GREAT BASIN
(Revised February 2003)

I. INTRODUCTION

As members of a Type 1 or 2 Incident Management Team, you will be expected to take an incident assignment anywhere, and be able to manage that incident in a cost efficient and safe manner. You will have to formulate strategies and tactics compatible with the local weather, fuels, topographic features, land/resource management objectives, and safety considerations. This chapter focuses on the unique situations and circumstances you may encounter while managing fire in the Great Basin.

Since it is very difficult to be familiar with all the fuel types in North America and special circumstances common to specific geographic areas, *an Incident Management Team coming into the Great Basin, or any other unfamiliar area, should make it a point to secure a knowledgeable local individual to advise the team on local weather, fuels, fire behavior, and other safety and management considerations.* This individual will prove invaluable to the team during the course of the management action.

II. DESCRIPTION OF THE GREAT BASIN

A. Geographic Location

The Great Basin consists of a distinct area covering southern Idaho, Utah, and Nevada.

B. Dispatch Coordination

Dispatch coordination within this geographic area functions through two separate Geographic Area Coordination Centers (GACC). These are shown in Table 1.

GREAT BASIN AREA	AREA COVERED
Eastern Great Basin Coordination Center (EGBCC), Salt Lake City, UT	Utah, southern Idaho, and western Wyoming
Western Great Basin Coordination Center (WGBCC), Reno, NV	Nevada

Table 1. Dispatch coordination centers for the Great Basin.

C. Topography

1. Elevations: Elevations of major landforms in this geographic area range from about 2000 to 14000 feet above sea level.

2. Landforms: Major landforms found in this area include the full spectrum of broad valleys to mesas, and mountains, varying in elevation and steepness. Most mountain ranges are oriented north and south with the Uintah Mountains in northeastern Utah the only exception.

D. Weather

Because this area experiences a continental climatic influence, it is subject to extended duration of hot, dry, windy weather with frequent thunderstorm activity throughout the summer. With summer thunderstorms comes high lightning activity.

1. Precipitation: Precipitation varies in amounts from about 4 to 25+ inches per year. In the Great Basin the majority of precipitation is received in winter in the form of snow and rain, depending on elevation. March is quite often the heaviest precipitation month.

2. Relative Humidity: Relative humidities can drop to minimums in the single digits with nighttime recovery ranging to 25-30%. Fire behavior is generally greatest at lowest levels but can occur up to 30-35 %. Above this level, spread and intensity are markedly reduced, although strong winds can sometimes overpower the dampening effects of humidity. An example is the fact that sagebrush stands can be consumed with significantly intense headfires at relative humidity levels in excess of 30% in the presence of winds in excess of 20 mph.

3. Temperatures: During July and August, maximum temperatures can reach 80-100 degrees with minimums 30-50 degrees lower. Minimum temperatures dropping below freezing and even into the teens. Snow can occur at higher elevations during any month of the year.

4. Winds: Upper airflow generally originates from the west to southwest and moves to the east to northeast. Surface winds vary greatly as they are affected by local terrain. Afternoon surface winds of 10-20 mph are common. Winds associated with the passage of thunderstorms can reach higher levels for short durations and often result in significant effects on fires. Dust devils are common, and dry cold fronts frequently affect active fires.

5. Storm Tracks: Storms track into the Great Basin from the southwest and affect southern and western Nevada, from the northwest into southern and central Idaho, and from the south and west into Utah.

6. Storm Frequency: Thunderstorm frequency increases as the summer progresses. Moisture associated with thunderstorms varies, but is greatest at higher elevations. In the western portion of the Great Basin, thunderstorms will persist into August and early September.

7. Day lengths: Generally, daytime hours are fairly long, but traveling from south to north in the area will increase the day length about one and one-half hours. This does impact suppression operations in that the peak burning activity occurs at different clock times, and can affect operational period crew changes, etc.

III. SPECIAL CONSIDERATIONS INFLUENCING INCIDENT MANAGEMENT TEAM OPERATIONS

A. Safety

1. Snakes, scorpions, insects. Rattlesnakes and scorpions can be quite common throughout this area. Special safety instructions should be provided to ensure personnel safety. Yellow jackets, hornets, wasps, ticks, and spiders (tarantulas and black widows) can be encountered also.
2. Access. Generally, Generally, four wheel drive vehicles can move over the terrain. Some rock outcroppings, steep sided gullies, cliffs, and underground arroyos pose special hazards at night. Loose soil types and rocks can quickly high center vehicles.

   Foot travel can be difficult. Sprained and broken ankles are possible. Tall sage is difficult to move through. Rapid rates of spread and sudden wind changes create needs for crew awareness, safety zones, and escape routes.

3. Fuel models. As typical of fuel models described "History of Fatalities and Near Misses," light flashy fuels have caused more fatalities than any other fuel models. Avoid complacency, all fuel models support fire and fire is dangerous. Taking certain fuels lightly or placing insufficient emphasis on fire behavior can result in undesirable outcomes.

4. Aviation. High elevations and hot temperatures produce high density altitudes. Most fire activity is at or above a density altitude of 9000 feet. Helicopter and fixed-wing performance is reduced.

   Military training routes and special use airspace (especially west desert Utah, southern Idaho, and all of Nevada).

   Lack of water sources requires heavy water tender support if any major tactical water show using aircraft is planned.

   Retardant is ineffective in wind-driven fires.

   View Great Basin lead plane/air attack requirement guidelines

5. Water. Due to high temperatures and direct exposure to sun, water consumption will be abnormally high. Up to two gallons of water per person, per operational period, is often necessary. This requires special efforts to get crews to carry enough water; it is a good idea to also make extra water available on the line. Dehydration is a serious problem if adequate water is not provided.

   Potable water must be obtained from a safe source due to Giardia in many streams.

6. Vehicles. Because of the access and the fuel type, build-up of vegetation on the undercarriage of vehicles often occurs. Undercarriage fires are not uncommon, with fire being spread over a considerable distance before the driver is aware of a problem. Catalytic converters also present a potential ignition device whenever traveling across country.

7. Volunteers. Due to the remoteness of areas within the Great Basin, local ranchers and other parties are often on the fire when a team arrives. This can present a serious safety concern. Volunteers should be released from the fire as quickly as possible.

8. Adverse weather. Rapid changes of temperatures from hot to very cold, often with moisture (sometimes snow) can pose a serious hypothermia threat to personnel. Planning should include visqueen to keep crews and equipment dry in the case of rain or snow, fuel for warming fires, and a place where wet, cold firefighters can be taken to dry out and warm up.

   When utilizing camps, they should be equipped early on with plenty of visqueen and rations in case bad weather should prevent resupply by air, which happens frequently.

9. Medical Facilities. Medical facilities are few and far between and evacuations for serious injuries will generally be by air.

10. Snags. Insect and disease caused tree mortality has created significant snag areas throughout the timbered areas of this geographic area. Teams should be aware of snag areas and take appropriate actions to minimize exposure to firefighters. Snag-related injuries have been increasing in recent years.

11. Terrain Features. Unique terrain features such as the major river breaks (Salmon, Snake) can pose specific problems. In these areas, steep slopes and dry fine fuels produce very fast moving fires. Special safety considerations are necessary here in that tactics may have to be modified in regard to crew placement, camp location, and crew movement. Numerous instances of shelter deployment have occurred in these river break areas (Ship Island, Butte, and Eagle Bar fires).

B. Resource Management Considerations

1. Wilderness Areas. Within the Great Basin, there are a large number of wilderness areas under federal jurisdiction. Many of these wilderness areas support fire tolerant and fire dependent species and frequently experience wildfire. When assigned to a fire incident in these areas, teams can expect to be placed in a range of capacities from an advisory capacity to the local unit to a suppression management capacity. When charged with suppressing the fire, additional constraints will face the team. Minimum impact suppression tactics and rehabilitation techniques will have to be adhered to. Helispot construction and rehabilitation techniques may have to be modified.

2. Livestock grazing allotments and critical winter ranges. In some areas of the Great Basin, single fire events can destroy all available forage on a permittee's allotment, thus threatening his/her business and livelihood. Many of the shrub zones are critical to big game species for providing winter habitat. Fires can destroy this habitat and have a dramatic and immediate impact on big game populations.

3. Anadromous Fisheries Habitat. With the decline in salmon fish populations, guidelines have been developed for fire suppression actions in salmon habitat areas. Basically, a team will have to coordinate/restrict or terminate their use of chemical retardants and foam, use of tanks that recently had foam or retardant in them, adjust their fueling operations for aircraft, ground vehicles, and other equipment, and even remove contaminated soil from Incident Bases where fuel burning heaters are used. This information is critical in developing suppression strategy and tactics and must be closely adhered to. It is the same information that has been discussed in the Northwest and Northern Rockies section. Specific Spill Prevention and Containment Countermeasures must be adhered and are included in a sample plan. View the USFS Region 4 Fire Suppression Guidelines for Salmon Habitat.

4. Cultural and Historical Resource Considerations. Throughout much of the Great Basin there are concentrations of cultural and/or historical resources. These resources will require maximum protection from damage from both the fire and the fire suppression actions. These resources will affect the range of strategy and tactics that the IMT can employ and will be provided to you as constraints from the Agency Administrator. Use of Resource Advisors is critical to remaining consistent with the Agency Administrator's direction and the constraints.

C. Socio-Economic Considerations

Smoke impacts near urban areas can be a real concern from both a visual and health standpoint. Large, long duration fires can also have significant impacts on local economies.

D. Political Considerations

Proactive involvement with local politicians and media is important and productive. Unfortunately, fire suppression activities during even numbered years are subject to closer scrutiny than during odd years.

E. Urban-Wildland Interfaces

Throughout the area urban-wildland interfaces are present. Critical areas are found in the Wasatch Front in Utah (Ogden to Provo), and the Sierra Front as well as other less populated locations throughout the geographic area. Fire suppression in these areas can involve special considerations for communications, information, aviation, and smoke considerations. Most importantly, fire suppression in urban-wildland interfaces requires greater time and planning efforts.

F. Functional Considerations.

1. Logistics. Logistics personnel need to plan for special considerations involving drinking water supply, communications needs, transportation and delivery times for personnel, supplies, and equipment.

   Because of the steep terrain, wilderness and roadless areas, travel by vehicle may not be possible. It is not uncommon to have one or more spike camps in this geographic area. This requires additional planning and resources to ensure crews can be supported. Particularly important is the length of supply lines that are associated with wilderness fires. Quite often it is necessary to provide an additional individual to work with the expanded dispatch or receiving unit to ensure supplies are ordered and transported to the incident.

   Vehicles for transporting overhead while working on fire assignments are

often very difficult to acquire due to fire locations and small communities. It is often critical to plan ahead and make arrangements for vehicles prior to the team arriving at the incident.

2. Fire Behavior. Due to the changes in fuel types, influence of weather, and time periods associated with fire behavior changes, it is critical to utilize a Fire Behavior Analyst on Incident Management Teams. Fire Behavior predictions and input to the planning process are vital to successful and safe suppression operations.

3. Information. Providing public information to media sources as well as to agency administrators is critical to successful operations. Of special consideration is the fact that urban-wildland fires can occur in close proximity and within view of major metropolitan areas (Salt Lake City, Las Vegas, Boise, Reno) and teams can quickly be inundated by the news media. It is imperative for incoming teams to plan ahead for additional staffing needs in the Information function. In many smaller populated areas, public meetings, media interviews, media tours, videotapes made by our personnel and sent to media outlets, and bulletin boards can buy real dividends in local support for the agency and the fire suppression activities.

4. Safety. Safety considerations cannot be overemphasized. Changing fire conditions, personnel welfare, heavy use of aircraft, and snag problem areas must constantly be monitored. Avoid complacency.

5. Operations/Air Operations. Several important areas of concern for operational activities exist. First, since this area contains vegetation ranging from desert to alpine types, IMT's must be prepared to deal with fires burning in fuels represented by a wide range of fuel models, including 1, 2, 5, 8, 9, and 10. Secondly, limited access and rugged terrain, especially in the river break areas, may prohibit personnel placement and may require the placement of crews above fires on ridgetops or ridgelines. Downhill line construction may have to be considered but safety considerations must never be compromised. Thirdly, heavy reliance on aircraft, particularly helicopters, increases as remoteness increases. On the average incident, aircraft can account for 20% or more of the total fire costs. In the Great Basin, these costs can be significantly higher due to incidents located in wilderness areas and those incidents with poor access.

6. General Organizational Considerations. In many areas, ICS concepts allow for the escalation of incident management as the complexity and size of the incidents increase. This can equate to the transition from Type 2 to Type 1 teams. In many areas of the Great Basin, wildland fires that escape initial attack, instantly become Type 1 incidents due to the complexity, land ownership, and location of the incident. In these situations, the team will be faced with a time lag associated with their

mobilization and the potential lack of additional overhead to support the Type 1 organization at the incident. As a result, Great Basin Type 1 IMT's may utilize more personnel as regular team members than listed on the standard long team configuration. Incident Commanders coming into this area should discuss potential needs with the receiving unit and order necessary resources as soon as it can be determined if they will be needed.

IV. INCIDENTS THAT CONSTITUTE TYPE 1 TEAM INVOLVEMENT

A. Fuels

Approximate IMT involvement by fuel types for the Great Basin is shown in Table 2.

Fuel Type	Great Basin
Sagebrush	rare
Pinon-juniper	15%
Oakbrush	rare
Ponderosa pine	60%
Lodgepole pine	15%
Spruce-fir	10%

Table 2: Type I Team responses based on fuel types.

B. Multiple Ignitions and/or Jurisdictions

A common occurrence in the Great Basin, is for Type I incidents to develop as a result of multiple ignitions that exceed the capability of local resources. The ignitions are typically lightning caused, associated with frontal passages that result in strong gusty erratic winds. The fires spread quickly, at times burn together, and grow to very large sizes often threatening communities.

Because of the intermix of state, private, and federal lands, it is also common for a single fire to involve multiple jurisdictions and ownerships. This increases the complexity of managing a fire.

C. Urban Interface

The urban interface and intermix into the wildlands is becoming more prevalent every day. This directly affects strategy and tactics for wildland fire operations. A fires complexity can escalate rapidly because of protection of public as well as private property. These types of fires typically require assistance from agencies outside the wildland fire community such as law enforcement, local fire departments, etc.

D. Extreme Fire Behavior

Because of the associated weather that typically occurs with Type I fires in the Great Basin extreme fire behavior in not uncommon. Multiple ignitions at times burn together resulting in erratic fire behavior. Vertical vortices associated with unstable conditions can occur within the flame zone resulting in rapid fire spread through spotting. Plume dominated fires in heavy fuels as well as wind and terrain driven crown fires move quickly and can cover large areas.

V. MANAGEMENT OBJECTIVES / WHAT DOES THE FUTURE HOLD

A. Management Objectives

Challenges and risks associated with wildland fire management are increasing in both complexity and extent. Threats from wildland fires grow each year as long-term effects from past land use and fire management actions become visible. In addition, escalating values to be protected associated with current land use practices are compounding protection concerns. Wildland fire management and agencies' ability to respond to these challenges is rapidly becoming overextended. Incident management teams can expect to encounter new and different situations than they have previously been exposed to.

Wildland fire management policy and procedures are changing to reflect new considerations, capabilities, and direction, while being responsive to resource management objectives. As an example the 2001 Federal Wildland Fire Policy provides a policy incorporating the full range of wildland fire management actions for federal programs.

The success of these recommendations and policy implementation depends upon actions and expectations both internal and external to all wildland fire management agencies. Agencies must ensure that wildland fire management is fully integrated into land management planning. Every Agency Administrator must ensure that these policies are incorporated into all wildland fire management actions. Managers and staff personnel must actively embrace and implement the recommendations. Every employee of every agency must be committed to fully carry out implementation at the ground level. Agencies must change their expectations that all wildland fires can and should be controlled and suppressed. The public will then have a

better understanding of what we are doing, why it is important to them, and be more open to accept short-term inconveniences of some implementation impacts. Absolute protection is an expectation that is difficult, if not impossible to achieve, and based on workforce limitations, fiscal constraints, and environmental and fire behavior variables, is unrealistic.

The purpose of giving management the ability to select the appropriate management response on every wildland fire is to provide the greatest flexibility possible and to promote opportunities to achieve greater balance in the program. To clarify the full range of options available under the appropriate management response, the following figure (Figure 1) utilizes four variables to illustrate development of an appropriate management response.

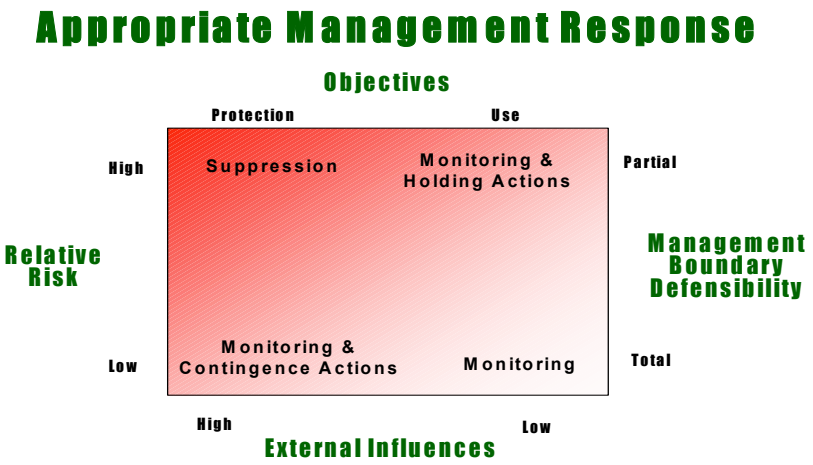

Figure 1. Ranges of appropriate management responses based on objectives, relative risk, complexity, and defensibility of management boundaries.

For those situations indicating a suppression-oriented response, a range of responses dealing with only suppression actions is available. The following chart (Figure 2) illustrates how the range of suppression-oriented appropriate management responses can vary.

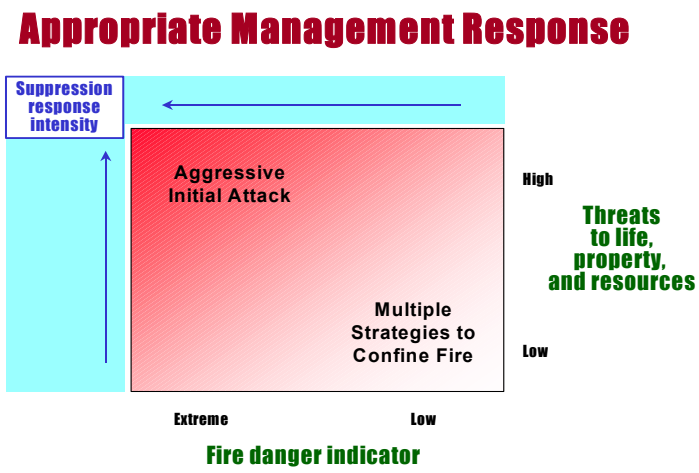

Figure 2. Range of suppression-oriented appropriate management responses.

Type 1 IMT's will be expected to manage large, complex wildland fire incidents as part of the implementation of this policy. This may add complexity to individual incidents in the form of specific constraints and a wide range of objectives necessitating a range of tactics.

The Wildland Fire Management Policy that now governs Federal wildland fire management provides for a full range of responses and for the opportunity for all wildland fires to be managed for resource benefits. This document can be found on the Internet at http://www.fs.fed.us/land/wdfire.htm

VI. FUELS AND FIRE

A. Fuel Types and Fire Behavior

Vegetative structure and composition in the Great Basin are closely related to elevation and precipitation variances. Temperatures increase and precipitation decreases as elevation decreases causing fewer occurrences of woody tree species and greater dominance of woody shrubs and grasses. These vegetative communities contain lower fuel quantities and tend to support fires with rapid rates of spread but of short duration. Containment actions are less rigorous than for heavier fuel types and mop-up activities are minimized.

As elevations increase, temperatures drop somewhat, precipitation amounts increase, and vegetative types show a shift to forest communities. These communities possess greater quantities of fuel, both alive and dead. Slower rates of spread are common for fires in these areas, but intensities can escalate dramatically and burn out of residual fuels after passage of the

flaming front can be of long duration necessitating extensive mop-up actions. The following sections provide a description of each major vegetative type and their influence on fire behavior.

1. Great Basin Fuel Types

    a. Desert: True deserts are located in isolated places within the Great Basin but present very little problem in terms of fire management.

    b. Salt Desert Shrub:

        (1) Description: These communities occupy transitional zones between sagebrush-grass and true desert communities. They are found at the lower levels of the elevation gradient, elevations 2000 - 4000 feet, with annual precipitation amounts of 6 inches and less, and experience maximum temperatures of 85 - 100 degrees. Fuel loadings are low, with woody shrubs comprising the dominant component, but these shrubs do not commonly achieve high crown cover levels. Understory herbaceous plants are minimal. Natural barriers are common.

        (2) Fire Behavior: Due to the sparseness of understory fuels, surface fires seldom attain any size of consequence. The presence of wind is required to move fires between shrub crowns and sustain any major fire spread. However, fuel limitations and natural barriers commonly inhibit fires from affecting extremely large areas. Head fires are the most common type of fire and with strong winds can exhibit flames lengths approaching 20 feet with rapid rates of spread.

    c. Grasses:

        (1) Description: Small isolated pockets of native grasses with few woody shrubs occur throughout the Great Basin. These areas do not represent a fire problem. Following fires in sagebrush communities, the woody shrubs are typically removed from the site returning to grass dominance. In some areas, perennial grasses will dominate while in others, annual grasses, principally cheatgrass, will achieve rapid dominance. During the last 20 years, many wildland fires have been reseeded with crested wheatgrass and large monocultures do exist. Recently, rehabilitation efforts involve the use of native species.

        (2) Fire Behavior: In a cured stage for both annual and perennial grasses, rates of spread can be high but fires are relatively easy to control. Large cheatgrass stands pose particular concerns because they reach a cured stage very early in the summer and remain very flammable throughout the fire season. With high

temperatures, low relative humidities, and strong winds, fires in grasslands can produce flame lengths far in excess of what can be direct attacked with hand tools and rates of spread that are very high. Safety is a particular concern in these situations and escape routes and safety zones are few and when present must have quick accessibility. Crested wheatgrass monocultures are thought to be somewhat resistant to fire spread because of the maintenance of high fuel moisture contents but during dry summers can support active fire spread.

(3) IMT Involvement: Team action responses rarely occur here and if they do, they are generally associated with a combination of grasslands and other fuel types.

d. Northern Desert Shrub:

(1) Description: This vegetative community represents a dry steppe community found between the desert and pinon-juniper communities. This community occupies large areas within the Great Basin and is where the largest number of wildland fires occur. Elevations range from 2500 - 5000 feet, annual precipitation varies from 6 - 10 inches, and maximum summer temperatures commonly reach 80 - 95 degrees. Sagebrush is by far the dominant species with associated species including: rabbit brush, bitterbrush, snowberry, other sage species, various annual and perennial grasses, and forbs. Summer time periods are generally hot and dry with very low relative humidities. Fuel volumes will vary significantly depending upon the site, its moisture regime, and human influences. Under moist conditions, sagebrush can attain a height of 8 feet but 3 - 4 feet is the norm.

(2) Fire Behavior: In areas where livestock grazing is deferred, or where a winter allotment exists, summer conditions include high amounts of understory grasses and forbs. This fuel continuity strongly contributes to surface fire spread. In areas where this surface fuel continuity does not exist, wind is required to move fires between individual sagebrush plants. Fuels are represented by fuel models 2 and 5. Flame lengths usually vary from 3 - 15 feet with rate of spread being strongly affected by terrain and wind. Head fires are most common and nighttime humidity recovery is sometimes slight enough to permit continual burning activity. Thermal belts will also maintain an active fire. Spread rates are high and burned areas can reach 5 - 10000 acres in a single burning period. With critical conditions, burned areas can go much larger in a single burning period.

(3) IMT Involvement: Large numbers of fires occur in this vegetative type but team action responses occur rarely and are usually

associated with multiple large fires such as in western Nevada, southern Idaho and Utah.

e. Pinon-juniper:

(1) Description: Pinon-juniper communities cover large areas in the Great Basin and occupy a transitional zone between sagebrush communities and higher elevation montane conifer forests. Pinon is the dominant species as elevations increase and juniper assumes the dominant role at lower elevations. Western juniper is the only species occupying this zone in southeastern Oregon and southwestern Idaho as the pinon component drops out this far north. Associated species found in this zone include sagebrush, other woody shrubs, grasses, and forbs. Generally understories are sparse with this condition escalating as the stand becomes older. Young stands commonly have a large understory component, usually dominated by sagebrush and other shrubs. Environmental conditions common to this zone include: elevations 4000 - 7500 feet, annual precipitation 10 -16 inches, maximum summer temperatures 70 - 85 degrees.

(2) Fire Behavior: Fire behavior fuel models 2 and 6 best represent this community. The sparse understory strongly controls the ability of these communities to support surface fires. Fires burning out of another fuel type into this one can travel into it in surface fuels but seldom can sustain this for very long. The arid nature of the environment combined with the small stature of these trees makes total crown closure a rarity, thus when crown fires do occur, they are totally dependent upon strong winds to sustain their existence. High quantities of dead and downed fuels in old stands, high quantities of resin and pitch in pinon trees, and low moisture contents of juniper trees as well as their shreddy bark make this woodland zone a very flammable situation. In the presence of strong winds, 25 - 50+ mph, independent crown fires occur that can cover large areas, 1000+ acres, but natural barriers and fuel changes are common and limit spread. Spotting can be a problem but without wind can be easily dealt with. Wind is the key element in these communities and fires are either a single tree, low intensity event, or a wind-driven, high intensity event covering large areas.

(3) IMT Involvement: Pinon-juniper communities may experience as much as 50% of the fire occurrence in the Great Basin but receive only about 15% of the IMT-action responses. This is primarily due to the type of terrain (natural barriers) and relatively short duration of fires.

f. Ponderosa pine/Douglas-fir:

(1) Description: These montane communities comprise a significantly important portion of the Great Basin. These communities are found between the pinon-juniper woodlands and the subalpine zone. These communities occur between 5500 and 8000 feet and are comprised of ponderosa pine, Douglas-fir, occasional lodgepole pine, and isolated aspen trees, fuel models 9 and 11. The understory varies significantly with drier sites having grass-needle understories to those having dense tall shrub understories in heavily shaded conditions. Slopes range from very steep to gentle. Activity fuels and plantations can be present but do not pose any particular problems in this geographic area. Annual precipitation ranges from 12 - 20 inches and maximum summer temperatures are found in the range of 70 - 85 degrees. Fuel complexes in these communities have been markedly altered in some areas through fire suppression, grazing, timber harvesting, and insect and disease occurrence. Open stands having low accumulations of down and dead woody materials have been changed to areas characterized by numerous dead overstory trees, shade tolerant regeneration abundant in the understory, heavy accumulations of surface fuels, and high vertical and horizontal fuel continuity.

(2) Fire Behavior: Fire behavior in these communities ranges from low intensity surface fires in needle-grass fuels to all types of crown fires. The specific fire type that will occur is dependent on the fuel availability; fuel quantities, environmental conditions, topographical conditions, weather conditions, and present stand structure. All types of fires, (heading, backing, flanking, crown) can occur with active burning possible throughout nighttime periods and sustained by thermal belts. Nighttime inversions develop frequently in valleys but fires can sustain activity above the inversion on slopes. Of special concern is the speed with which a fire can change from a benign surface fire to a fast-moving, high intensity, crown fire. Safety considerations regarding this potential are paramount and fire behavior predictions are an extremely valuable part of incident action plan development and implementation.

(3) IMT Involvement: Forest health has become an important concern within these communities since fire exclusion has been responsible for interruption of a number of historical fire return cycles. Fuel accumulation and insect and disease proliferation has accelerated in the absence of fires. <u>As a result, 60% – 70% of all extended attack and/or team actions will occur in the Ponderosa pine/Douglas-fir zone.</u>

g. Subalpine communities:

(1) Description: This fuel type covers a relatively small area at higher elevations within the Great Basin, but fires that do occur here are often difficult, and expensive to suppress. These high elevation communities, 7,500ft to 12,500 ft, are comprised of Engelmann spruce and subalpine fir, with some lodgepole pine present. Surface fuels can be minimal in open grown stands or very heavy, predominantly large down tree stems, in closed canopy stands. Tree limbs of both species of trees usually are present all the way to the ground, posing good vertical fuel continuity.

(2) Fire Behavior: These stands often burn in patchy, spotty patterns best described as hundreds of spot fires, fuel model 10. Regular line construction and burn out efforts are ineffective on fires in this type. Spread is by torching of individual trees or groups of trees with spotting into more individual trees downwind. Retardant is seldom effective. These fires have the potential to wear crews out especially in low relative humidity situations with the constant torching and spotting into new fuels. Heavy down fuels, deep duff layers, and dense stands can make fire suppression a very laborious process. The key to suppression in this type is having crews limb up all trees with fire under them, to remove the ladder fuels and stop the torching and spotting into new fuels. Once the spread is stopped, water from pumps, engines, fold-a-tanks, and bladder bags can be used to speed up the mop-up in deep duff and heavy downed material under the trees.

(3) IMT Involvement: Team action responses in this vegetative type vary by year but can range from 15 to 25% of all activity annually.

VII. SUMMARY

While managing wildland fire in the Great Basin may not be unique, special circumstances can arise that may differ from past experiences or present new challenges. Incident Management Teams must be prepared to accept these challenges and resolve problems associated with fire management.

Key points to note are:

- Fuel types and fire behavior- fuel characteristics unique to these areas and relationships to fire dynamics.
- Special considerations - safety, management objectives, resource management considerations, functional considerations.
- Situations that result in a Type 1 Team response to an incident.