kniphofia* species, hybrids)

- Large plants; moist in summer

Photo: www.stewo.no

Photo: www.stauder.net/BILDEARKIVET.htm

Lavender (*Lavandula* species)

- Moist in summer; compact; cut to ground regularly

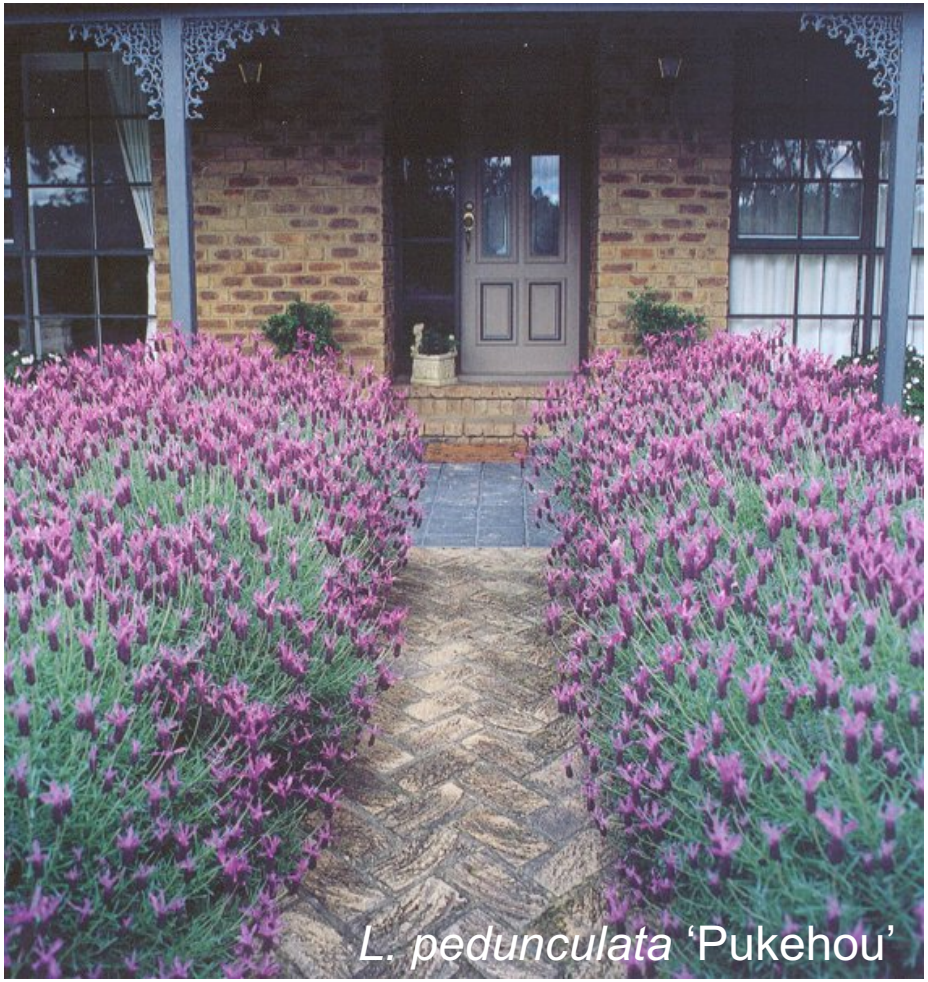


Photo: www.icangarden.com/NewEden/pukehou.htm

Shasta Daisy (*Leucanthemum* x *superbum*)

- Green and moist in summer

Photo: www.stewo.no

Sea Lavender, Statice (*Limonium latifolium*)

- Low growing leaves; salt resistant; dry soils

Photos: www.csu.org

Flax (*Linum* species)

- Good for tough sites & soils

Photos: www.terra.hu/novkorny/ htm/linuaust.htm

Lily-turf (*Liriope spicata*)

- Fairly low growing; moist or dry sites; evergreen

Photo: tnolan.tripod.com

Lupine (*Lupinus* species, hybrids)

- Some are annuals; poisonous to livestock; good for poor soils

Photo: www.stauder.net/BILDEARKIVET.htm

Alfalfa (*Medicago sativus*)

- Green & moist in summer; low growing

Photo: www.snre.umich.edu/nassauer/rules.html

Primrose (*Oenothera* species)

- Fairly low growing; best on poor soils

Photo: www.stauder.net/BILDEARKIVET.htm

Poppy (*Papaver* species)

- Easy to grow; cut back regularly

Photo: www.stauder.net/BILDEARKIVET.htm

Penstemon (*Penstemon* species, hybrids)

- Use on well-drained soils

Photo: www.stauder.net/BILDEARKIVET.htm

Russian Sage, Azure Sage (*Perovskia atriplicifolia*)

- Moist in summer; cut back yearly

Photo: www.csu.org

Photo: www.ext.nodak.edu/county/cass/horticulture.htm

Cinquefoil, Potentilla (*Potentilla* species, hybrids)

- Use low-growing, non-shrubby spp.; full-sun

Photo: www.stauder.net/BILDEARKIVET.htm

Salvia, Sage (*Salvia* species, hybrids)

- Some are annuals; only use low-growing, small plants; Mediterranean sage is weedy

Photo: www.stauder.net/BILDEARKIVET.htm

Stonecrop, Sedum (*Sedum* species)

- Very low growing; fleshy, moist leaves; drought tolerant

Photo: www.stauder.net/BILDEARKIVET.htm

Hen and Chicks (*Sempervivum tectorum* and other species)

- Very low-growing; succulent; good on droughty, poor soils

Photo: www.stauder.net/BILDEARKIVET.htm

Lamb's Ear (*Stachys byzantina*)

- Moist in summer; good on poor soils

Photos: www.stauder.net/BILDEARKIVET.htm

Yucca (*Yucca filamentosa*)

- Evergreen; very drought tolerant

Photo: members.aol.com/hardycacti

Firewise plants – Shrubs, vines

- Woody; grows out from above-ground stems
- Many low growing; slow growing

Bearberry, Kinnikinnick, Manzanita (*Arctostaphylos uva-ursi*)

- V. low, spreading; evergreen; poor soils; needs little pruning; salt tolerant

Photos: www.funet.fi/pub/sci/bio/life

Saltbush (*Atriplex* species)

- Very drought tolerant; low maintenance

Photos: helios.bto.ed.ac.uk/bto/desertecology

New Jersey Tea (*Ceanothus americanus*)

- Low, dense form; evergreen; fairly trouble-free; drought tolerant

Photo: Mike Haddock, www.lib.ksu.edu/wildflower

Photo: biology.smsu.edu/Herbarium

Ceanothus (*Ceanothus ovatus* and others)

- Fairly low growing; evergreen; low maintenance

Photo: wiscinfo.doit.wisc.edu/herbarium

Rock-rose (*Cistus* species)

- Not all are cold hardy; evergreen; dry sites; size varies

Photo: perso.wanadoo.fr/lyceepaysagemarseille

Photo: ohric.ucdavis.edu

Cotoneaster (*Cotoneaster horizontalis, C. dammeri*, & others)

- Use low-growing, compact forms; some are evergreen; dry sites; low maintenance; tough

Photos: www.orst.edu/dept/Idplants; Dept. Hort., Oregon State Univ.

English Ivy (*Hedera helix*)

- Evergreen vine; low growing, spreading, climbing; prune to control spread; sun or shade

Photo: hflp.sdstate.edu

Immigrant Forage Kochia (*Kochia prostrata*)

- Stays green most of year; no volatiles; grows in clumps that break up fuel continuity; don't confuse w/ weedy annual kochia (*K. scoparia*)

Photo: Mike Pellant

Honeysuckle (*Lonicera* species, hybrids)

- Shrubs or vines; use low-growing species/cvs.

Photo: muextension.missouri.edu/xplor/agguides/hort/g06840.htm

Creeping Oregon-grape (*Mahonia repens*)

- Very low growing, spreading shrub; evergreen; needs some shade

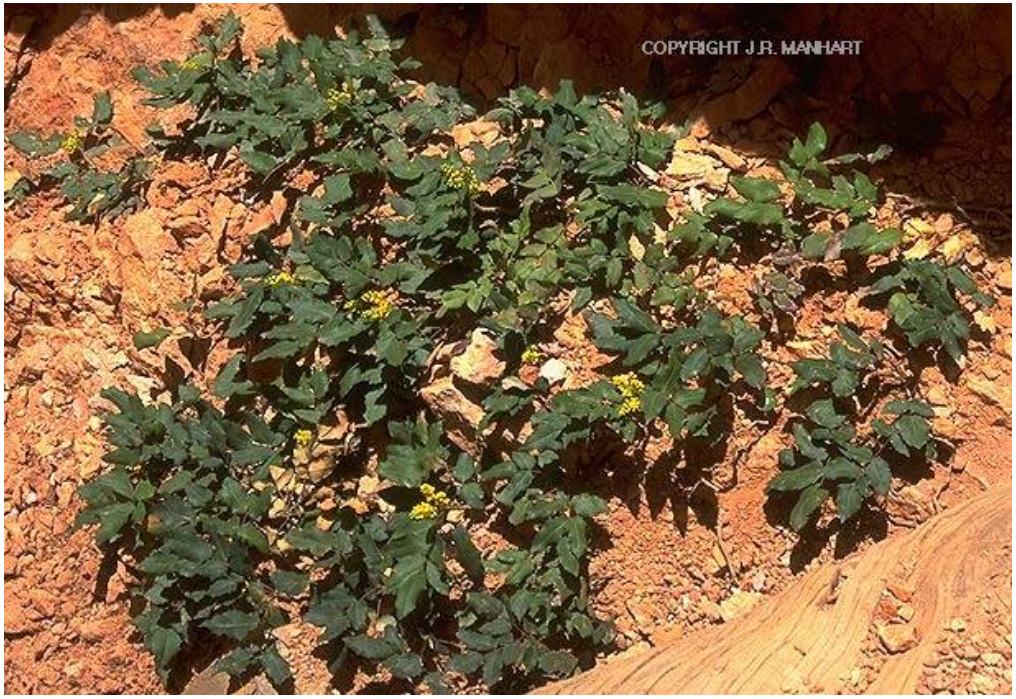


Photo: www.csdl.tamu.edu/FLORA/imaxxber.htm

Virginia Creeper (*Parthenocissus quinquefolia*)

- Vine; tough and very adaptable; prune to control spread

Photo: www.orst.edu/dept/ldplants; Dept. Hort., Oregon State Univ.

Sand Cherry (*Prunus besseyi*)

- Small, spreading shrub for dry, tough sites

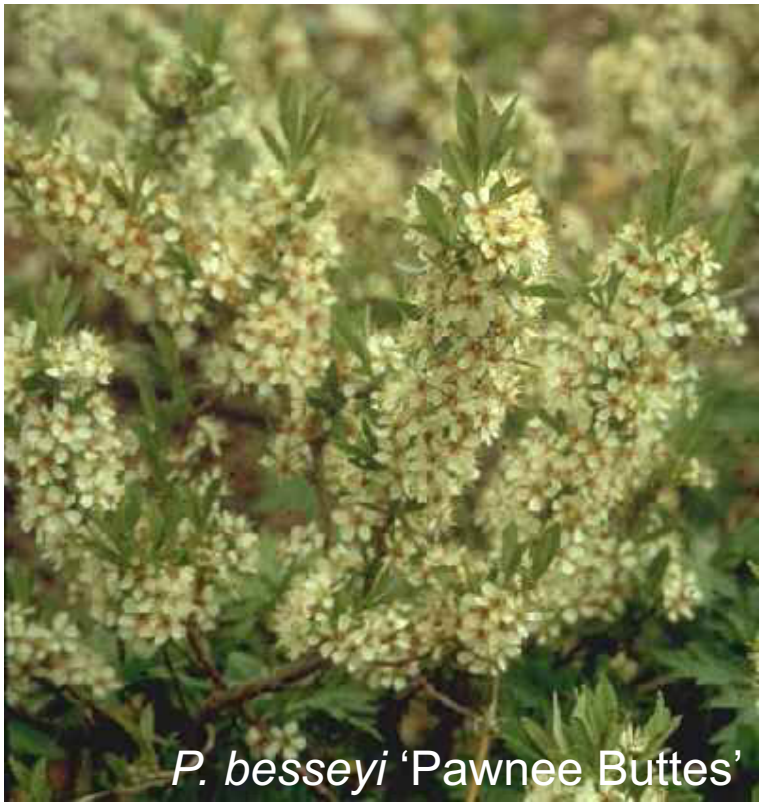


Photo: www.ext.colostate.edu/psel

Bitterbrush, Antelope Bitterbrush (*Purshia tridentata*)

- Low maintenance; good for dry, tough sites

Photos: www.cnr.vt.edu/dendro/wwwmain.html; Virginia Tech Dendrology

Firethorn, Pyracantha (*Pyracantha* species)

- Evergreen shrub; use low-growing selections; prune regularly

Photo: www.orst.edu/dept/Idplants; Dept. Hort., Oregon State Univ.

Buckthorn (*Rhamnus* species)

- Tough shrub; low maintenance

Photo: www.hort.uconn.edu/plants

Skunkbush Sumac and other Sumacs (*Rhus trilobata* and others)

- Skunkbush small, easy to grow, low maintenance; some get large; thin & prune; drought tolerant

Photo: www.biosurvey.ou.edu

Photo: www.csdl.tamu.edu/FLORA/BigBend/BB0294.jpg

Currant, Gooseberry (*Ribes* species)

- Use low-growing dwarf forms; fairly tough; adaptable

Photo: www.gf.vu.lt/depts/garden/photogalery.htm

Photo: www.orst.edu/dept/Idplants; Dept. Hort., Oregon State Univ.

Shrub Roses (*Rosa rugosa* and other species)

- Medium shrub; tough; fairly drought and salt tolerant

Photo: www.wsu.edu/~lohr/wcl

Photo: www.wellesley.edu/Biology/Courses/217/Rosaceae.html

Russet Buffaloberry (*Shepherdia canadensis*)

- Does well on very poor soils; drought tolerant; fixes nitrogen; salt tolerant

Photo: www.wsdot.wa.gov/eesc/environmental

Photo: botit.botany.wisc.edu

Lilac (*Syringa vulgaris*)

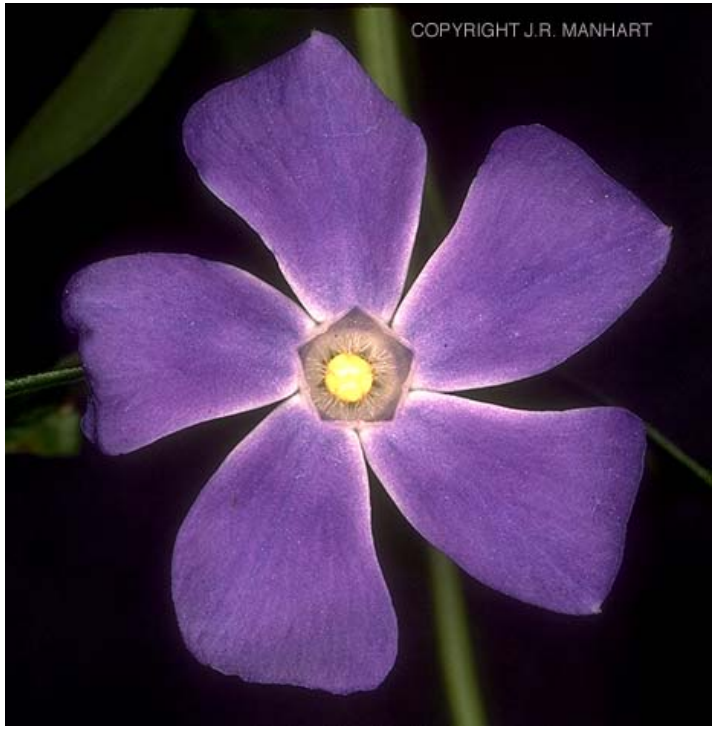
- Small to large shrubs; green in summer with irrigation; thin & prune regularly

Photo: www.oznet.ksu.edu/hfrr

Photo: www.orst.edu/dept/Idplants; Dept. Hort., Oregon State Univ.

Large Periwinkle (*Vinca major*)

- Low growing, prostrate ground cover; sun or shade; evergreen



Photos: www.csdl.tamu.edu/FLORA/imaxxapo.htm

Dwarf Periwinkle, Common Periwinkle (*Vinca minor*)

- Similar to large periwinkle, but very low to the ground

Photos: www.hort.uconn.edu/plants

Firewise plants – Trees

- Many will need supplemental moisture
- Large woody plants; lots of fuel
- Use moist, broadleaved trees; not conifers
- Pruning branches up from ground important
- Break up large, continuous wooded areas near area to be protected

Firewise Plants – Trees

- Maple (*Acer*)

Firewise Plants – Trees

- Birch (*Betula*)

Firewise Plants – Trees

- Redbud (*Cercis*)

Firewise Plants – Trees

- Aspen, Cottonwood, Poplar (*Populus*)
- Willows (*Salix*)

Firewise landscaping resources

- USU Extension or at http://forestry.usu.edu/htm/forest-fire/fire-safetywildland-urban-interface
- Firewise website at www.firewise.org
- Oakland Hills fire history – https://www.youtube.com/watch?v=IrZsQW1uaDA

Firewise landscaping resources

- Mike Kuhns, Extension Forester
  5230 Old Main Hill, USU
  Logan, UT 84322-5230
  mike.kuhns@usu.edu