WILDFIRE MITIGATION PLAN

May 2005

Prepared by Certified Forester Ron Gosnell

Reviewed by

Approved by

This plan encompasses two deeded properties combined as 2475 Big Owl Road
Approximately 7 acres total in SE1/4 NW1/4 S2 T3N R73 W of the 6th P.M.,
Boulder County, Colorado

Landowners
Ron and Jo Gosnell
457 Old St. Vrain Road
Lyons CO 80540
Telephone (303) 823-6122

The purpose of the plan is to fulfill the land use planning requirements of Boulder County to build on the property, and to lower the risk of potential wildfire damage here.

The Colorado State University Natural Resources Series Forestry publication no. 6.302, Creating Wildfire-Defensible Zones was used as a guide for this plan.

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WILDFIRE MITIGATION DATA SUMMARY

INSPECTION BY _____	DATE_____
LANDOWNERS:	Ron and Jo Gosnell, 457 Old South St. Vrain Rd., Lyons 80540
TELEPHONE:	(303) 823-6122
SITE ADDRESS:	2475 Big Owl Road, Allenspark 80510
IDENTIFICATION:	Land Use Department Parcel Number 119702000035
LEGAL:	+-7ac SE1/4 NW1/4 S2 T3N R73W OF 6TH PM
DIRECTIONS:	From Colorado Highway 7 between Allenspark and Estes Park and ¼ mile south of the county line, go east on Big Owl Road ¼ m, turn right (South) onto property
FIRE PROTECTION:	Allenspark Fire Department/Unincorporated Boulder County
DOMINANT FUEL:	Mixed Conifer Species Forest
COMPOSITION:	Order by %: LPP, A, W, S, PP, J, LP and grass
DOM. CANOPY:	Pole class lodgepole pine
CODOMINANT:	None
FUEL MODEL:	Zone 1&2 mitigated; Zone 3, Fuel Model 8
SLASH DISPOSAL:	Pile and burn, lop and scatter, future broadcast burn possible
ASPECT:	SE
SLOPE:	7% (isolated locations less, and home site location 12%)
ELEVATION:	8710 Feet ASL
BUILDING SITES:	Home-in clearing, at isolated 12% slope (full walkout basement) Garage-in clearing, almost level Studio-in clearing, almost level
SITE MOISTURE	Home-rocky and dry decomposed granite Garage- well drained shallow soil Studio-moist, well drained soil
FIRE BARRIERS:	(features which will slow or retard fire spread) Forest clearings around all buildings, aspen and willow stands to the east & NE and SW of buildings, Big Owl Road on the north, access lane from Big Owl on the east, secondary access lane from Highway 7 on the south, cleared fire lanes around property, previous thinning/fuel reduction accomplishments completed since 1981
INSECTS	Mountain Pine Beetle in PP, removed as detected
DISEASE	Dwarf mistletoe in SW LPP stand, isolated; western gall rust LPP, remove in thinnings; Aspen-numerous stem and leaf, regenerate
LOT SIZE:	Property is two lots combined, 4.34+2.82= +-7.16
STRUCTURES EXISTING:	Three structures are planned to be built over several years time. A movable tool shed
DRIVE LENGTH: (In feet)	From Big Owl Road to Studio=560, to Garage=655, to Home=795 From Highway 7 to Home=838, to Garage=823, to Studio=953 Home to Garage=140. Garage to Studio=95, Home to Studio=235; (turn-outs are planned)

ELECTRIC	From new power pole located along south side secondary access lane, underground 55 feet to garage, then from garage, underground 110 feet to house and underground 100 feet to Studio
PROPANE	Underground service from tank location 25 feet north of house
SEPTIC:	30 feet north of house
WELL:	125 feet SE of house
ZONE 1A:	Home: native and crushed rock, Garage: quarry crusher fines, Studio: compacted decomposed granite
ZONE 1:	Mostly cleared with a few trees for effect and screening
ZONE 2:	Heavily thinned/limb pruned LPP, regenerated aspen and willow
ZONE 3:	Managed for protection and production of forest products

NEW CONSTRUCTION:

Home – simple, 24' X 24' 11/2-story 2 BR, 2 BA, with walk out concrete basement (1400SF living space), *Smartwood* tm post and beam model CB-0912-2A Cedar Run I with custom heavy timber frame entry, R-16 SIP walls, drywall interior, wood grain cement board exterior siding, R-30 SIP roof with exterior 12/12 pitch metal skin and soffits, skylight, Upstairs BR roof 4/12 pitch, metal front door, concrete stoop, heavy timber frame entryway, 15 vinyl clad wood Anderson double pane low E windows and one patio door, no decks, south face situated slightly east for passive solar.

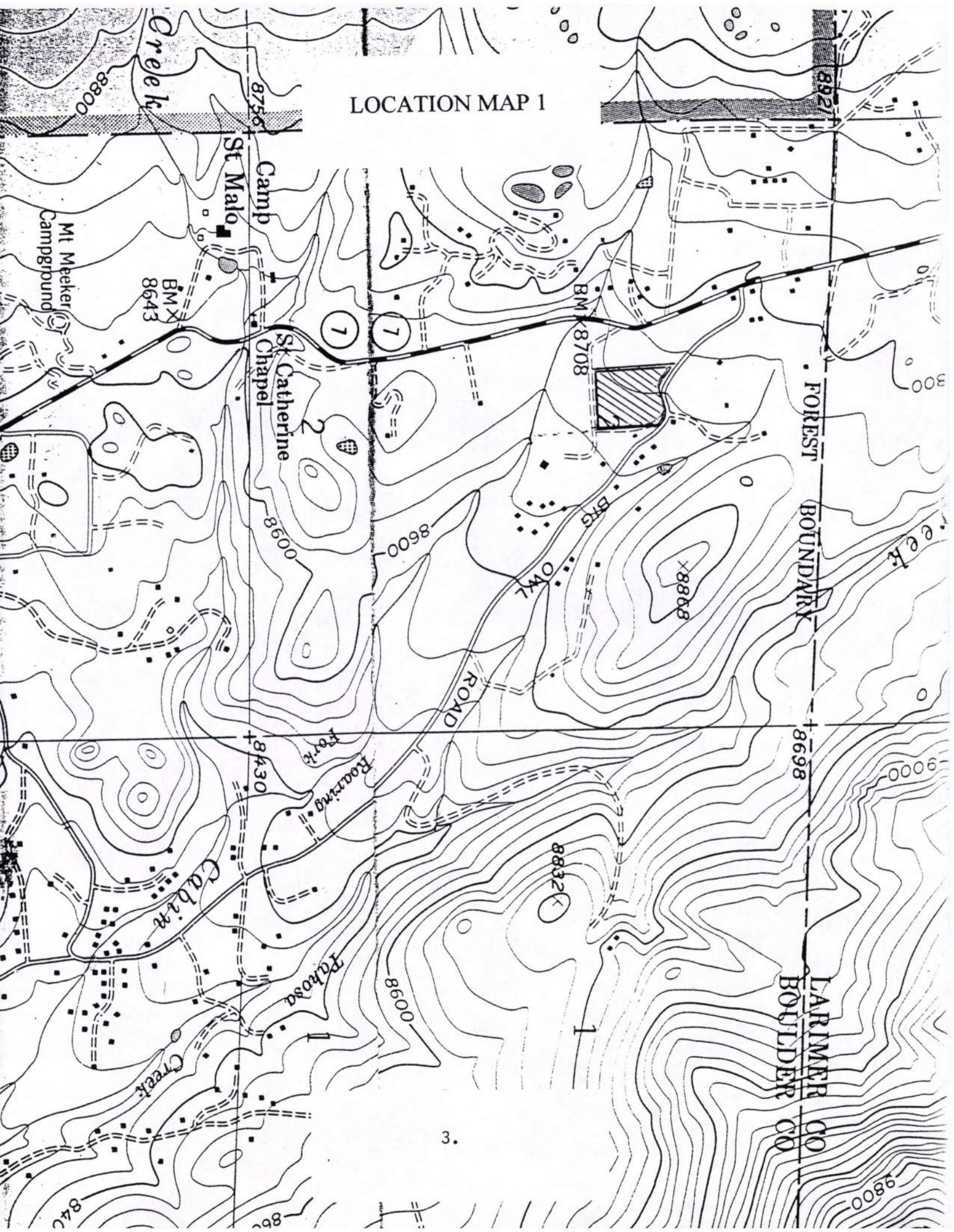
Garage – simple, 24'X24' plus 6' shed roof overhang north side (576 SF plus 144 SF covered outside), *EPS* Inc. pre-engineered, metal exterior, post frame, two metal walk doors, one metal overhang door, no windows, light panels beneath roof extensions, south side facing slightly west.

Studio – simple 16' X 22' (315 SF floor space), owner designed, smooth peeled logs from property, ½ dovetail notch square corners no overhang, metal roof and soffits, heavy wood door, Lyons sandstone stoop, heavy timber frame entryway, up to five wood frame windows with shutters, front side situated facing SE.

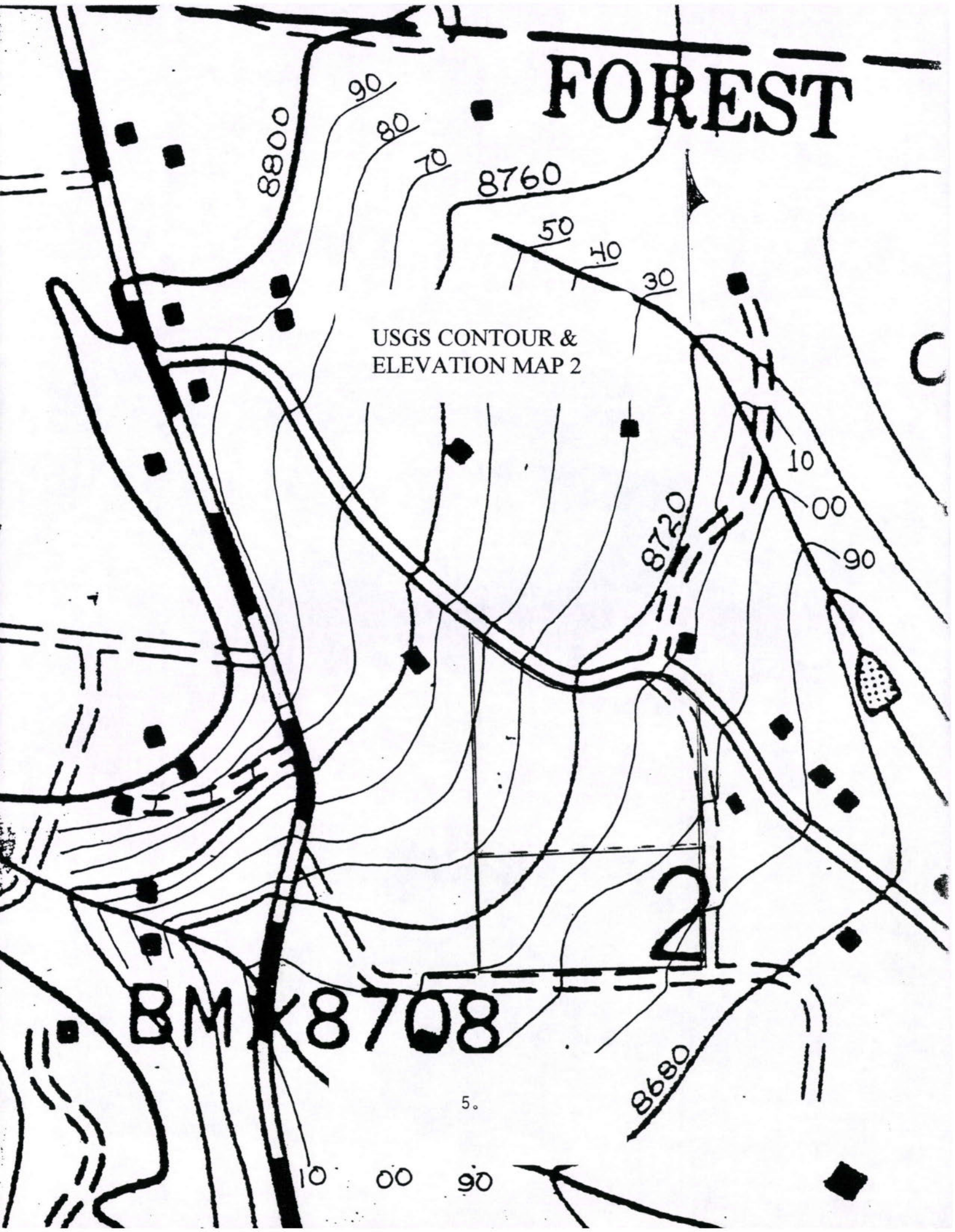
ORDER OF CONSTRUCTION: Garage, Home, Studio and over several years time

FIRE CISTERN:	2000 gallons or larger capacity, buried to freeze proof, with stand pipe and fittings for drafting which meet fire department specifications, near a location for emergency vehicle turn-around/back-up, at approx 70 'NE of home, 80 feet N of garage, 50' W of studio.

LOCATION MAP 1




PROPERTY AERIAL
PHOTOGRAPH


FOREST
8800
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8760
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40
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USGS CONTOUR &
ELEVATION MAP 2
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BM 8708
8680
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GENERAL

This is property for which a 1988 forest management plan with updates is on file with the Colorado State Forest Service, Boulder District. The property is recognized as an American Forest Council Certified American Tree Farm. The forestry plan on file outlines steps to protect and manage sustained production of forest products.

The gradually sloping land west to east (averages 7% slope with a slight SE aspect) is vegetated with a mixture of tree, shrub, grass, forbs, moss and lichen species, all of which contribute fuel to burn. There is evidence of previous fires here and much of the property's mid-size tree component regenerated after an early 1900's (estimated 1905) large fire that encompassed much of this mountain valley between Mount Meeker and the Twin Sisters peaks. There is evidence of previous tree harvesting, probably for fence posts and rails, with old axe and hand saw cut stumps and signs of horse logging skid-trails.

The soils are shallow decomposed granite, and some 4 foot to 10 foot rock outcrops exist. The only erosion noticed here is from Big Owl Road run-off onto the property. In the spring there may be some overland water flow from melting snow, especially noticeable in the aspen and willows during heavy snow years. At these times vehicle travel at some fire lane locations is avoided. Otherwise the native soils provide sufficient vehicle support.

The tree species in order of percent composition are lodgepole pine, aspen, willow, ponderosa pine, spruce, sub alpine fir, limber pine and juniper. Except for the trees in a narrow swath along and south of Big Owl Road, all of this forest has been thinned periodically since 1981, following professional forestry guidelines. Slash disposal is by pile burning, with some lop and scattering of branches in the southwest corner lodgepole pine stand. All trees harvested are utilized. There is a limited amount of under-story planting of white fir and Douglas fir for Christmas trees and some bristlecone pine seedlings are planted for their unique character and visual screening.

WILDFIRE MITIGATION STRATEGY

The selected strategy and planned actions to address the wildfire danger are to recognize that fires will occur here over time in this fire prone environment, and that on-going management practices can reduce the impacts and damage, but not prevent all unwanted fire. Since wildfire behavior is affected by Weather, Topography and Fuel, and little can be done to change weather and topography, managing fuels is a keystone to defense.

The mitigation strategy for this property and buildings is:

1. Choose defensible building sites and fire resistant building materials with fuel-less building perimeters and maintain good access.
2. Manage surrounding forest fuels regularly over time and commensurate with vegetation growth. Keep fuel accumulations low to keep expected wildfire intensity low.
3. Maintain fire awareness and an understanding of potential fire behavior. Take appropriate actions for the actual fire behavior during any fire event.
4. Have an evacuation plan in place.

ACTION PLAN (To be reviewed and updated as appropriate each May 1, every year.)

The volume and continuity of forest fuels will be kept in check. This will be accomplished with selective harvesting, thinning, some tree and shrub clearing or maintenance of fuel breaks and fire lanes, and pruning of lower limbs from tree trunks (6-8'). Once thinning achieves an appropriate level of stocking, and fuel continuity is broken, that condition will be maintained with tree removal and lower level tree limb pruning commensurate with annual tree growth. Tree regeneration will be monitored and thinned as needed.

At appropriate locations, fire resistant species (aspen and willow) will be favored in the tree harvest selection process. Prescribed broadcast fire may be employed if, where and when it becomes appropriate as a fire prevention tool. Any broadcast prescribed fire will follow a specific approved prescribed fire plan and involve the local fire department at the department's discretion.

Structures will be protected from vegetation fire with adequate space between the buildings and forest fuels. A vegetation free ground perimeter (3-5') will be maintained immediately around structures to prevent a creeping ground fire from reaching any flammable material of a structure. Trees near structures will be thinned to such spacing as to encourage any approaching crown fire to drop to the ground. Remaining trees near structures pruned of lower branches will prevent a ground fire from climbing into crowns.

Structures will be composed of fire resistant materials and located with planned and adequate access for emergency fire apparatus. Three emergency vehicle turn-arounds are prepared with one potential staging area. Fire lanes and fuel breaks are cleared and all of these will be maintained to remain without tree interference. An emergency water cistern will be appropriately located underground, installed and maintained available year round. Fire extinguishers and smoke alarms will be maintained at appropriate locations inside the structures.

Once planned structures are constructed, the swath of trees along Big Owl Road will be thinned and some additional trees planted there for restoring a noise and visual tree buffer from Big Owl Road traffic. To reduce traffic visibility, noise, fugitive dust and road chemicals are the reasons for this portion of the forest remaining un-thinned to date.

Property owners will monitor general forest fire danger weather conditions to maintain fire awareness. Dwelling exit and emergency evacuation routes are planned depending upon the anticipated directional source of incoming wild fire. These will be posted in the home. Fire procedures will be reviewed by the owners with family and visiting friends. A 5-person fire tool cache will be maintained and remain accessible to suppress any

accidental fire started on this land or to suppress fire before emergency help can arrive. Fire emergency phone contact information will be posted at phone locations. The property owners will periodically invite the Allenspark Fire Chief and or officers of the fire and sheriff's department to visit the property. This will be an opportunity for firefighters to become familiar with the improvements, the land and its vegetation, access routes and fuel break locations. Firefighters can see ongoing forest improvement work, and at the departments discretion, to run and operate emergency equipment here to confirm access and fire lane routes and train equipment operators.

BUILDING SITES, CONSTRUCTION AND FUEL ZONES 1 AND 2

HOME

The location for the home was selected for its close proximity to fire resistant aspen and willow vegetation; a natural clearing enlarged. Here there is this whole combined property's best soil for septic leaching, absent of trees. There is close-by electric power, suitable terrain for a desired walkout basement, a near-by willow-witched location for the water well and reasonable emergency access from both Big Owl Road and State Highway 7. The selected building sites also offer isolation and forest-screening of neighbors, and noise-screening from the road and highway, and a view of both Twin Sisters and Longs Peak, with a minimally shaded south exposure for solar radiation. This home location minimizes productive forest land conversion since it is somewhat dry and rocky and was open grown with short trees. Choosing this site for building leaves more productive tree-growing sites to surrounding forest. Also, this site accommodates having the two other planned buildings near by, giving them the same fire mitigation advantages of the home site with opportunity for reduced electric transmission costs. The home will be placed with a slightly east of south orientation to maximize passive solar radiation into the home's south facing windows.

This dwelling will be a one and one half story 24 feet by 24 feet engineered post and beam timber frame with exterior structural insulated panels covered by an attractive wood grain cement board material, Anderson vinyl clad low E thermo pane windows with a metal roof and metal clad soffits, and metal front door and a timber-framed front door entryway, and a full walk out concrete basement. A 6X8 extension of the foundation underneath the front stoop (a cold-cellar) will serve as a fire shelter during an unlikely but possible general fire storm situation.

Zone 1 consists of a native rock outcrop on the SW side, decorative crushed rock elsewhere, and eventually, a brick-pavers or sandstone patio at east side walk out level will immediately surround the concrete foundation with non-flammable materials. Zone 2 consists of forest clearing and widely spaced (to a maximum spacing for lodgepole

pine) and limbed trees, some left in small groups that support each other to avoid wind throw. Some small patch cuts are made to break fuel continuity. Zone 2 extends past the west boundary of the west side fire lane, and into the lodgepole pine stand

GARAGE

The garage location is approximately 50 feet south east of the home with its same fire mitigation advantages and for close walking distance, is nearly a level site requiring little excavation, and has easy access to enter and exit and to maneuver and park a vehicle inside. This would be the first building constructed and would serve as a work space, electric power source and storage area for tools and materials and other construction needs. Orientation of the garage door is facing SE.

This will be an engineered 24' X 24' treated post frame building with two-colored metal sides (36" wainscot perimeter), roof and 3 doors, crusher fines floor and 6 foot shed roof overhang on the north side. There will be no windows but surrounding light panes just below the roof overhangs.

The Zone 1 building perimeter and under and outside the overhang will be road-base crusher fines from the Lyons Andesite quarry, as will be the entryway to the one 8 X 10 garage door. Zone 2 is an extension of the homes' and includes the emergency vehicle turn around and extends to the secondary access road south boundary.

STUDIO

The studio site is also almost level, approximately 70 feet east of the home and 50 feet north east of the garage, with the same fire mitigation advantages.

This will be a 16' X 22' native log structure designed and built by the owner and with intent to utilize harvested logs from this property and instruct his grandsons in log building. Construction would not begin until a year or two after completion of the dwelling. The foundation will be buried treated timbers with an exterior cladding of cement board enclosing the crawl space. The 10 inch diameter minimum smooth-peeled logs will be fitted with ½ dove-tail notch square corners having no overhang. Windows will be wood framed and shuttered. The roof and soffits will be metal as well as the underside of the timber framed entryway roof. The entry stoop and steps will be native Lyons Sandstone. It may be three years before studio construction begins.

The Zone 1 perimeter will be compacted native decomposed granite material maintained clear of vegetation and organic material. Zone two is an extension of the cleared aspen and willow or heavily thinned and pruned area surrounding the home and garage, and extends to the outside of the driveway on the east.

ADDITIONAL MITIGATION ACTION

Wood stoves will be equipped with spark arrestor chimney screens. Firewood accumulations from tree thinning will be removed or stored at a designated forest clearing (approximately 220 feet north of the home). Limited amounts of firewood for periodic use will be stored in the aspen/willow clearing. The area surrounding the propane tank will be maintained clear of vegetation and organic material and there will be a chemical extinguisher within sight of the propane tank, near-by on the outside of the home. During forestry work or the operation of equipment, and during construction phases, fire shovels and a fire extinguisher will be kept accessible and within eye sight of workers.

PROBABLE FIRE SOURCE, MOVEMENT, ACCESS AND EGRESS

Mitigation actions taken and planned will reduce the likelihood of a structure-source fire here moving to forest or of a forest ground fire escaping this property. Forest thinning and limbing and fire lanes and fuel breaks are such that a crown fire is unlikely to develop here in the absence of ladder fuels. Even if pushed by winds, Big Owl Road on the north, the gravel access lane to the east and secondary access road on the south and the west side fire lane should stop or slow a ground fire's advance.

Wildfire approaching the property is the greatest threat. During drought conditions, wildfire will follow available fuel. Thus during drought, fire can approach this property from all directions. Aspen and willows to the east and at the SW corner afford some protection as do the roads on the north, east and south. South of the garage is a cleared area for emergency vehicle staging and turn around.

Threatening fire approaching from the west seems most possible with extensive forest to timberline, frequency of lightening, development west of Highway 7, and predominant westerly winds. Awareness of any fire in the valley, but in particular any fire approaching from the west, is important.

A decision to stay and defend, when and which escape route to use, or to stay in the basement shelter will be predicated on fire behavior information at the time of a wildfire threat. Potential emergency access and egress routes are identified on Map 3. Page 15. Potential open water sources for fire fighting are identified on Map 4. Page 16.

EXPECTED FIRE BEHAVIOR

The behavior of any wildfire on this property will be affected by weather and moisture conditions that precede and exist at the time of a fire, the lay of the land, and the fuels available to feed the fire here. Also, a fire here may be influenced by the intensity of an approaching wildfire.

The lodgepole pine/mixed conifer timber type (Fuel Model 8) is used to calculate expected fire behavior for the Zone 3 forest. Fire behavior for Zone 1 and 2 is mitigated so as to not present a wildfire threat. No expected behavior is calculated for Zones 1 and 2 fuels.

Zone 3 expected fire behavior is calculated using a computer model named BEHAVE. Extreme fire danger weather data (90^{th} percentile conditions from 30 years of records) are inputs. That is, the calculated fire behavior is based upon extremely dangerous weather conditions that might be expected less than 10 percent of the time.

This mathematical probability does not preclude more frequent occurrence, or repeated occurrence of the 90^{th} percentile conditions. Such might be the case during drought. Also it is possible for more severe fire danger than what the 90^{th} percentile conditions represent. Moderate fire danger conditions were also calculated as a comparison.

Both moderate and extreme expected fire behavior for Zone 3 is presented in Table 1, page 13. Expected fire behavior is expressed in terms of flame height in feet and rate of spread in chains per hour. A chain is a survey unit of measurement 66 feet in length. Eighty chains per hour would be a rate of spread of one mile per hour.

BEHAVE expected fire behavior Table 1 was prepared by professional fire managers at Anchor Point Group LLC, Boulder, Colorado.

Average Weather conditions:

Surface Rate of Spread (Chains/hour)

1hr Moisture	20-ft Wind 0	4	8	12	16	20
2	0.4	2.3	5.7	9.9	9.9	9.9
4	0.3	1.8	4.6	6.7	6.7	6.7
6	0.3	1.5	3.8	4.9	4.9	4.9
8	0.2	1.3	3.3	3.8	3.8	3.8
10	0.2	1.2	3	3.1	3.1	3.1
12	0.2	1.1	2.7	2.7	2.7	2.7

Flame Length (ft)

1hr Moisture	20-ft Wind 0	4	8	12	16	20
2	0.6	1.3	2	2.5	2.5	2.5
4	0.5	1.1	1.7	2	2	2
6	0.4	1	1.5	1.6	1.6	1.6
8	0.4	0.9	1.3	1.4	1.4	1.4
10	0.4	0.8	1.2	1.3	1.3	1.3
12	0.3	0.8	1.2	1.2	1.2	1.2

Extreme Weather conditions:

Surface Rate of Spread (Chains/hour)

1hr Moisture	20-ft Wind 0	4	8	12	16	20
2	0.4	2.3	5.7	10.1	10.1	10.1
4	0.3	1.8	4.6	6.8	6.8	6.8
6	0.3	1.5	3.9	4.9	4.9	4.9
8	0.2	1.3	3.3	3.8	3.8	3.8
10	0.2	1.2	3	3.1	3.1	3.1
12	0.2	1.1	2.7	2.7	2.7	2.7

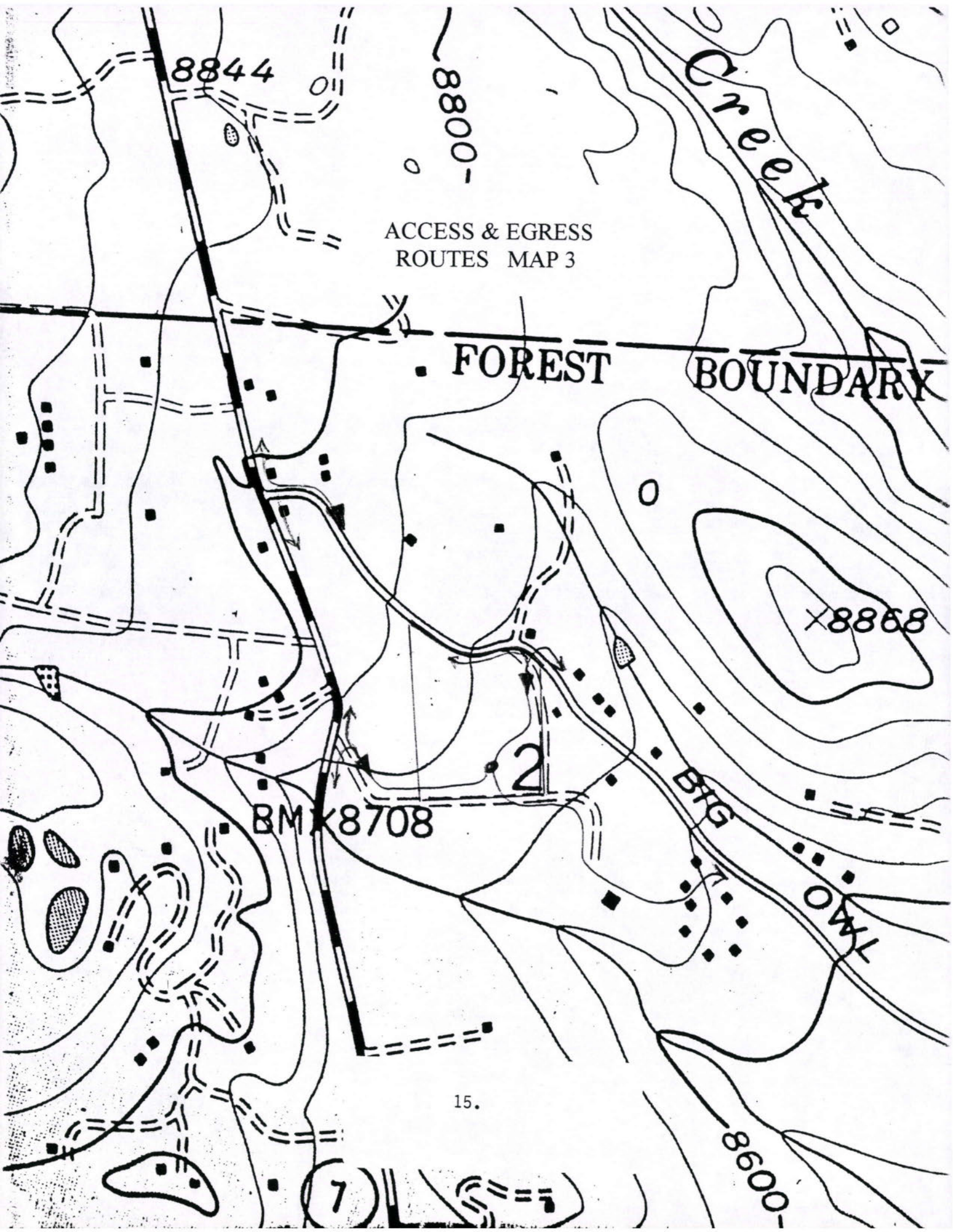
Flame Length (ft)

1hr Moisture	20-ft Wind 0	4	8	12	16	20
2	0.6	1.3	2	2.6	2.6	2.6
4	0.5	1.1	1.7	2	2	2
6	0.4	1	1.5	1.7	1.7	1.7
8	0.4	0.9	1.3	1.4	1.4	1.4
10	0.4	0.8	1.2	1.3	1.3	1.3
12	0.3	0.8	1.2	1.2	1.2	1.2

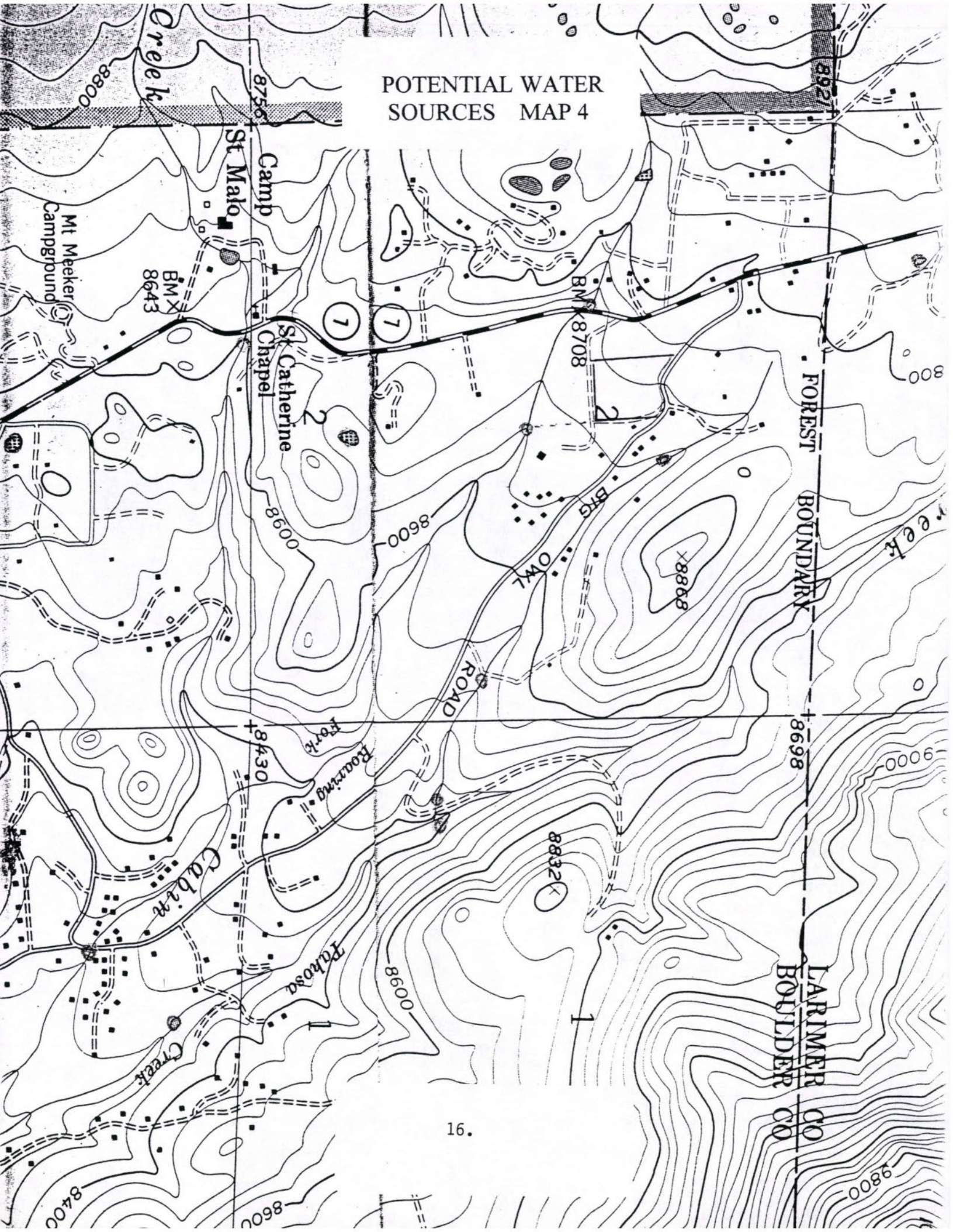
SUMMARY

By following this mitigation plan and maintaining the prescribed forest condition, structure loss or damage from wildfire is unlikely at 2475 Big Owl Road. Continuing forest management practices for products, as outlined in the referenced Tree Farm Forest Management Plan, complements mitigation actions. The thinned and maintained surrounding forest lowers expected wildfire intensity for this forest type. Building locations and materials have low exposure to any forest fire's heat. Use of this land is made safer with lowered risk of fire injury to inhabitants. There is lowered risk of wildfire-caused building damage and or harm to the forest environment by fire. A summary of site mitigation measures with field-verified locations is identified on Map 5. Page .

Ron Gosnell
May, 2005


8844
8800
Creek
ACCESS & EGRESS
ROUTES MAP 3
FOREST BOUNDARY
8868
2
BM 8708
BIG
OWL
8600
7

POTENTIAL WATER SOURCES MAP 4



SITE MITIGATION
MAP 5