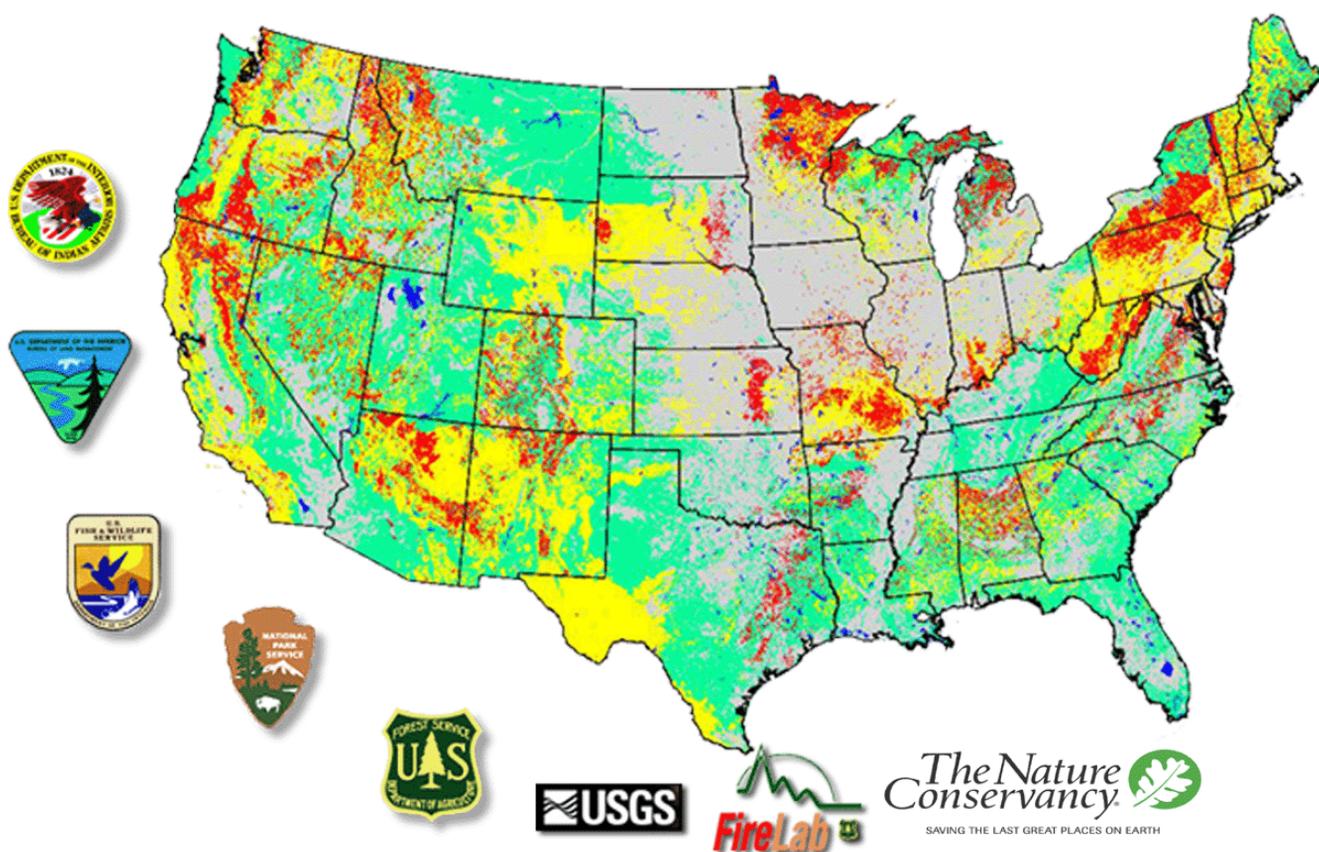


# INTERAGENCY FIRE REGIME CONDITION CLASS GUIDEBOOK



VERSION 1.1

MARCH 2004

# **FIRE REGIME CONDITION CLASS GUIDEBOOK**

## **EXECUTIVE SUMMARY**

### **Fire Regime Condition Class Version 1.1**

The field procedures for Fire Regime and Fire Regime Condition Class (FRCC) are used to describe general characteristics of a landscape that can be used to calculate and classify the Fire Regime and FRCC when combined with estimates of the natural (historical) fire regime reference values. A landscape is considered to be the contiguous area within a delineation that encompasses the variation of the natural fire regimes. Typically this is the area within a subwatershed (hydrologic unit code 6), but other types of landscape delineation can be used. The landscape is stratified into biophysical and project or treatment strata. When using these methods for National Fire Plan Operations and Reporting System (NFPORS) project submission or accomplishments, the landscape FRCC methods are used for large projects that contain multiple stands, while the stand FRCC method is used for small areas, typically containing only one stand.

The data collected for determination of FRCC characterize the size of the area, geographic location, biophysical conditions, and fire regime characteristics. This method provides the ecological information that can be used to classify the landscape fire regime and determine similarity, departure, ecological sustainability risks, abundance of vegetation-fuel classes, and the FRCC. These variables can be determined for several scales: landscape, project, stands, or stratifications. The Standard Landscape Method (formally known as Standard Guidebook Method) and Landscape Scorecard Method are used for landscape scale assessments. For small project or treatment areas that are not landscape in size, a scorecard method (Stand Scorecard Method) is provided for determining a stand or patch scale FRCC based on the context of the stand within the landscape FRCC. The Standard Landscape Method provides the training and validation process for use of the Fire Regime and FRCC Scorecard Methods (both the Landscape and Stand Scorecard).

This version (1.0.5) of the field procedures guidebook has been the result of 2 years of development, beta-testing, and revision, hierarchically stepped down from the original FRCC concepts and definitions published in Hardy and others (2001), Hann and Bunnell (2001), and GTR-87 (Schmidt and others 2002). We thank all the people who tested the beta versions of FRCC field procedures guidebook and provided recommendations and solutions. We also thank all the people who participated in development of the reference conditions.

An FRCC mapping guidebook and software is in development and planned for release in June, 2004. This guidebook and software emulate the field procedure methods.

The FRCC guidebooks (both field procedures and mapping guides) are developed and implemented by an Interagency and TNC working group. This working group is chartered and managed by the Interagency Fuels Committee. The FRCC guidebook, software, website, and associated publications are developed as a component under the Rocky Mountain Research Station (RMRS) Fire Effects Unit in association with the Fire Monitoring and Inventory system (FIREMON) and in parallel with the RMRS Rapid Assessment and LANDFIRE projects.

No more changes will be made in this versions (1.0.5) guidebook data fields, definition of those fields, or in the procedures for FRCC calculation and classification. There will continue to be additions in descriptive text to this version that will result in release of an updated version 1.0.5 with a different date shown on the lower left of each page of the guidebook. There will continue to be refinements in the potential natural vegetation (PNV) classification and associated reference conditions by geographic area as regional or subregional teams revise these values and as the National Rapid Assessment delivers refined PNV and reference values. A Nationally consistent process has been developed for revision of the reference conditions. Contact the help desk for facilitation of this process. There will continue to be improvements in the form formats, code sheets, text descriptions, data recorded applications, software and website to improve functionality and incorporate updated reference conditions. Users should check the website (<http://frcc.gov/>) or the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)) to obtain the guidebook with the latest text changes in description, PNV classification, reference conditions, and software.

A version 2.0 of the FRCC field procedures is scheduled for development that will be revised based on results from nationally consistent science peer review and recommendations, research focused on the FRCC methods and reference conditions, results from the National Landfire projects, and assessment of training and implementation tools. This version 2.0 will be different in that it will be scheduled for implementation by geographic area following the schedule for the National Landfire projects. The first geographic areas scheduled for delivery of version 2.0 will be in 2006. A version change in the FRCC mapping guidebook and software will occur in parallel.

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## CHAPTER 1 – INTRODUCTION

Field procedures were designed for the Standard Landscape (quantitative) Method for fire regime and Fire Regime Condition Class (FRCC) to describe ecological characteristics of the landscape-, strata, and stand that can be used to classify fire regimes and FRCC within the broad definitions from the coarse-scale classification by Hardy et al. (2001) and Schmidt et al. (2002). The Project Landscape or Project Area is the unit encompassing the large area being analyzed for fuel management, fire use, wildland fire, or other management applications. Examples include: 1) landscapes where fire, vegetation, or fuel management projects are being considered, 2) landscapes - with- a fire management planning unit delineation, 3) - areas encompassing a National Fire Plan Operations and Reporting System (NFPORS) project area or treatment unit, 4) - areas with a wildland fire incident, or 5) other landscapes assessed for fire, vegetation, and fuels management planning. For FRCC assessments, each Project Landscape is subdivided into "Strata." Strata are logical units based on differences in biophysical attributes, natural (historical) fire regimes, current vegetation and fuels, management treatment units, wildland fire incidents, or other factors (Note that the term "Strata" is used for both the singular- and plural cases throughout the guidebook). Methods were designed to provide consistency and quantification from the stand- to landscape scales, and to allow extrapolation to larger scale assessment projects (e.g., Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). For small-scale projects or treatment units (such as a single patch or stand) the fire regime and FRCC should first be determined for the surrounding landscape. Then a stand-scale FRCC can be determined that can be used for NFPORS or other reporting requirements for projects at this scale.

### *FRCC Objectives*

Specific objectives established by Agency leadership through the Inter-agency fuels committee guided the development of the FRCC procedures:

- 1) Procedures would be designed to reflect the fire regime and FRCC as defined and described by Hardy et al. 2001 and Schmidt et al. 2002, with the purpose to support multi-scale planning and monitoring based on a broad-based vegetation and disturbance regime sustainability index (e.g. FRCC), as described by Hann and Bunnell 2001.
- 2) Field methods would be developed that would be emulated by mapping procedures so users would understand the implications of mapped fire regimes, FRCC, and associated measures based on their field applications.
- 3) Field and mapping procedures would be based on simple calculations, classification, and commonly available data so that users can hand calculate and classify in the field and follow the path of mapping determinations.
- 4) A standard quantified field method would be developed that was flexible in application, ranging from rapid reconnaissance estimates with only moderate confidence, to detailed

- determination, with high confidence. A companion scorecard would be developed for rapid determinations that would emulate the outcome of the standard quantified method.
- 5) Development of the field and mapping procedures would follow similar concepts and terminology as those for other resource condition measures (e.g. range, watershed, forest and rangeland health) to facilitate interdisciplinary communication and an integrated approach to multi-scale planning and monitoring.

The coarse-scale definitions of FRCC follow similar concepts as other resource (e.g., forest, range, watershed, wildlife) condition class tools comparing current characteristics to the natural reference conditions (Clements 1934, Hann et al. 1998, Lee et al. 1998, Rieman et al. 2000, Samson 1919, Wisdom et al. 2000). Methods for FRCC classification followed those conceptualized by Heinselman (1981) and refined by Brown (1995). Subsequently, adjustments were made for multi-scale situations (Caprio 2000, Hann and Bunnell 2001, Hann et al. 2002, Hessburg et al. 1999, Kaufman et al. 2000, Keane et al. 2002). Central to the FRCC concept is the natural or historical range of variability (NRV or HRV) (Landres et al. 1999, Morgan et al. 1994), which is defined as Condition Class 1, and the concept of departure from NRV, which reflects Condition Class 2 or Condition Class 3 (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002).

The typical errors in fire regime relate to classification into surface or replacement for many types that are actually mixed, and classification into infrequent for many types that may be frequent. The typical errors in condition class relate to classification of 2 instead of 3 or vice versa, less frequently a 1 instead of a 2 or vice versa, and seldom a 1 instead of a 3 or vice versa. The most common reason for error is misclassification of the potential natural vegetation, and thus an error in reference conditions. Landscapes where the most common errors occur in potential natural vegetation identification are those naturally dominated by grass or shrub that are now dominated by trees.

The FRCC data fields described in the following Chapters pertain to several scales: 1) the entire landscape, 2) the biophysical stratifications (Strata), and 3) individual stands, depending on the method used. As mentioned above, stratifications of the Project Landscape are developed based on differences between biophysical conditions, natural or historical fire regimes, current vegetation-fuel class conditions, current fire regimes, or management treatment units. The 3 to 5 page set of Standard Landscape Method worksheets (appendix 3-A) were designed so that the fire regime, FRCC, ecological risk, abundance class, and other associated variables can be calculated and graphed during a single field training session so that all users understand the

associated calculations and classifications. However, a software program has been developed that will compute all calculations and graphs after initial data entry.

### **Guidebook Structure**

The guidebook is arranged in five chapters. The first two are an introduction and an overview of the FRCC process. Chapters 3-5 were created to be stand alone documents depending on the method you choose. Chapter 3 being the Standard Landscape Method, Chapter 4 the Landscape Scorecard Method, and Chapter 5 the Stand Scorecard Method. Each of these method chapters has an appendix attached with the required forms and code sheets for that specific method. There may be some text in Chapters 4 and 5 that refer you to the Standard Landscape Method for clarification. Thus, you may want to have Chapter 3 handy even when applying the other methods.

Pages and Tables have numbers that correspond to the Chapter they are in with the first number always representing the chapter (e.g. Page 3-4 would be page 4 of Chapter 3, Table 2-1 would be table 1 of Chapter 2).

## CHAPTER 2 – OVERVIEW

### Background

Definitions of fire regime and FRCC came from Hardy et al. (2001), Hann and Bunnell (2001), and Schmidt et al. (2002). Most fields in the FRCC methods were identified from project and watershed scale fire regime and condition class mapping tests and demonstration projects. However, substantial modifications have been incorporated based on subsequent informal workshops and field tests. Version 1.0.5 Western U.S. natural fire regime reference conditions have been developed for vegetation-fuel class composition, fire frequency, and fire severity for the coarse-scale Potential Natural Vegetation Groups (PNVGs). These values were developed through Vegetation Dynamics Development Tool (VDDT) modeling, literature review, field visits, and communication with regional experts. These values are in a review and refinement process. To make sure you have the most recent values, users with internet access should check the FRCC website ([www.frcc.gov](http://www.frcc.gov)) or contact the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)). Users without web access should contact their federal, state, TNC or private agency coordinator (a list is provided on the training CD). The preferred method for developing the reference conditions is local expert or interdisciplinary team (IDT) estimates based on a local VDDT modeling workshops with literature review, ground reconnaissance, historic and current photo comparisons, and field assessment. Second to the preferred method would be region and state developed default reference conditions based on a similar process. However, because of the recent nature of development of FRCC methods these preferred methods have not been implemented. In the absence of reference values from these preferred methods the coarse-scale reference conditions for the western U.S. may be used. Beta-test reference values for the eastern U.S. and Alaska will be available by August of 2004.

### Fire Regime and Fire Regime Condition Class Definition

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse-scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include:

- I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);
- II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity.

As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but hierarchy to coarse scale definitions will be retained.

FRCC is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001). They defined coarse-scale fire regime current condition classes as *“the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects and disease, or other management activities.”* They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and diseased mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), “high graded” forest composition and structure (e.g. large fire tolerant trees removed

and small fire intolerant trees left in a frequent surface fire regime), or repeated annual grazing that reduces grassy fuels across relatively large areas to levels that will not carry a surface fire. Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation-fuel composition; fire frequency, and fire severity) to the central tendency of the natural (historical) fire regime. Amount of departure is classified to determine the FRCC.

### **Scale Considerations**

Fire regime and condition class are landscape scale variables. It is highly recommended that you put a lot of thought into how you classify your landscape. The inputs to the fire regime and condition class calculations and classification come from the sum of stand or patch scale conditions within a given biophysical land unit (BPLU) across a landscape of sufficient size to incorporate the natural variation of the fire regime. This sum area should include a larger area than just the treatment units that are to be assessed, generally equivalent to the Project Landscape. This can generally be equated to delineation of the hydrologic unit (watershed, subwatershed) that would surround the gross area that would be burned in a one day burning period under dry, windy large fire conditions, typical of when large fire runs occurred naturally (90<sup>th</sup> plus percentile). This assessment should be based on typical size of a one day burning period given the landscape contained natural fuel mosaic conditions and not necessarily current conditions.

Another general guideline that can be used is the Project Landscape containing multiple patches or stands, with more patches in regimes that naturally contain higher variation. Patches or stands are delineated by the combination of terrain (similar aspect, slope, BpLU) and vegetation-fuel (similar composition and structure). The combination of fire regime and terrain are the dominant factors that determine the typical patch or stand size within the natural mosaic. Patch or stand sizes in flat to rolling terrain with a surface or replacement regime typically range from 100 to 300 acres, while sizes in steep and dissected terrain range from 10 to 50 acres. Patch sizes in areas broken up with rocks, boulders, or other non-fuel producing conditions also typically range from 10 to 50 acres in both flat to rolling or steep and dissected. Mixed fire regimes tend to produce patch sizes ranging from 10 to 50 acres irrespective of type of terrain, but often the type of terrain (steep and dissected or mosaic of rocky areas) produces the mixed fire regime. Natural variation is generally highest in the mixed regime, second in the replacement regime, and lowest in the surface regime, so more patches or stands may be necessary for some regimes in order to contain the natural variation. Based on these typical conditions some general guidelines for a typical size of assessment area for projects based on dominant natural fire regime and terrain follow.

**Table 2-1** – Guidelines for Typical Assessment Sizes

| Natural Fire Regime | Terrain         |                     |                   |
|---------------------|-----------------|---------------------|-------------------|
|                     | Flat to Rolling | Steep and Dissected | Broken With Rocks |
| Surface             | 10,000 acres    | 1500 acres          | 1500 acres        |
| Mixed               | 20,000 acres    | 3000 acres          | 3000 acres        |
| Replacement         | 15,000 acres    | 2250 acres          | 2250 acres        |

In many cases because of management objectives, land use, or land ownership patterns the Project Area will be much smaller than a landscape, and in some cases may consist of just one patch or stand. For projects or treatment units such as these the fire regime and FRCC information should be determined for the project and surrounding stands that make up the landscape using the Standard Landscape or Landscape Scorecard fire regime and FRCC Methods. Following this a stand level FRCC can be determined using the Stand Scorecard FRCC Method. The Stand Scorecard FRCC results can then be used for NFPORS and other project submission and reporting for these small, single stand or patch projects or treatments. It is important to remember that the natural fire regime is the same as determined for the surrounding landscape.

### **Standard versus Scorecard Methods**

This guidebook will address three methods for determining FRCC. The first two (Standard Landscape Method – Chapters 3 and Landscape Scorecard Method – Chapter 4) are both landscape scale assessments. The third (Stand Scorecard Method – Chapter 5) is a patch or stand scale assessment.

The Standard Landscape (quantitative) fire regime and FRCC Method provides the training, validation, and ground truth for the scorecard (qualitative) methods. The Landscape Scorecard and Stand Scorecard Method provide little supportive documentation of the inputs to determination of Fire Regime and FRCC, and have only moderate consistency between users, in comparison to the Standard Landscape Method. However the Landscape Scorecard and Stand Scorecard Method have much higher accuracy than a best guess (35-55%) based on the FRCC definitions and photos (table 2-2).

The Landscape Scorecard and Stand Scorecard Method provide a quick approach for field determination of fire regime and FRCC. However, the Landscape Scorecard and Stand Scorecard Method have only moderate accuracy (55-75%) in comparison to the relatively high accuracy (75-100%) that can be obtained using the Standard Landscape Method. This indicates that the Landscape Scorecard and Stand Scorecard will produce the correct Fire Regime and

FRCC 2 out of 3 times (conversely, in error 1 out of 3 times) if used by a person that has been trained and has calibrated their estimates by using the Standard Landscape Method in a similar landscape. In contrast the Standard Landscape Method will produce the correct Fire Regime and FRCC 4 to 5 out of 5 times (conversely, in error 1 or 0 out of 5 times) if used by a person that has been trained and has used the method in similar landscapes. If all polygons within the Standard Landscape Method assessment area are ground truthed to their correct cover, structure, potential vegetation, fire history, and potential fire severity 100% accuracy can be achieved.

Users should be trained first in the Standard Landscape Method to provide them with a ground truth understanding of inputs to fire regime and FRCC and then trained with the Landscape Scorecard Method. The most important perspective for use of the Stand Scorecard Method is that the fire regime and FRCC is a landscape determination first, not a point or patch or stand determination. To understand and rate stand scale relationships the user must first have the context of fire regime and FRCC at the landscape scale. The behavior and effects of fire as well as many other disturbances, within any one patch or stand, are equally dependent on the behavior and effects of fire in the adjacent patches or stands. Through time, natural fire regimes operate on landscape scales to create mosaics of vegetation-fuel patches. Altered fire regimes result in often unsustainable or undesirable mosaics. Hence, it is the condition of vegetation-fuel mosaics and fire regime characteristics as a whole across a landscape that determines FRCC, not necessarily the condition of a particular patch or stands in isolation.

*Some considerations for when to use field procedures or mapping procedures for determination of FRCC:*

- 1) Most small area (stand-scale) projects will require a field visit and use of the stand-scale FRCC procedures (Stand Scorecard Method), with associated landscape FRCC inputs. Even the best of maps are only 80 to 90 percent accurate and managers of small projects may not want to take the risk of a 1 out of 5 chance of being in error for pre- and post-treatment descriptions of FRCC inputs and determination.
- 2) The larger the landscapes the more difficult it is to accurately determine FRCC using the field procedures. In addition, the larger the landscapes the lower the risk that inclusion of 10 to 20 percent or more error in inputs will cause an error in FRCC.

**Table 2-2 – Summary Comparison of Methods and their Recommended Uses**

| Method   | Scale          | Recommended Uses   | Accuracy   |
|--|----------------|--|--|
| Standard Landscape Method (Chapter 3) (Quantitative) | Landscape      | <ul style="list-style-type: none"> <li>• Fire and Land Management Planning</li> <li>• Project Prioritization</li> <li>• Project Planning for areas not characterized by the Standard Method Before</li> <li>• Project Funding Requests</li> <li>• Reporting</li> <li>• Monitoring</li> <li>• Validation for the Scorecard Methods</li> </ul>                                 | 75-100%  |
| Landscape Scorecard Method (Chapter 4) (Qualitative) | Landscape      | <ul style="list-style-type: none"> <li>• Wildland Fire Implementation Planning</li> <li>• Situation Analysis</li> <li>• Wildland Fire Reporting</li> <li>• Project Planning for areas that have been, or are similar to, areas that have been classified using the Standard Method</li> <li>• Project Funding Requests</li> <li>• Reporting</li> <li>• Monitoring</li> </ul> | 55-75%<br>if used by a person that has been trained and has calibrated their estimates by using the Standard Landscape Method in a similar landscape |
| Scale Scorecard Method (Chapter 5) (Qualitative)     | Stand or Patch | <ul style="list-style-type: none"> <li>• Reporting for small treatment areas</li> </ul>  | Same as Landscape Scorecard Method   |

### Web Versus Stand Alone Data Entry

Downloadable data entry and reporting software is currently available (<http://frcc.gov> or cd-rom – contact the help desk @ [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov) or contact your federal, state, TNC or private FRCC agency coordinator) for fire regime and FRCC Standard Landscape and Landscape Scorecard methods (version 1.0.5 March 1, 2004). We recommend that all users with computer capability use data entry and reporting software (requires MS Access 2000 or a subsequent version). Use of the software provides a much more efficient system for storage, filing, correcting data, sensitivity testing, and producing finished reports with graphics and photos.

A web version will be available to federal agency and TNC personnel with web access. Other personnel can be approved for web version access upon submitting a request through a federal agency or TNC sponsor. This web version will be much more sophisticated than the downloadable version and in the future will have the capability to export data to NFORS and LANDFIRE and the ability to share data. Your federal agency or TNC office may choose to make the web version mandatory when it is available.

Downloadable software for the Stand Scorecard method (version 1.0.5) will be available in 2004. The Stand Scorecard FRCC software will extract data inputs from the associated landscape FRCC database. In order to enter data for the Stand Scorecard Method there must be a corresponding landscape fire regime and FRCC strata record in your data base. This landscape strata record must have the same registration code, project code, project number, project characterization date, strata number, and strata characterization date.

If you do not have access to the web, but have computer capability, install the software from the training cd-rom (available April, 2004). To share data with the Interagency and TNC FRCC working group or other personnel you will need to put the data on a disk.

### **Quality Control**

The examiner code used in FRCC methods is your email address (e.g. [jsmith@blm.gov](mailto:jsmith@blm.gov) or [jsmith@fs.fed.us](mailto:jsmith@fs.fed.us)). This code provides the linkage to the "Student Tracking Database". This database automatically contains information on each student that has participated in formal FRCC training sessions or on the interactive website training. The database also contains information on students participating in the cd-rom training or informal FRCC training that meet requirements. These students will need to assure they meet the training requirements by contacting the FRCC help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)) or, for users without web access, contact your federal, state, TNC or private agency coordinator (a list is provided on the training CD). The database contains a FRCC "certification code" for those that have met the training requirements and these participants are identified as an FRCC "user" or "trainer" in the data. The database also records the last date of training, and the associated version of methods and software.

Web fire regime and FRCC data cannot be released for sharing with others, or automated export to NFPORS or LANDFIRE, unless they are from a "Certified Examiner." In the future some federal agencies may choose to require a certification code be entered into the NFPORS system for data entry. This would limit data entry capabilities to only certified FRCC examiners.

For FRCC Landscape or Stand Scorecard data records to be identified as "Calibrated" the examiner must have at least 1 FRCC Standard Landscape strata record that has the same Biophysical Land Unit (BPLU, coarse-scale PNVG) code in their web or downloadable software database, as the scorecard record they are entering.

## CHAPTER 3 - STANDARD LANDSCAPE METHOD

*\*NOTE – THE STANDARD LANDSCAPE METHOD WAS CALLED STANDARD GUIDEBOOK METHOD IN PREVIOUS VERSIONS. THE PROCEDURES ARE THE SAME, ONLY THE NAME CHANGED TO BETTER REFLECT THE METHODOLOGY.*

The Standard Landscape (quantitative) Method for fire regime and FRCC provide the training and validation for the scorecard methods. It is the recommended method for use in determining FRCC for all Project Landscapes that have not been assessed before. Users should be trained first in the Standard Landscape Method to provide them with a ground truth understanding of inputs to landscape fire regime and FRCC and then trained with the scorecard methods.

The fire regime and FRCC field methods described here are the recommended procedures for conducting the Standard Landscape Method for fire regime and FRCC. they will guide the user through the worksheet in Appendix 3-A.

### *Field Numbers*

Fields are generally numbered sequentially. However, often there are field numbers that are not used. These are numbers that are retained for use by the computer or for storage of data from a former version.

### **Standard Landscape Procedure - Landscape Scale Fields (Fields 1 - 20)**

This data describes the landscape as a whole. The first four fields (Registration Code ID, Project Code, Project Number and Sampling Date) allow the unique identification of a landscape or project area.

**Registration Code ID (Field 1-REGCOD) – Required** – For federal agency and TNC personnel using the web version or downloading the stand alone version the Registration Code is a 4-character code assigned from the FRCC help desk based on your agency affiliation. Standard codes are assigned to all federal agency and TNC units that cannot be used by other units (check the website at <http://frcc.gov/> for an updated list, contact the help desk at [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov) if your land management unit is not listed). For users that do not have web access and for non-federal agency users contact your federal, state, TNC or private agency coordinator (a list is provided on the training CD).. We encourage non-federal agency users to use one Registration Code per “group”, and then use a Project Code for separate monitoring projects.

**Project Code (Field 2-PROCOD) – Required** – The Project Code is an 8-character code used to identify project work that is done within the unit (you are not required to use all eight characters).

Some examples of Project Codes are:

TCRESTOR = Tenderfoot Creek Restoration

BurntFk = Burnt Fork Project

SCPF1 = Swan Creek Prescribed Fire, Unit 1

BoxCkDem = Box Creek Demonstration Project

You may want to use the same code you would use in the National Fire Plan Operations Reporting System (NFPORS) or, if you are a non-federal employee, link it to whatever reporting system you may use. In NFPORS this would be your “treatment unit name”.

It will be easier to read sorted results if you do not include digits in the left most position of the project code. For instance, if two of your projects are 22Lolo and 9Lolo, when sorted 22Lolo will come before 9Lolo. The preferred option would be to name the projects Lolo09 and Lolo22, although Lolo9 and Lolo22 will sort in the proper order, also.

**Project Number (Field 3 – PLOJID) – Required** – Identifier that corresponds to the fire, vegetation, and fuel management landscape or project area. Integer value.

**Project Characterization Date (Field 4-SDATE) – Required** – The characterization date is the date you want assigned to the landscape or project summary as a whole that makes this data unique from previous or subsequent characterization. The date of characterization should be entered in Field 4 of the FRCC sampling form as an 8-digit number in the MM/DD/YYYY format where MM is the month number, DD is the day of the month, and YYYY is the current year. So, April 10, 2001 would be entered 04/10/2001.

If the same landscape or project is being re-measured after treatment of one or more units or to update condition class following a period of succession or unplanned disturbances, be sure to keep the same project code and project number. The only item to change will be the project characterization date. Strata or treatment units within the landscape or project that have not changed can be copied in the data entry program from the previous project code/project number date of characterization to the new date and only those strata or treatment units that have changed need to be entered as new data.

**Examiner Name (Field 5-NAME) – Required** – The Examiner code is the email address of the crew boss or lead examiner. The examiner's email address corresponds to the Examiner's UserID in the central FRCC database at <http://frcc.gov/>.

If the project is exported to the central database, the website will verify that the examiner is a certified FRCC user or trainer. If the examiner is not certified, the FRCC website will not allow the project to be viewed by other users or exported to the NFPORS or LANDFIRE databases.

For users that do not have an email address, but have downloaded software, enter a UserID assigned to you by the help desk at the time you receive your registration ID.

For users that do not have an email address, do not have software, and have not been assigned a UserID by the help desk, but are using the field forms and worksheets to hand calculate FRCC, enter your first and last name with no spaces in between.

**Project Name (Field 6-PROJECT) – Required** – The name of the project can be up to 50-characters. The project name is the name of the overall landscape or project area where you will be applying the field procedures for FRCC. This project is usually named by the major drainage or other prominent feature.

You may want to cross reference this with your NFPORS "Project" or "Treatment Unit Name" or another reporting system if you are a non-federal employee.

**Project Area (Field 7-AREA) – Required** – The area of the project in an integer value. The project area is the size of the overall landscape or project area where you will be applying the field procedures for FRCC.

**Project Area Units (Field 8-UNITS) – Required** – Choose either acres or hectares for the size of the project area from field 7.

#### *Recording a Georeferenced Project Position*

The next set of fields provides georeferencing for your Project area. These fields are not required, but can be important for re-taking photographs, for placing the Project in a Geographic Information System, and for cross-walking to the NFPORS database (although a better georeference position for NFPORS may be the strata locations – Fields 43 and 44).

We recommend using a GPS receiver to record latitude and longitude, in decimals rather than degrees. Try to select a central position with a good panoramic view. Then record the GPS coordinates to the sixth decimal place.

**Latitude (Field 10-LATC) – Not Required** – Enter the latitude of the landscape or project in decimal degrees to the sixth decimal place (e.g., 45.951234).

**Longitude (Field 11-LONGC) – Not Required** – Enter the longitude of the landscape or project in decimal degrees to the sixth decimal place (e.g., 95.951234).

**Datum (Field 15) – Not Required** – Enter the datum used. Datum is a model used to represent map coordinates on the Earth's surface. If you are unsure of which to use contact your local GIS coordinator to see what datum they prefer you use.

You may want to use the same georeference position you used in your NFPORS reporting system or other non-federal reporting system. In NFPORS this is a center point in your project.

#### *Documenting Project Landscape with Current and Historic Photos*

Digital photographs and scans are a useful means to document the project a number of ways. They provide a unique opportunity to visually assess the landscape or project area or vegetation class in a database format for both local and regional/national use. Of particular value are digital photos and scans showing current and historic oblique views or current and historic aerial views. In addition, previously established projects can be found by orienting the landmarks in photos to visual cues in the field. Photos can be compared to determine important changes after project implementation or an unplanned fire or other disturbance event. Photos provide excellent communication tools for describing project rationale to the public and fire and fuels personnel. Possibly the most important use of these photos will be to develop a photo series once your data and photos are uploaded to central data storage.

Document the landscape or project using a current landscape view photograph. If available, scan a historic picture of the landscape project area from a similar view or for a landscape with similar potential vegetation or vegetation land types. You can also document the current and historic conditions using digital photographs or scans of aerial photographs from current (recent) and historic (such as 1930s) aerial photography. Enter the file name path of the digital picture or scan.

**Current Photo (Field 16-LSCPHOTO) – Not Required** – Use the browser to enter the file name path. The digital photo file will be uploaded with the database when you upload to the central location.

**Current Photo Date (Field 17-LSCPHOTODT) – Not Required** – Enter the date the Current Photo was taken.

**Historic Photo (Field 18-LSHPHOTO) – Not Required** – Use the browser to enter the file name path. The digital photo file will be uploaded with the database when you upload to the central location.

**Historic Photo Date (Field 19-LSHPHOTODT) – Not Required** – Enter the date the Historical Photo was taken.

*Entering Comments about the Landscape or project*

The Comments field is provided so that the field examiner or crew can record any information associated with the landscape or project that cannot be recorded elsewhere on the form. For example, you can record ecological conditions, dates of wildland fire or fire use occurrence, directions, historic information, and/or other important attributes.

**Comments (Field 20-COMMENTS) – Not Required** – Enter up to a 256-character comment. Try to use shorthand and abbreviations to reduce space as long as the comments are still understandable. You might try to organize comments in a standard order with appropriate punctuation. For example, you might describe history of the area first and only use colons to separate the next major category of comments.

### **Standard Landscape Procedure Strata Fields (Fields 21- 60)**

The Strata fields describe the biological, physical, and fire regime characteristics of the management unit for each of the Project Landscape stratifications.

Through review of existing data, current management plans, field reconnaissance, or assessment of treatment units delineate the landscape or project area into strata by differences in fire regime groups (table 3-1- Page 3-25), potential lifeform (table 3-2 – Page 3-26), current conditions (physical and/or biological), and treatment or non-treatment units.

You can delineate as many strata as you would like as long as strata percent composition sum to 100% of the landscape or project area and they are characterized for one time (date). Do not

include strata that mix characterization dates. To characterize strata for a different time period or for re-measurement enter or copy the same project code and number, but change the strata characterization date. Then copy those strata that have not changed and enter new data for the strata that have changed.

If you are conducting a rapid reconnaissance we suggest you do not include types that make up less than 20 percent of the project area (thus with 5 each at 20% you can only have up to 5 strata for 100% of the project area) unless the type has very important management implications. Keep it simple by stratifying only the dominant 2-3 types.

**Strata Number (Field 21-BIOSTRATANUM) – Required** – This field is automatically entered in by the computer if you are using the software or you can enter the number of the Strata yourself. It is recommended that the Strata be numbered incrementally, starting with 1. (e.g. 1, 2, 3... n)

**Strata Code (Field 22-CODE) – Not Required** – Code that may be used to crosswalk the strata to a reporting system, such as NFPORS (e.g. This can be linked to the “Treatment Unit Name” in NFPORS).

**Strata Name (Field 23-NAME) – Not Required** – Name associated with the strata.

**Strata Characterization Date (Field 24-STRATADATE) – Required** – Date the strata data was collected. This date can be different from the project characterization date because of a different date of sampling, but should characterize the strata for the same general time period.

**\*\*Caution – Field 25 is where most errors occur. Be sure you identify the correct PNVG using the guidelines below**

**Strata Bp Land Unit Code (Field 25-CBpLUTYP) – Required** – Enter the 4-6 character code for the coarse scale BpLU (potential natural vegetation group (PNVG)), from table 3-3 or 3-4, from the field code sheet, or from the pop down menu that best describes the BpLU-PNVG indicator species. If you enter any code except for NNNN or XXXX the next field (26) will be automatically filled with the appropriate lifeform. Use the Schmidt et al. (2002) GTR and this document as descriptive references, along with Bailey (1995), Kuchler (1975), and Brown and Smith (2000).

*Identifying the Coarse-scale PNVG*  
Review the following terms:

**Natural cover** – the assemblage of species, usually named by the most common or dominating species, that occupies the area for the majority of time during the normal ( $\pm$  33% of the central

tendency measure) disturbance and succession regime cycles, in the absence of modern human mechanized intervention.

**Historical cover** – the assemblage of species, usually named by the most common or dominating species, that occupied the area for the majority of time during the normal ( $\pm$  33% of the central tendency measure) disturbance and succession regime cycles, prior to Euro-American settlement and modern mechanized intervention.

**Importance** – natural (or historical as a proxy) is important to understand because this is the assemblage of species and their amounts that would be in sync with the normal disturbance and succession regime cycles, given no management and no investment; this provides a baseline reference for quantifying disturbance and succession outcomes, and associated diversity of species without management, that can be compared to outcomes with management and varying levels of investment.

**Forest** – conifer or broadleaf trees with a general average height to the top of the upper layer greater than 30 feet (approximately 9 meters) with fairly continuous and complete canopy closure occupy the majority of succession from post-replacement disturbance to maturity.

**Woodland** - conifer or broadleaf trees with an average height to the top of the upper layer less than 30 feet (approximately 9 meters) with non continuous canopy closure occupy the majority of succession from post-replacement disturbance to maturity.

**Cover** – canopy cover is approximately twice (2x) foliar cover (e.g. 30% canopy cover of sagebrush is approximately 15% foliar cover using line intercept).

After reviewing the terms use the following key to determine the potential natural lifeform.

**Strata Bp Land Unit Lifeform (Field 26-CBpLUFORM) – Required** – If you entered NNNN or XXXX in field 25 enter the 2-character lifeform code that best describes the BpLU site indicator lifeform that would be an indicator of the stratification 1 site conditions (Table 3-2 pg 3-29) otherwise this field will be populated for you.

*Key to Potential Natural Lifeforms*

A. Natural average potential height (height of most mature successional stage) of upper layer greater than 30 feet (approx 9 meters) and canopy cover of forest typically greater than 15% -  
-- **Forest** – The most common error in potential natural lifeform identification is selection of “Forest” because there are currently trees present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the current trees are one size class that is a younger age than the time since Euro-American settlement. This is a good indicator the area may not have natural forest potential.

AA. Natural average potential height (height of most mature successional stage) of upper layer less than 30 feet (approx 9 meters) and canopy cover of forest less than 15% -- Non-forest – go to B.

B. Natural canopy cover of woodland greater than 15% -- Woodland - The second most common error in potential natural lifeform identification is selection of “Woodland” because there are currently woodland trees present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the trees are one size class that is a younger age than the time since Euro-American settlement. This is a good indicator the area may not have natural forest potential.

BB. Natural canopy cover of woodland less than 15% -- Non-woodland – Go to C.

C. Natural foliar cover of shrubs greater than 5% -- Shrubland - The third most common error in potential natural lifeform identification is selection of “Shrubland” because there are currently shrubs present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the shrubs are of a size class and age that could not be achieved within the natural fire frequency. This is a good indicator the area may not have natural forest potential.

C1. Potential for forest and woodland species greater than 15% canopy cover with removal of natural disturbance – Shrubland with Trees

C2. Potential for forest and woodland less than 15% canopy cover with removal of natural disturbance -- Shrubland

CC. Natural foliar cover of shrubs less than 5% -- Non-shrubland – go to D.

D. Natural canopy cover of grasses, forbs, and other herbs greater than 5% -- Grassland

D1. Potential for forest and woodland species greater than 15% canopy cover with removal of natural disturbance -- Grassland with Trees

D2. Potential for shrub species greater than 5% foliar cover with removal of natural disturbance -- Grassland with Shrubs

D3. Potential for shrub species less than 5% without natural disturbance – Grassland

DD. Natural cover of grasses, forbs, and other herbs less than 5% -- Barren

Once you have identified the lifeform proceed to the appropriate table (table 3-3 for western U. S. forest and table 3-4 for western U.S. woodland, shrubland, or grassland) to select the PNVG. If you are from the **East** use the coarse-scale GTR-87 list, also provided on the code sheet and in the pop down menu of the software. An effort is underway to refine the PNVG classification and develop the reference values for the East. Be sure to check for updates. If you are from Alaska

enter a local code. An effort is underway to develop a PNVG classification and the associated reference values for Alaska. Be sure to check for updates. For selection of the PNVG in table 3-4 (western U.S. woodland, shrubland, and grassland) you will need to determine if the **natural cover is shrubland or grassland PNVG influenced by tree or shrub**. Use the following interpretations to help you make this determination.

**Forest or woodland tree in shrubland or grassland**

Shrubland or grassland is the **natural cover**

Trees currently present on the strata land unit

Trees not currently present, but have potential and available seed source

**Shrub encroachment in grassland**

Grassland is the **natural cover**

Shrubs currently present on the strata land unit

Shrubs not currently present, but have potential and available seed source

The PNVG classifications and associated reference values (tables 3-3 and 3-4 – Pages 3-27&28) for the western U.S. are from version 1.0.5. These values are in a review and refinement process. To make sure you have the most recent values, users with internet access should check the FRCC website (<http://frcc.gov/>) or contact the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)). Users without web access should contact their federal, state, TNC or private agency coordinator (a list is provided on the training CD).

*BpLU Indicator Species*

Enter up to 4 species from the Natural Resources Conservation Service (NRCS) plant list that are indicative of the type of site conditions typical of the BpLU. A local list of NRCS species will be developed in the database starting with a list of common species that occur in the coarse-scale BpLU (field 25) plus the addition of any additional species you enter. This local list can be popped up and will limit the number of NRCS codes you need to deal with.

**Indicator Species 1 (Field 27-INDSPP1) – Required** – Enter the NRCS plant code.

**Indicator Species 2 (Field 28-INDSPP2) – Not Required** – Enter the NRCS plant code.

**Indicator Species 3 (Field 29-INDSPP3) – Not Required** – Enter the NRCS plant code.

**Indicator Species 4 (Field 30-INDSPP4) – Not Required** – Enter the NRCS plant code.

**Local Bp Land Unit Strata Code (Field 31) – Not Required** – Enter up to a 10-character alpha-numeric code for the local BpLU (for example landtype, habitat type, plant association, range site, ecological land unit, potential vegetation type or group, etc.).

**Landform (Field 32) – Required** – Enter a coarse-scale landform code from the following list:

| Code | Landform                               |
|------|--|
| GMF  | Glaciated mount ains-foothills         |
| NMF  | Non-glaciated mountains-foothills      |
| BRK  | Breaklands-river breaks-badlands       |
| PLA  | Plains-rolling plains-plains w/ breaks |
| VAL  | Valleys-swales-draws                   |
| HIL  | Hills-low ridges-benches               |
| OTH  | Other-explain in comments              |

If OTH (other) is used explain in the strata comments (field 60).

**Average Slope Class (Field 34) – Required** – Enter a slope class from the following list:

| Class  | Slope (percent) |
|--------|-----------------|
| GENTL  | 0-10            |
| MOD    | 11-30           |
| STEEP  | 31-50           |
| VSTEEP | > 50            |
| OTH    | Other-explain   |

If OTH (other) is used explain in the strata comments (field 60).

**Insolation (Aspect) Class (Field 36) – Required** – Insolation is a relative classification of the amount of sun heating reception. This is typically related to the aspect of slopes and influences of cold or warm air flow. Enter an insolation class from the following list:

| Class | Insolation   |
|-------|--|
| LOW   | NW, N, NE, E, or flat if cold air drainage         |
| MOD   | Flat ( $\leq$ 10% slope) or all aspects            |
| HIGH  | W, SW, S, SE, warm air upflow from adjacent valley |
| OTH   | Other-explain                                      |

If OTH (other) is used explain in the strata comments (field 60).

**Low Elevation (Field 38) – Required** – Enter an elevation that represents the typical lower elevation of the strata. This is not the statistical minimum, but the typical lower elevation of the strata if the stratum covers an elevation zone. If the elevation does not change within the strata then enter the same elevation for low and high. If you were to use GIS to calculate this elevation you would select the polygons with lowest 10% slope values and determine the average or median value.

**High Elevation (Field 39) – Required** – Enter an elevation that represents the typical upper elevation of the strata. This is not the statistical maximum, but the typical upper elevation of the strata if the stratum covers an elevation zone. If the elevation does not change within the strata then enter the same elevation for low and high. If you were to use GIS to calculate this elevation you would select the polygons with highest 10% slope values and determine the average or median value.

**Elevation Units (Field 40) – Required** – Choose Feet or Meters.

**Strata Composition (Field 41) – Required** – Enter the percent composition for this strata of the total project area (e.g. enter 20 for 20% do not enter .20). The sum of all strata for a project must add to 100 percent.

#### *Recording a Georeferenced Strata Position*

The next set of fields is not required, but important if you want to relocate the general strata location or cross-walk the location to the NFPORS data base. These fields fix the geographic location of a point within the strata area.

Your selection for location of the strata position is flexible. A point that is generally central to the strata area or a point that provides a good visual perspective of the strata. The position should be the location where the current strata photo (field 49) is taken from so that the photo could be repeated at a later date for monitoring purposes.

**Latitude (Field 43-LATC) – Not Required** – Enter the latitude in decimal degrees of the plot center into Field 9 of the PD Plot Form to the sixth decimal place (e.g., 45.951234).

**Longitude (Field 44-LONGC) – Not Required** – Enter the longitude in decimal degrees of the plot center into Field 10 of the PD Plot Form to the sixth decimal place (e.g., 95.951234).

**Datum (Field 48) – Not Required** – Enter the datum used. Datum is a model used to represent map coordinates on the Earth's surface. If you are unsure of which to use contact your local GIS coordinator to see what datum they prefer you use.

**Current Strata Photo (Field 49-PHOTO) – Not Required** – Use the browser to enter the file name path. A copy of the digital photo file will accompany the database when you upload to the central data storage location.

**Strata Photo Date (Field 50-PHOTODT) – Not Required** – Enter the date the Strata Photo was taken.

**Reference Fire Frequency (Field 51) – Required** – Enter the central tendency (average, midpoint, median) for the natural fire frequency. This can be taken from the national coarse-scale fire frequency (tables 3-3 and 3-4), Fire Frequency (MFI (mean fire interval)), from regional values, or from local estimates. The central tendency for the natural fire frequency is also the same as the reciprocal of the average probability of natural fire (for example 1/.10 probability = 10 year frequency). The fire frequency can also be calculated as (fire exclusion date – first natural fire record date) / (number of natural fires – 1). The data entry program will automatically populate this value with the national coarse-scale reference value (tables 3-3 and 3-4). If you want to review information about the coarse-scale reference conditions for this BpLU-PNVG refer to the FRCC web page. This estimate of central tendency for the natural fire frequency is assumed to have plus or minus 33 % variation when compared in a ratio to the current fire severity for classification of FRCC.

We discourage people from conducting destructive fire history sampling unless they have education and training in fire history methodologies, intend to integrate this information with other reference data (such as succession rates and historical photography) with simulation modeling, and intend to publish the findings for others to use. We encourage people to conduct field reconnaissance, consult the literature and expert opinion, and integrate this with other information using simulation modeling in an interdisciplinary framework. If you decide to conduct or contract a fire history study according to published protocols and methods and are looking for an outlet for publication of your studies please contact the website.

**Current Fire Frequency (Field 52) – Required** – Enter the current fire frequency.

Estimate current fire frequency by conducting a thorough analysis of post-settlement fire activity. Here we're referring to fires burning in a somewhat natural manner, not suppressed spot fires. For example, you might want to count fires that burned at least 5 or 10 percent of your Project Landscape.

There are several ways to assess current fire frequency. You will be estimating mean (central tendency) fire interval when possible. This estimate of central tendency for the current fire frequency is assumed to have plus or minus 33 %. You can summarize Fire Atlas records, you can examine stumps for recent fire scars, or you could take a few increment cores from area age classes. Then, you compare the findings to the presettlement fire regimes by reviewing the literature, consulting with experts, or by using the FRCC default models that we mentioned above (tables 3-3 and 3-4 or estimate for East and Alaska). Here are some other guidelines that might help:

*Rule One.* If your analysis suggests that fires are now markedly more frequent than during the historical era, estimate the Mean Fire Interval. For example, current fires might be unnaturally frequent in areas with heavy cheatgrass encroachment.

*Rule Two.* If your analysis suggests that fire occurrence has not changed markedly during the post-settlement era, estimate the Mean Fire Interval. For example, fire atlas records might show five fires during the past sixty years. The MFI would be 15 years, or, sixty years divided by four fire intervals.

Note: Sometimes you can't calculate an MFI, particularly with the long-interval fire regimes. If your analysis suggests that the current fire interval is still within the natural range, simply re-enter the Natural Fire Frequency value from Field 51.

As you will see below, this signifies "No Change" when calculating Condition Class. But if you're unsure in this regard, enter the actual current interval.

*Rule Three.* If your analysis suggests that fire exclusion has caused a decline in fire frequency, enter the years since last fire, or calculate a Mean Fire Interval if possible. If you can't find any fire evidence for the post-settlement era, enter 100 years as a default value.

**Natural Fire Severity (Field 53- ) – Required** – Enter the average natural fire severity (upper layer lifeform replacement). This value depicts the degree of upper canopy replacement (top-kill) which would occur during peak burning season conditions (90<sup>th</sup> plus percentile), viewed at a large scale under natural conditions. Stated another way, the natural fire severity is a landscape measure of the proportion of a fire area which would experience greater than 75% upper canopy replacement during an unconstrained, naturally occurring fire event. For example, a natural fire severity of 50% should be interpreted as half the fire area experiencing upper layer canopy replacement of greater than 75%. In this example, the remaining 50% of the landscape would experience non-replacement fire severity, which is defined as less than 75% upper canopy replacement.

This value corresponds to the upper layer lifeform, not the upper layer size class. For example if there are scattered large conifers with an interspersed in-growth of pole and sapling conifers the estimate is for the replacement of the conifers in that upper layer as a whole (including large, pole, and sapling). In contrast, if there are only scattered large conifer trees with an herbaceous understory the estimate is for the replacement of the large conifers. The value can range from 0 to 100 percent. This can be taken from the national coarse-scale fire severity (table 3-3 or 3-4 Fire Severity (Replacement)), from regional values, or from local estimates. The data entry program will automatically populate this value with the national coarse-scale reference value (table 3-3 or 3-4 or estimate for East or Alaska). If you want to review information about the coarse-scale reference conditions for this BpLU-PNVG refer to the website <http://frcc.gov/> or, if you do not have web access contact your federal, state, TNC or private agency coordinator (a list is provided on the training CD). This estimate of central tendency for the natural fire severity is assumed to have plus or minus 33 % variation when compared in a ratio to the current fire severity for classification of FRCC.

**Current Fire Severity (Field 54) – Required** – enter an estimate of the current fire severity as a percent of the upper layer lifeform that currently exists that would be burned during similar conditions as used for estimating the natural fire severity. You are encouraged to enter a local expert estimate or average determined from modeling using fire effects and behavior models. This estimate of central tendency for the current fire severity is assumed to have plus or minus 33%.

A. For replacement natural fire regimes (fire regime II, IV, and V) use the natural fire severity central tendency as a default value (tables 3-3 and 3-4 or estimate for East or Alaska) unless amounts of uncharacteristic vegetation-fuel class variables have caused a decrease in potential fire severity.

B. For surface or mixed fire regimes (fire regime I and III) use the natural fire severity central tendency estimate (tables 3-3 and 3-4 or estimate for East and Alaska) as a default when you feel your estimate of current is within plus or minus 10 percent of the natural fire severity. If your estimate of current is greater than 10 percent different, then enter the central tendency for the range of current fire severity you feel fits the closest: 0-5% - central tendency = **3%**; 6-15% - central tendency = **10%**; 16-25% – central tendency = **20%**; 25-55% - central tendency = **40%**; 56-85% - **70%**; and 86-100% - central tendency = **90%**.

*Strata Metadata*

**Reference Vegetation-Fuel Class Percent Composition Source (Field 55) – Required** – enter a 1-character code from the following list. The selections are ordered from least rigorous to most rigorous in validity of the values.

- N - non-local expert estimate
- D - coarse-scale default values from lit. review/modeling workshops
- R - region/state default values from lit. review/modeling workshops
- L - local expert estimate
- T - interdisciplinary team (IDT) consensus w/ local expert
- M – local expert estimate + lit. review/modeling
- B - IDT consensus from lit. review/modeling workshop w/ local expert
- F – published local study + lit. review/modeling workshop

**Current Vegetation-Fuel Class Composition Source (Field 56) – Required** – enter a 1-character code from the following list. The selections are ordered from least rigorous to most rigorous in validity of the values.

- V - visual estimate
- R - walk through and visual estimate
- M - mapped summary

**Natural Fire Frequency and Native American Burning (Field 57) – Required** – enter a 1-character code from the following list to indicate how you addressed the issue of inclusion of Native American burning in the natural reference conditions. Refer to Barrett and Arno (1982) for a discussion of ecological implications.

C – used coarse-scale default

A – Substantial Native American burning influence included

D – Substantial Native American burning influence, but not included

W – Native American burning considered but not different than without

N - Native American burning influence not considered

**B to C Vegetation-fuel class breakpoint (Field 58) – Required** – Enter the breakpoint percent canopy closure for differentiating between classes B and C. The default is 35% for forest, woodland, and herbland and 15% for shrubland. If you use the national coarse-scale default composition values from tables 3-3 and 3-4) the software will assume the breakpoints.

**D to E Vegetation-fuel class breakpoint (Field 59) – Required** – Enter the breakpoint canopy closure for differentiating between classes D and E. The default is 35% for forest, woodland, and herbland and 15% for shrubland. If you use the national coarse-scale default composition values from tables 3-3 and 3-4) the software will assume the breakpoints.

**Strata Comment (Field 60)** – Enter comments for the strata. For fields where you used an other (OTH) code or could not assess describe the situation.

### **Standard Landscape Procedure Strata Vegetation-Fuel Class Composition Fields (Fields 62- 75)**

Use national coarse-scale reference condition vegetation-fuel class descriptions, regional or state descriptions if available, or develop custom local descriptions of the characteristic and uncharacteristic succession/disturbance classes. These values are in a review and refinement process. To make sure you have the most recent values, users with internet access should check the FRCC website (<http://frcc.gov/>) or contact the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)). Users without web access should contact their federal, state, TNC or private agency coordinator (a list is provided on the training CD). See table 3-6 for general description of the standardized classes. Canopy cover values are the coarse-scale default values. These may be different for some PNVGs in the national coarse-scale descriptions (see web page or help desk for most current descriptions) and may be refined regionally or locally.

**Vegetation Fuel Class (Field 62) – Required** – Enter the 4 character code for the Vegetation Fuel Class from table 3-6 (these are the formal data entry codes). The characteristic vegetation-fuel Classes AESP (Early seral post-replacement), BMSC (Mid seral closed canopy), CMSO (Mid seral open canopy), DLSO (Late seral open canopy), and ELSC (Late seral closed canopy) are required and will be created by the program (Note that we commonly also use the shorthand codes A through E in referring to these characteristic vegetation fuel classes). If you choose to use the national coarse-scale default composition values for the characteristic types then you should review the description on the web page or from the help desk. Additional classes may be added if they occur, based on the description in table 3-6.

**Upper Layer Lifeform (Field 63) – Required** – Enter the 4 character code for the lifeform in the upper layer. This is based on reference conditions for characteristic types, and current conditions for uncharacteristic types. Work through the list sequentially from coniferous trees to does not fit any category and use the determination criteria. If the determination criteria do not fit then go to the next row.

| Code | Lifeform                                  | Upper Layer Determination Criteria            |
|------|---|---|
| CONT | Coniferous Trees                          | ≥ 15% canopy cover                            |
| BRDT | Broadleaf Trees                           | ≥ 15% canopy cover                            |
| SHRB | Shrubs                                    | ≥ 5% line intercept cover or 15% canopy cover |
| HERB | Herbaceous (graminoids, forbs, and ferns) | ≥ 15% canopy cover                            |
| MOSS | Moss or Lichens                           | > 5% ground cover                             |
| NVEG | Non-vegetated                             | < 5% any vegetation cover                     |
| NNNN | Does not fit any category                 |   |

**Upper Layer Size Class (Field 64) – Required** – Enter the 4-character majority size class code of the upper layer life form (field 63). This is based on reference conditions for characteristic types, and current conditions for uncharacteristic types.

| Class                                 | Dimensions  |
|---------------------------------------|---|
| <b>Coniferous and Broadleaf Trees</b> |   |
| SEED                                  | Seedling - Trees that are less than 4.5 feet (1.37 meters) tall.                                    |
| SAPL                                  | Sapling - Trees that are greater than 4.5 feet (1.37 meters) tall and less than 5.0 in (13 cm) DBH. |
| POLE                                  | Pole - Trees that are greater than 5 in (13 cm) DBH and less than 9 in (23 cm) DBH.                 |
| MEDM                                  | Medium - Trees that are greater than 9 in (23 cm) DBH and less than 21 in (53 cm) DBH.              |
| LARG                                  | Large - Trees that are greater than 21 in (53 cm) DBH and less than 33 in (83 cm) DBH.              |
| VLAR                                  | Very large - Trees that are greater than 33 in (83 cm) DBH.   |
| <b>Shrubs</b>                         |   |
| LOWS                                  | Low - Shrubs that are less than 3 feet (1 meter) tall.  |
| MEDS                                  | Medium - Shrubs that are greater than 3 feet (1 meter) tall and less than 6.5 feet (2 meters) tall. |
| TALS                                  | Tall - Shrubs that are greater than 6.5 feet (2 meters) tall.                                       |
| <b>Herbaceous</b>                     |   |
| LOWH                                  | Low - Herbaceous less than or equal 2 feet (0.6 meters) tall.                                       |
| TALH                                  | Tall - Herbaceous greater than 2 feet (0.6 meters) tall.  |
| <b>Other</b>                          |   |
| MMLL                                  | Moss, Lichens, Litter/Duff  |
| BARN                                  | Barren, Rock, Gravel, Soil  |
| NNNN                                  | Does not fit any category, Unable to Assess   |

**Upper Layer Canopy Closure (Field 65) – Required** – Enter the code for the estimated canopy closure of the upper vegetation layer. This is based on reference conditions for characteristic types, and current conditions for uncharacteristic types:

| <b>Class</b> | <b>Crown</b>           |
|--------------|------------------------|
| 0            | Zero percent           |
| 0.5          | Trace or 0-1 percent   |
| 3            | Present or 2-5 percent |
| 10           | >5-15 percent          |
| 20           | >15-25 percent         |
| 30           | >25-35 percent         |
| 40           | >35-45 percent         |
| 50           | >45-55 percent         |
| 60           | >55-65 percent         |
| 70           | >65-75 percent         |
| 80           | >75-85 percent         |
| 90           | >85-95 percent         |
| 98           | >95-100 percent        |
| XX           | Could Not Assess       |

**Dominant Species 1 (Field 66) – Required** – Enter the NRCS plants database code. See description for fields 27 through 30. This is based on reference conditions for characteristic types, and current conditions for uncharacteristic types.

**Dominant Species 2 (Field 67) – Not Required** – Enter the NRCS plant code.

**Dominant Species 3 (Field 68) – Not Required** – Enter the NRCS plant code.

**Dominant Species 4 (Field 69) – Not Required** – Enter the NRCS plant code.

**Surface Fire Behavior Fuel Model (Field 70-FMODEL) – Not Required** – Chose the appropriate fire behavior fuel model from the Anderson 1983 publication, Aids for Determining Fuel Models for Estimating Fire Behavior. This is based on reference conditions for characteristic types, and current conditions for uncharacteristic types.

Anderson (1982) 13 Standard Surface Fuel Models

| FM# | Vegetation Types  | Fire Behavior  | Fuels   |
|-----|---|--|---|
| 0   | -- Non-Vegetated  |  |   |
| 1   | -- Perennial Grasslands, Annual Grasslands, Savannahs, Grass-tundra, Grass-shrub with < 1/3 shrub or timber   | Rapidly moving   | Cured fine, porous herbaceous; .5-.9 tons surface fuel load per acre; .5-2 foot depth   |
| 2   | -- Shrub, pine, oak, pinyon-juniper with < 2/3 shrub or timber cover  | Moderate spread in herbaceous with added intensity from litter/wood and production of firebrands                               | Fine herbaceous surface cured or dead, litter, dead stem or limb wood; 1-4 tons surface fuel load per acre; .5-2 foot depth                   |
| 3   | -- Tall Grassland, Prairie, and Meadow  | Fast moving with wind, but not as fast as FM 1   | Tall herbaceous surface with > 1/3 dead or cured; 2-4 tons fuel load per acre; 2-3 foot depth   |
| 4   | -- Coastal/Sierra Chaparral, Pocosin Shrub (fetterbrush, gallberry, bays), Southern Rough Shrub, Closed Jack Pine, Pine Barrens                                       | Fast moving and intense  | Flammable foliage and small dead woody material with or w/o litter layer; 10-15 tons fuel load per acre; 4-8 foot depth                       |
| 5   | -- Moist or Cool Shrub Types (Laurel, Vine Maple, Alder, Manzanita, Chamise), Forest/Shrub, Regeneration Shrubfields after fire or harvest                            | Slow moving and low to moderate intensity  | Green foliage with or w/o litter; 3-5 tons per acre; 1-3 foot depth   |
| 6   | -- Pinyon-juniper w/ shrubs, Southern Hardwood/ Shrub w/ Pine, Frost Killed Gambel Oak, Pocosin Shrub, Chamise, Chaparral, Spruce-taiga, Shrub-tundra, Hardwood Slash | Moderate spread and intensity, not as fast/intense as FM 4, but faster than FM 4   | Flammable foliage, but shorter and more open than FM 4 w/ less dead small wood and litter; 4-8 tons per acre; 2-4 foot depth                  |
| 7   | -- Palmetto-gallberry w/ or w/o Pine overstory, Black spruce/shrub, Southern Rough, Slash Pine/gallberry  | Fast moving even at higher dead fuel moisture contents   | Flammable foliage even when green; 4-6 tons per acre; 2-3 foot depth  |
| 8   | -- Closed canopy short needle conifer types, Closed canopy broadleaf or hardwood types  | Typically slow moving with low intensities; can move rapidly with high intensity with very low fuel moistures, & hot/dry/windy | Usually low to moderately flammable foliage with litter or scattered vegetation understory; 4-6 tons per acre surface fuels; .1-.5 foot depth |
| 9   | -- Long needle (ponderosa, Jeffrey, red, southern) conifer types, Oak-hickory and similar Hardwood types,   | Fast moving fires with moderate to high intensity depending on amount of surface fuel  | Flammable foliage with needle or leaf litter and some dead down woody material; 3-4 tons per acre; .1-.5 feet                                 |
| 10  | -- Any Forest type with > 3" down dead woody fuels  | High fire intensity with low fuel moisture and fast moving with wind   | Dead down > 3" woody fuels and litter; 10-14 tons per acre of total surface fuel < 3"; .5-2 foot depth  |
| 11  | -- Light Logging Slash, Partial Cut Slash   | Fast moving and low to moderate intensity with wind  | 10-14 tons per acre total fuel load < 3"; .5-2 foot depth   |
| 12  | -- Moderate and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned areas   | Fast moving and moderate intensity fire  | 30-40 tons per acre total fuel load < 3"; 2-3 foot depth  |
| 13  | -- Heavy and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned areas  | Fast moving and high intensity fire  | 50-60 tons per acre total fuel load > 3"; 2-4 foot depth  |

**Reference Percent Composition (Field 72) – Required** – enter central tendency (mean, median, midpoint) reference condition percent composition estimate for these vegetation-fuel class stratifications. If you want to use the national coarse-scale western U.S. reference conditions for this BpLU-PNVG refer to tables 3-3 and 3-4. These values are in a review and refinement process. To make sure you have the most recent values, users with internet access should check the FRCC website (<http://frcc.gov/>) or contact the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)). Users without web access should contact their federal, state, TNC or private agency coordinator (a list is provided on the training CD). The data entry program will automatically populate these values. The sum of entries for the five characteristic classes must equal 100 percent. Do not be concerned with a minimum or maximum range of variation. This estimate of central tendency for each characteristic vegetation-fuel class is assumed to have plus or minus 33 % variation as an input to condition class.

We discourage people from conducting intensive stand or landscape sampling to reconstruct historical conditions unless they have education and training in methodologies, intend to integrate this information with other reference data (such as fire history and historical photography) with simulation modeling, and intend to publish the findings for others to use. We encourage people to conduct field reconnaissance, consult the literature and expert opinion, and integrate this with other information using simulation modeling in an interdisciplinary framework. If you decide to conduct or contract intensive stand or landscape sampling to reconstruct historical conditions according to published protocols and methods and are looking for an outlet for publication of your studies please contact the help desk at [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov).

**Current Percent Composition (Field 73)** – enter a local estimate or map summary of the percent composition for this vegetation-fuel class within its strata and project area. The sum of entries for the five characteristic classes AESP, BMSC, CMSO, DLSO, ELSC, and any uncharacteristic classes must equal 100 percent. Any one patch or stand of vegetation-fuel can only have one characteristic or uncharacteristic vegetation-fuel code. You cannot double count such that the sum is greater than 100 percent. For example if uncharacteristic timber harvest (UTHV) has affected vegetation-fuel patches that make up 20% of the area and those same patches have an uncharacteristic pattern (UPAT) you must select the primary effect, which in this case would be the UTHV.

**Class Representative Photo (Field 74-CLSREPPHOTO)** – Use the browser to enter the file name path. The digital photo file will be uploaded with the database when you upload to the central location.

**Class Representative Photo Date (Field 75-CLSREPPHOTODT)** – Enter the date the Class Representative Photo was taken.

## **Standard Landscape Procedure Similarity, Abundance, and Condition**

### **Class Calculation Fields (Fields 77- 104)**

**Similarity (field 77 and 78)** – This value is not entered into the database. The analysis program will calculate this value. To calculate this value yourself, for field 77, choose the smaller of the 2 values; either reference composition (field 72) or current composition (field 73). The sum of field 77 (the current similarity to the reference amount of the five characteristic classes) is the input for field 78 and is the similarity of the strata to the natural regime. This methodology follows Clements (1934) and is one of the most common and simple measures of similarity to central tendency of the reference composition.

**Percent Difference (field 79)** – This value is not entered into the database. The analysis program will calculate this value. To calculate this value yourself use the formula % Diff. =  $[(\text{Current (field73)} - \text{reference (field 72)}) / (\text{Current (field73)} + \text{Reference (field 72)})] * 100$ .

**Ecological Sustainability Risk (field 80)** – This value is not entered into the database. The analysis program will calculate this value. This field provides an estimate of risk based on the results for Percent Difference in Field 79. To classify this yourself, the codes are as follows. A rating LOW applies when Field 79 is between minus 25 and plus 25 percent. MODERATE applies when the value is between 25 and 74 percent, or, when between minus 25 and minus 75 percent. Finally, HIGH risk applies when the value is equal to or greater than 75 percent, or, when it's less than minus 75 percent, or, whenever Uncharacteristic classes are present. In summary, "Low" implies that the sustainability risk is within the historical range of variability, or HRV. And, "moderate" and "high" are successively outside the historical range  
Risk Classes (based on field 79):

**Abundance (field 81)** – This value is not entered into the database. The analysis program will calculate this value. To classify this yourself use the results from the previous Percent Difference and the following class ranges:

Abundance Classes (based on field 79):

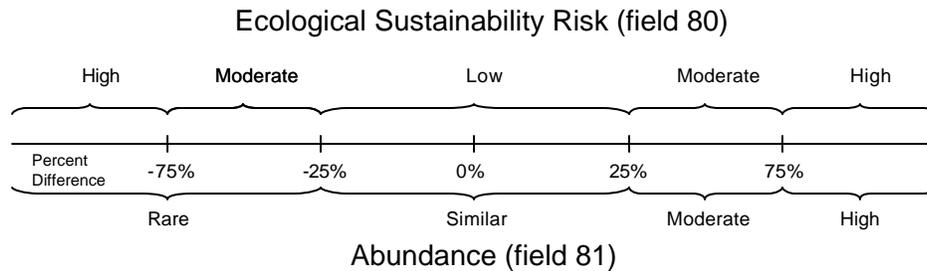
R - RARE ( $\leq -25\%$  Diff);

S - SIMILAR ( $> -25\%$  &  $< +25\%$  Diff);

M - MODERATE ( $\geq +25\%$  and  $\leq +75\%$  Diff);

H - HIGH (> + 75% Difference or > 0% Uncharacteristic).

To help you envision this better, here's a graph showing the Risk and Abundance variables on a continuum.



**Current Veg-Fuel Departure (field 82)** – This value is not entered into the database. To calculate this yourself subtract the value in field 78 from 100%. This is the dissimilarity to the central tendency of the natural regime.

**Veg-Fuel Condition Class (field 83)** – This value is not entered into the database. To classify this yourself categorize the current veg-fuel departure value (field 82) into a condition class: condition class 1 (within natural/historical range of variability) =  $\leq 33\%$ ; condition class 2 (moderate departure) =  $> 33\%$  to  $66\%$ ; condition class 3 (high departure) =  $> 66\%$ .

**Current Fire Frequency Departure (field 84)** – This value is not entered into the database. To calculate this yourself determine  $(1 - (\text{smaller of field 51 or 52} / \text{larger of field 51 or 52})) * 100$ .

**Current Fire Severity Departure (field 85)** - This value is not entered into the database. To calculate this yourself determine  $(1 - (\text{smaller of field 53 or 54} / \text{larger of field 53 or 54})) * 100$ .

**Current Frequency-Severity Departure (field 86)** – This value is not entered into the database. To calculate this yourself determine  $((\text{field 84} + \text{field 85}) / 2)$ .

**Frequency-Severity Condition Class (field 87)** – This value is not entered into the database. To classify this yourself categorize the current frequency-severity departure value (field 86) into a condition class: condition class 1 (within natural/historical range of variability) =  $\leq 33\%$ ; condition class 2 (moderate departure) =  $> 33\%$  to  $66\%$ ; condition class 3 (high departure) =  $> 66\%$ .

**Strata Fire Regime Condition Class (field 88)** – This value is not entered into the database. To classify this yourself enter the greater of field 83 or 87.

**Percent of Area (Field 41).** These boxes represent the percent of the Landscape occupied by each Strata. Here, you re-enter the data from Field 41 on your Strata worksheets. Again, always double-check that your Strata total 100 percent of the Project Landscape.

**Natural Fire Frequency (Field 51).** Now, you simply re-enter the Reference fire frequencies from Field 51.

**Field 92** – This value is not entered into the database. To classify this yourself, divide Field 41 by 100, then multiply by Field 51. This is the weighted fire frequency for each Strata.

**Weighted Mean Fire Frequency (field 93)** – This value is not entered into the database. To classify this yourself, sum the above values to derive a Weighted Fire Frequency for Project Landscape.

**Weighted Mean Fire Frequency Class (field 94)** – This value is not entered into the database. To classify this yourself, enter “Frequent” if Field 93 is less than 35 years. Enter “Infrequent” if it’s 36 to 200 years, or “Rare” if more than 200 years.

**Field 95** – This value is not entered into the database. To classify this yourself, divide Field 41 by 100, then multiply by Field 53. This yields a weighted fire severity value for each Strata.

**Landscape Natural Fire Severity (field 96)** – This value is not entered into the database. To classify this yourself, sum the above values (field 95) to diagnose the Natural Fire Severity value for the Project Landscape.

**Landscape Natural Fire Severity Class (field 97)** – This value is not entered into the database. To classify this yourself, enter “Surface” if Field 96 is less than 25 percent. Enter “Mixed” if it’s 26 to 75 percent, or “Replacement” if more than 75 percent.

**Landscape Natural Fire Regime Group (field 98)** – This value is not entered into the database. To classify this yourself, enter class based on the combination of field 94 and field 97: I - frequent, surface & mixed, II - frequent, replacement, III - infrequent, mixed & surface, IV - infrequent, replacement, V - rare, replacement.

**Current Veg-Fuel Departure (field 82)** – Enter field 82 from the Strata Worksheet (previous field 82 above).

**Field 99** – This value is not entered into the database. To classify this yourself, divide Field 41 by 100, then multiply by Field 82. Again, use the literal digit in the Field 41 box, not a percent value.

**Project Veg-Fuel Weighted Departure (Field 100)** – This value is not entered into the database. To classify this yourself, sum the previous values (field 99) to diagnose the weighted Veg-Fuel departure for the entire landscape.

**Field 86. Project Fire Frequency-Severity Departure** – This value is not entered into the database. Here, you simply re-enter the Field 86 values from the Strata forms.

**Weighted Fire Frequency-Severity Departure (field 101)** – This value is not entered into the database. To classify this yourself, divide Field 41 by 100, then multiply by Field 86.

**Field 102 Fire Frequency-Severity Weighted Departure** – This value is not entered into the database. To classify this yourself, sum the above values (field 101) to diagnose Frequency-Severity Departure for the entire Landscape.

**Field 103** – This value is not entered into the database. To classify this yourself, enter the greater of the Field 100 or 102 values. This box simply represents the worst-case departure among the vegetation- and fire variables.

**Field 104 Project Fire Regime Condition Class** – This value is not entered into the database. When Field 103 is less than or equal to 33 percent, the Condition Class is “1”. Condition Class 2 ranges from 34 to 66 percent, and Condition Class 3 is any score above 66 percent.

Trend to condition class 1 will be calculated using pre-treatment and post-treatment assessments or estimates using the “difference” formula. The software program will determine this value for you. If you would like to determine this yourself you will need a pre and post assessment and use the following formula (note this is not a field found on your worksheet – it is an output from the software). The software will choose the higher of the two departures (Veg-Fuel or Frequency-Severity) to determine this trend.

Difference is calculated as: % Difference =  $((\text{Pretreatment} - \text{Posttreatment}) / (\text{Pretreatment})) * 100$ .

The results from the “difference” calculation will be used to classify trend as follows:

D – Degradation in Condition Class =  $\leq - 10\%$

N – No change in Condition Class =  $> - 10\%$  and  $< + 10\%$

I – Improvement in Condition Class =  $\geq + 10\%$

### Drawing the Worksheet Graphs

The software will create the graphs for you. However, below are the procedures for how to graph the results by hand.

*Frequency and Severity Classification graph (on the left side – see below).*

**Step 1.** On the Y-axis, place a small tick mark to locate your Project Fire Frequency (Field 93).

**Step 2.** On the X-axis, mark the Project Fire Severity percent that you entered in Field 96.

**Step 3.** Now you simply integrate those two variables. That is, project the Y-axis value horizontally and project your X-axis value vertically. The intersection of those lines shows the dominant Fire Regime group.

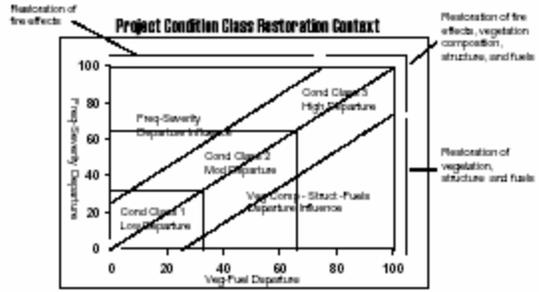
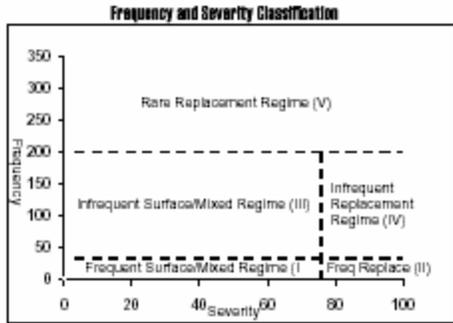
*Project Condition Class graph (on the right side – see below).*

**Step 1.** On the Y-axis, place a mark showing your Frequency-Severity weighted departure (Field 102).

**Step 2.** On the X-axis, place a tick mark for the Veg-Fuel weighted departure that you entered in Field 100.

**Step 3.** Now integrate those two variables. Again, project the Y-axis value horizontally, then project your X-axis value vertically. The intersection of the two lines shows the Project Condition Class.

One final point about the Condition Class graph. Notice that the margins contain several notes interpreting the restoration context. For example, assume for a moment that your lines had intersected in the upper left-hand side of the graph. That portion of the graph suggests that restoration of fire effects should probably have a higher priority than restoring vegetation. Conversely, the lower right side of the graph suggests that vegetation restoration might be a high priority, and so on.



**Table 3-1** - Natural (historical) fire regime groups for assessment of landscape dynamics and departure from natural (historical) range and variability (NRV or HRV) at landscape scales

| Fire Regime Group | Frequency (Fire Return Interval)       | Severity          | Description  |
|-------------------|--|-------------------|--|
| I                 | 0 – 35+ years,<br>Frequent             | Surface/<br>Mixed | Open park-like, savannah grassland, or mosaic forest, woodland, or shrub structures maintained by frequent surface or mixed severity fires; surface fires typically burn through a forest understory removing fire intolerant species and small size classes and removing < 25% of the upper layer, thus maintaining an open single layer overstory of relatively large trees; mosaic fires create a mosaic of different age post-fire savannah forest, woodlands, or open shrub patches by leaving > 25% of the upper layer (generally < 40 hectares (100 acres)). Interval can range up to 50 in systems with high temporal variability. |
| II                | 0 – 35+ years,<br>Frequent             | Replace-<br>ment  | Shrub or grasslands maintained or cycled by frequent fire that removes > 75% of the upper layer; fires kill non-sprouting shrubs such as sagebrush which typically regenerate and become dominant within 10-15 years; fires remove tops of sprouting shrubs and grass, such as mesquite, chaparral, or bunchgrass, which typically resprout and dominate within 5 years; fires typically kill most tree regeneration such as juniper, pinyon pine, ponderosa pine, Douglas-fir, or lodgepole pine. Interval can range up to 50 in systems with high temporal variability.  |
| III               | 35 – 100+ years-,<br>Infrequent        | Mixed             | Mosaic of different age post-fire open forest, early to mid-seral forest structural stages, and shrub or herb dominated patches (generally < 40 hectares (100 acres)) maintained or cycled by infrequent fire that removes < 75% of the upper layer. Interval can range up to 200 in systems with high temporal variability.   |
| IV                | 35 – 100+ years,<br>Less<br>Infrequent | Replace-<br>ment  | Large patches (generally > 40 hectares (100 acres)) of similar age post-fire shrub or herb dominated structures, or early to mid-seral forest cycled by infrequent fire that removes > 75% of the upper layer. Interval can range up to 200 in systems with high temporal variability.   |
| V                 | > 100-200 years,<br>Rare               | Replace-<br>ment  | Large patches (generally > 40 hectares (100 acres)) of similar age post-fire shrub or herb dominated structures, or early to mid to late seral forest cycled by infrequent fire that removes > 75% of the upper layer.   |

**Table 3-2.** Code Potential lifeform

| Code | Biophysical (BpLU) Lifeform                             |
|------|---|
| AQ   | Aquatic -- Lake, pond, bog, river                       |
| NV   | Non-vegetated -- Bare soil, rock, dunes, scree, talus   |
| CF   | Coniferous upland forest -- Pine, spruce, hemlock       |
| CW   | Coniferous wetland or riparian forest -- Spruce, larch  |
| BF   | Broadleaf upland forest -- Oak, beech, birch            |
| BW   | Broadleaf wetland or riparian forest -- Tupelo, cypress |
| SA   | Shrub dominated alpine -- Willow                        |
| SU   | Shrub dominated upland -- Sagebrush, bitterbrush        |
| SW   | Shrub dominated wetland or riparian -- Willow           |
| HA   | Herbaceous dominated alpine -- Dryas                    |
| HU   | Herbaceous dominated upland -- grasslands, bunchgrass   |
| HW   | Herbaceous dominated wetland or riparian -- ferns       |
| ML   | Moss or lichen dominated upland or wetland              |
| OT   | Other BpLU vegetation lifeform                          |

**Table 3-3.** Reference Condition Characteristics for 34 Forested PNVGs, Western U.S.

| PNVG_Name  | Code  | A:               | B:                     | C:                   | D:                    | E:                      | Fire Freq<br>(MFI) | Fire Dominant<br>Regime <sup>1</sup> | Repl.<br>Fire<br>% |
|--|-------|------------------|------------------------|----------------------|-----------------------|-------------------------|--------------------|--------------------------------------|--------------------|
|  |       | Early Seral<br>% | MidSer.<br>Closed<br>% | MidSer.<br>Open<br>% | LateSer.<br>Open<br>% | LateSer.<br>Closed<br>% |                    |                                      |                    |
| California Mixed Conifer                             | MCON  | 5                | 15                     | 35                   | 40                    | 5                       | 15                 | I                                    | 5                  |
| California Mixed Evergreen                           | CAME  | 10               | 30                     | 15                   | 20                    | 25                      | 17                 | I                                    | 17                 |
| Cedar-Hemlock_Douglas-fir                            | CHDF  | 10               | 35                     | 5                    | 5                     | 45                      | 233                | V                                    | 77                 |
| Cedar-Hemlock-Pine (Washington)                      | CHPI  | 15               | 49                     | 1                    | 5                     | 30                      | 125                | IV                                   | 75                 |
| Decid. Woodland Oak-Asp. with Conifer                | DWOA  | 15               | 15                     | 40                   | 25                    | 5                       | 10                 | I                                    | 15                 |
| Douglas-fir Interior Pacific Northwest               | DFIR1 | 10               | 10                     | 20                   | 45                    | 15                      | 15                 | I                                    | 5                  |
| Douglas-fir Interior Rocky Mountains                 | DFIR2 | 15               | 25                     | 20                   | 25                    | 15                      | 30                 | III                                  | 10                 |
| Fir-Hemlock (Wash., Oreg), Forest                    | FHWO1 | 15               | 25                     | 5                    | 10                    | 45                      | 769                | V                                    | 85                 |
| Fir-Hemlock (Wash., Oreg), Parkland                  | FHWO2 | 44               | 25                     | 1                    | 1                     | 29                      | 769                | V                                    | 92                 |
| Grand Fir-Douglas fir                                | GDFD  | 15               | 45                     | 10                   | 5                     | 25                      | 59                 | III                                  | 30                 |
| Great Basin Pine (Nevada, Utah)                      | GBPI  | 25               | 0                      | 12                   | 54                    | 9                       | 400                | III, V                               | 12                 |
| Lodgepole Pine-Subalpine Calif.                      | LPSC  | 20               | 10                     | 30                   | 30                    | 10                      | 77                 | III                                  | 25                 |
| Mosaic Cedar-Hemlock – DFir/Oak (Oreg)               | CHDO  | 10               | 30                     | 5                    | 15                    | 40                      | 200                | V, III                               | 60                 |
| Pine- Douglas fir-Central Rockies                    | PPDF3 | 15               | 10                     | 20                   | 45                    | 10                      | 33                 | I                                    | 15                 |
| Pine- Douglas fir-Colorado Plateau                   | PPDF5 | 15               | 10                     | 20                   | 50                    | 5                       | 12                 | I                                    | 10                 |
| Pine- Douglas fir-Southwest                          | PPDF7 | 15               | 5                      | 15                   | 60                    | 5                       | 10                 | I                                    | 5                  |
| Ponderosa Pine Black Hills                           | PPIN9 | 10               | 15                     | 25                   | 40                    | 10                      | 23                 | I                                    | 12                 |
| Ponderosa Pine Colorado Plateau                      | PPIN5 | 5                | 5                      | 15                   | 65                    | 10                      | 6                  | I                                    | 5                  |
| Ponderosa Pine Northern & C.Rockies                  | PPIN2 | 10               | 10                     | 20                   | 55                    | 5                       | 17                 | I                                    | 7                  |
| Ponderosa Pine PNW/Great Basin                       | PPIN1 | 10               | 5                      | 20                   | 55                    | 10                      | 15                 | I                                    | 10                 |
| Ponderosa Pine Southern Rockies                      | PPIN6 | 15               | 5                      | 25                   | 50                    | 5                       | 17                 | I                                    | 10                 |
| Ponderosa Pine Southwest                             | PPIN7 | 15               | 4                      | 20                   | 60                    | 1                       | 4                  | I                                    | 5                  |
| Ponderosa Pine-Douglas-fir (Inland NW)               | PPDF1 | 15               | 10                     | 25                   | 40                    | 10                      | 22                 | I                                    | 24                 |
| Ponderosa Pine-Douglas-fir S.Rockies                 | PPDF6 | 15               | 10                     | 30                   | 35                    | 10                      | 38                 | III                                  | 10                 |
| Red Fir-California                                   | RFCA  | 10               | 10                     | 5                    | 40                    | 35                      | 44                 | III                                  | 10                 |
| Redwood-California                                   | RWCA  | 10               | 20                     | 5                    | 5                     | 60                      | 32                 | I                                    | 16                 |
| Silver Fir-Douglas-fir                               | SFDF  | 5                | 20                     | 5                    | 5                     | 65                      | 625                | V                                    | 88                 |
| Southwestern Mixed Conifer                           | MCAN  | 10               | 5                      | 20                   | 60                    | 5                       | 10                 | I                                    | 5                  |
| Spruce-Cedar-Hemlock (Wash., Oreg.)                  | SCWO  | 5                | 30                     | 10                   | 10                    | 45                      | 833                | V                                    | 100                |
| Spruce-fir Douglas-fir                               | SPDF  | 5                | 25                     | 28                   | 22                    | 20                      | 19                 | III                                  | 6                  |
| Interior West Lower Subalpine Forest #1 <sup>2</sup> | SPFI1 | 20               | 35                     | 15                   | 10                    | 20                      | 111                | IV                                   | 67                 |
| Interior West Lower Subalpine Forest #2              | SPFI5 | 20               | 40                     | 10                   | 5                     | 25                      | 167                | V                                    | 83                 |
| Interior West Lower Subalpine Forest #3              | SPFI7 | 25               | 35                     | 20                   | 10                    | 10                      | 91                 | III, IV                              | 46                 |
| Interior West Upper Subalpine Forest                 | SPFI2 | 20               | 25                     | 25                   | 15                    | 15                      | 143                | III-V                                | 57                 |

<sup>1</sup> I (0-35 yr/Low Severity); II (0-35 yr/Std. Replacmt); III (35-100+/Mixed Severity); IV (35-100+/Std. Replacmt); V (200+ yr/Std. Replacmt).

<sup>2</sup> Interior West Lower Subalpine Forest #1 = Moderately frequent fire (e.g., Northern Rockies & west side of Central/Southern Rockies).

Interior West Lower Subalpine Forest #2 = Relatively infrequent fire (e.g., Pacific Northwest & east side of Central/Southern Rockies).

Interior West Lower Subalpine Forest #3 = Relatively frequent fire (e.g., Southwestern U.S.)

**Table 3-4.** Reference Condition Characteristics for 52 Non-forested PNVGs, Western U.S.

| PNVG_Name                              | Code  | A:            | B:               | C:             | D:              | E:                | Fire Freq (MFI) | Repl. Fire % | Dominant Fire Regime <sup>3</sup> |
|--|-------|---------------|------------------|----------------|-----------------|-------------------|-----------------|--------------|-----------------------------------|
|  |       | Early Seral % | MidSer. Closed % | MidSer. Open % | LateSer. Open % | LateSer. Closed % |                 |              |                                   |
| Alder-Ash (Oregon, Washington)         | AAOW  | 22            | 52               | 3              | 2               | 21                | 63              | 80           | IV                                |
| Alpine Meadows-Barren                  | AMDW  | 2             | 20               | 78             | 0               | 0                 | 120             | 80           | IV                                |
| Blue Oak Woodlands                     | OKCA1 | 5             | 10               | 20             | 55              | 10                | 10              | 5            | I                                 |
| Calif. Annual Grassland                | AGRA1 | 40            | 60               | 0              | 0               | 0                 | 5               | 100          | II                                |
| Calif. Annual Grassland With Shrubs    | AGRA2 | 35            | 50               | 0              | 10              | 5                 | 5               | 95           | II                                |
| Calif Steppe Grassland                 | CAST1 | 30            | 40               | 30             | 0               | 0                 | 5               | 100          | II                                |
| Calif. Steppe Grassland with Shrubs    | CAST2 | 30            | 25               | 30             | 10              | 5                 | 5               | 95           | II                                |
| Chaparral, Interior                    | CHAP5 | 20            | 45               | 5              | 5               | 25                | 45              | 90           | IV                                |
| Chaparral, Mesic (Coastal California)  | CHAP2 | 20            | 50               | 15             | 5               | 10                | 8               | 20           | III                               |
| Chaparral, Montane                     | CHAP4 | 25            | 35               | 9              | 1               | 30                | 31              | 85           | II                                |
| Chaparral, Xeric (Coastal California)  | CHAP1 | 20            | 45               | 25             | 5               | 5                 | 8               | 77           | II                                |
| Desert Grassland                       | DGRA1 | 15            | 20               | 65             | 0               | 0                 | 10              | 93           | II                                |
| Desert Grassland With Shrubs           | DGRA3 | 3             | 20               | 65             | 8               | 4                 | 10              | 93           | II                                |
| Desert Grassland With Trees            | DGRA2 | 5             | 25               | 67             | 2               | 1                 | 8               | 99           | II                                |
| Desert Shrubland, No Grasses           | DSHB4 | 5             | 15               | 80             | 0               | 0                 | 77              | 55           | III, IV                           |
| Desert Shrubland With Grasses          | DSHB2 | 10            | 15               | 75             | 0               | 0                 | 43              | 60           | III, IV                           |
| Desert Shrubland With Trees            | DSHB3 | 7             | 25               | 65             | 2               | 1                 | 40              | 60           | III, IV                           |
| Desert Shrub-Salt Desert Shrub         | DSHB1 | 5             | 40               | 55             | 0               | 0                 | 40              | 60           | III, IV                           |
| Juniper Steppe-Ancient                 | JUST2 | 4             | 4                | 10             | 80              | 2                 | 286             | 43           | III, V                            |
| Juniper Steppe-Infrequent Fire         | JUST1 | 5             | 5                | 20             | 55              | 15                | 118             | 35           | III, IV                           |
| Juniper-Pinyon Frequent Fire           | JUPH1 | 20            | 10               | 20             | 40              | 10                | 31              | 41           | III, IV                           |
| Juniper-Pinyon Infrequent Fire         | JUPI2 | 10            | 15               | 5              | 10              | 60                | 400             | 92           | V                                 |
| Mesquite Bosques (New Mexico)          | MBNM  | 10            | 35               | 20             | 15              | 20                | 46              | 32           | III                               |
| Mtn. Grassland                         | MGRA1 | 15            | 15               | 45             | 20              | 5                 | 16              | 80           | II                                |
| Mtn. Grassland With Shrubs             | MGRA3 | 5             | 90               | 5              | 0               | 0                 | 20              | 99           | II                                |
| Mtn. Grassland With Trees              | MGRA2 | 15            | 10               | 60             | 10              | 5                 | 15              | 60           | II, I                             |
| Mtn. Shrubland                         | MSHB2 | 25            | 25               | 10             | 10              | 30                | 42              | 100          | IV                                |
| Mtn. Shrubland With Trees              | MSHB1 | 40            | 20               | 10             | 5               | 25                | 19              | 90           | II                                |
| Northern California Garry Oak          | OKCA2 | 5             | 10               | 20             | 55              | 10                | 10              | 5            | I                                 |
| Northern Plains Grassland              | PGRA1 | 15            | 25               | 15             | 30              | 15                | 11              | 80           | II                                |
| N. Plains Grassland With Shrubs        | PGRA3 | 13            | 35               | 50             | 2               | 0                 | 9               | 80           | II                                |
| N. Plains Grassland With Trees         | PGRA2 | 8             | 35               | 15             | 40              | 2                 | 10              | 55           | III, II                           |
| Plains Oaks/Shinnery                   | POAK  | 55            | 30               | 5              | 5               | 5                 | 13              | 75           | II                                |
| Prairie Grassland                      | PRAR1 | 1             | 44               | 55             | 0               | 0                 | 8               | 90           | II                                |
| Prairie Grassland With Shrubs          | PRAR3 | 2             | 50               | 45             | 3               | 0                 | 8               | 85           | II                                |
| Prairie Grassland With Trees           | PRAR2 | 2             | 53               | 40             | 4               | 1                 | 8               | 80           | II                                |
| Riparian (willow -sedge) <sup>4</sup>  | RIPA  | Var.          | Var.             | Var.           | Var.            | Var.              | Var.            | Var.         | Var.                              |
| Sagebrush-Basin Big                    | BSAG1 | 25            | 20               | 25             | 15              | 15                | 24              | 61           | II                                |
| Sagebrush-Basin Big, With Trees        | BSAG2 | 25            | 20               | 35             | 15              | 5                 | 24              | 51           | II, III                           |
| Sagebrush-Warm (Wyoming big sagebrush) | WSAG1 | 15            | 5                | 15             | 50              | 15                | 54              | 54           | III, II                           |
| Sagebrush-Warm, With Trees             | WSAG2 | 15            | 5                | 10             | 50              | 20                | 60              | 46           | III, IV                           |

<sup>3</sup> I (0-35 yr/Low Severity); II (0-35 yr/Std. Replacmt); III (35-100+/Mixed Severity); IV (35-100+/Std. Replacmt); V (200+ yr/Std. Replacmt).

<sup>4</sup> NOTE: Riparian PNVG currently too variable for development of a default model.

| PNVG_Name                               | Code  | A:            | B:               | C:             | D:              | E:                | Fire Freq (MFI) | Repl. Fire % | Dominant Fire Regime <sup>3</sup> |
|---|-------|---------------|------------------|----------------|-----------------|-------------------|-----------------|--------------|-----------------------------------|
|   |       | Early Seral % | MidSer. Closed % | MidSer. Open % | LateSer. Open % | LateSer. Closed % |                 |              |                                   |
| Sagebrush-Cool (Mountain Big Sagebrush) | CSAG1 | 20            | 25               | 40             | 10              | 5                 | 17              | 40           | III, II                           |
| Sagebrush-Cool, With Trees              | CSAG2 | 20            | 20               | 35             | 15              | 10                | 20              | 40           | III, IV                           |
| Sagebrush-Other (Silver, Wyoming)       | SAGE1 | 25            | 20               | 30             | 10              | 15                | 25              | 75           | II                                |
| Sagebrush-Other, With Trees             | SAGE2 | 15            | 5                | 35             | 40              | 5                 | 25              | 45           | III, II                           |
| Southern Plains Grassland               | PGRA4 | 5             | 20               | 75             | 0               | 0                 | 10              | 90           | II                                |
| S. Plains Grassland With Shrubs         | PGRA6 | 5             | 20               | 70             | 5               | 0                 | 10              | 86           | II                                |
| S. Plains Grassland With Trees          | PGRA5 | 5             | 20               | 70             | 4               | 1                 | 10              | 83           | II                                |
| Southwest Shrub Steppe                  | SWSS1 | 5             | 10               | 85             | 0               | 0                 | 10              | 90           | II                                |
| Southwest Shrub Steppe With Trees       | SWSS2 | 4             | 15               | 75             | 5               | 1                 | 8               | 85           | II                                |
| Texas Savanna                           | TSAV  | 45            | 20               | 20             | 5               | 10                | 10              | 50           | II, III                           |
| Wet Grassland                           | WGRA  | 15            | 80               | 5              | 0               | 0                 | 5               | 75           | II                                |

**Table 3-6.** Coarse-scale vegetation-fuel class descriptions.

| Vegetation-Fuel Class   | Process  | Forest & Woodland  | Shrubland & Grassland   |
|---|--|--|---|
| AESP-Characteristic; Early Seral                              | Post-replacement disturbance; young age  | Single layer; fire response shrub, graminoids, and forbs; typically < 10% tree canopy cover; Standing dead and down  | Fire response forbs; resprouting shrubs; resprouting graminoids   |
| BMSC-Characteristic; Mid Seral Closed                         | Mid successional; mid age; competition stress  | One to two upper layer size classes; > 35% canopy cover (crown closure estimate); standing dead & down; litter/duff; standing dead and down  | Upper layer shrubs or grasses; < 15% canopy cover (line intercept)  |
| CMSO-Characteristic; Mid Seral Open                           | Mid successional; mid age; disturbance maintained  | One size class in upper layer; < 35% canopy cover; fire-adapted understory; scattered standing dead and down   | Upper layer shrubs or grasses; > 15% canopy cover shrubs  |
| DLSO-Characteristic; Late Seral Open                          | Late successional; mature age; disturbance maintained  | Single upper canopy tree layer; One to three size classes in upper layer; < 35% canopy cover; fire-adapted understory; scattered standing dead and down  | Upper layer shrubs or grasses; < 15% canopy cover   |
| ELSC-Characteristic; Late Seral Closed                        | Late successional; mature age; competition stress  | Multiple upper canopy tree layers; Multiple size classes; > 35% canopy cover; shade-tolerant understory; litter/duff; standing dead and down   | Upper layer shrubs or grasses; > 15% canopy cover shrubs  |
| UINP–Uncharacteristic; Invasive Plants                        | Invasive plants, such as annual grasses or knapweed; difficult to reverse with restoration if large and scattered infestations; most effective to prevent and contain  | Commonly spread along roads and in harvest units with mechanical soil surface disturbance; more competitive than native grasses and forbs  | Commonly spread along roads and by livestock; more competitive than native plants; usually associated with increase (annual grasses) or decrease (knapweed) in fire frequency |
| UTHV-Uncharacteristic Timber Mgt Not Mimicking Natural Regime | Timber harvest, stand improvement, and tree planting is not similar to natural regime; road density may be excessive; often lacks dead and down trees and logs; patterns are typically linear or uniform rather than irregular and random or clumped | Commonly involves cutting of large trees & leaving small trees; timber thinning to systematic single tree spacing rather than group trees with variable spacing; planting higher density or different species composition than natural, or off-site stock; high density road system enhancing invasive plant spread, rerouting of water & sediment, and animal displacement/harassment |   |

| Vegetation-Fuel Class   | Process   | Forest & Woodland  | Shrubland & Grassland   |
|---|---|--|---|
| UGRZ-Uncharacteristic Grazing Mgt. Not Mimicking Natural Regime   | Grazing season, frequency, and intensity is not similar to natural regime; pattern is often uniform vs. irregular utilization   | Often associated with loss of shrub and grass understory; spread of invasive weeds   | Decrease in desirable forage species; increase in less desirable and invasive species   |
| UFUS–Uncharacteristic Fuels/Succession/Lack Fire Effects          | Natural disturbance frequency is beyond maximum allowing fuel accumulation or structure that did not occur naturally  | Usually associated with change to larger patch size and loss of patch mosaic with more contiguous heavy fuels  | Usually associated with change to larger patch size and loss of patch mosaic with more contiguous upper layer fuels   |
| UFEF-Uncharacteristic; Post-fire Effects More Severe Than Natural | Effects of fire on plants, soil, water, and air more severe than natural because of higher than natural or different fuel loads; difficult to reverse with restoration; most effective to restore classes I, H, G, and L before this occurs | Commonly occurs in areas with heavy contiguous fuels due to uncharacteristic succession, timber mgt., or insect-disease effects; loss of large trees, excessive smoke, soil erosion, increased water temperatures  | Commonly occurs in areas with contiguous upper layer fuels due to uncharacteristic succession or invasive plants  |
| USHD-Uncharacteristic; Soil/Hydrologic Disturbance More Severe    | Changes or diversion of flow, channelization, loss of biota, sedimentation, or changes in evapotranspiration. Increased soil erosion, compaction, or displacement.  | In forest stream channelization, changes in vegetation evapotranspiration, and shift in flow amounts. In woodland the loss of understory herbaceous cover of soil resulting in increased erosion. Increased vegetation evapotranspiration reducing flow from springs. Loss of beaver and associated ponds & cutting. | Reduced width in wet riparian zones or drying that change fire behavior & effects. Loss of upland soil cover resulting in increased soil erosion. Increased vegetation evapotranspiration reducing flow from springs. Loss of beaver and associated ponds & cutting allowing fires to spread across riparian zones. |
| UIDS-Uncharacteristic Insect-Disease Invasive or More Severe      | Invasive insects or disease, such as blister rust; or epidemic or level of extent not similar to natural regime   | Commonly occurs following uncharacteristic timber harvest of large trees leaving small insect-disease susceptible trees  |   |
| UCLR-Uncharacteristic cultural treatments                         | Cultural treatments do not mimic the natural disturbance regime or pattern  | Timber stand improvements, burned area restoration, or road networks that preclude successional stages or patterns   | Range improvements, burned area restoration, roads that preclude successional stages or patterns  |
| UPAT  | Alteration of disturbance regimes have changed the patch pattern  | Harvest, fire exclusion, or uncharacteristic fires result in uncharacteristic patterns.  | Grazing, fire exclusion, or uncharacteristic fires result in uncharacteristic patterns  |
| UOTH – Uncharacteristic; other disturbances                       | Other human altered disturbance processes   |  |   |

**APPENDIX 3-A**

**STANDARD LANDSCAPE METHOD  
FORMS AND CODE SHEETS**

FRCC Summary Worksheet and Graphs – to use in place of software (calculations fields included)  
FRCC Field Form – to use in the field for later data entry (calculations fields not included)

### Fire Regime and Condition Class Summary Worksheet

|  |                       |                         |                                   |                  |  |  |  |
|--|-----------------------|-------------------------|-----------------------------------|------------------|--|--|--|
| <b>FRCC Project Data</b>               |                       |                         |                                   |                  |  |  |  |
| <b>Registration Code</b> 1             | <b>Project Code</b> 2 | <b>Project Number</b> 3 | <b>Charact Date</b> 4 / /         |                  |  |  |  |
| Examiner Name 5                        | <b>Project Name</b> 6 | <b>Project Area</b> 7   | acres / hectares (circle one) (8) |                  |  |  |  |
| <b>Georeferenced Project Position:</b> |                       |                         |                                   |                  |  |  |  |
| Latitude 10                            | Longitude 11          | Datum 15                | def                               |                  |  |  |  |
| <b>Photos:</b>                         |                       | <b>Photo Dates:</b>     |                                   | <b>Comments:</b> |  |  |  |
| Current Photo 16                       | 17 / /                |                         |                                   |                  |  |  |  |
| Historical Photo 18                    | 19 / /                | 20                      |                                   |                  |  |  |  |

Before completing the section below, complete one strata worksheet for each strata in the project landscape

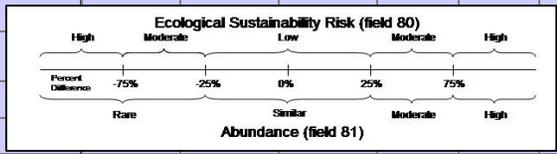
|           |   | Strata |   |   |   |   | Landscape Total |
|-----------|---|--------|---|---|---|---|-----------------|
|           |   | 1      | 2 | 3 | 4 | 5 |                 |
| Field 41  | <b>% Area</b> . Enter the % of the landscape that each strata comprises. (field 41 on the strata wksht).  | 41     |   |   |   |   | 100%            |
| Field 51  | <b>Natural Fire Frequency</b> . For each strata, enter field 51 from the strata's individual worksheet  | 51     |   |   |   |   |                 |
| Field 92  | Multiply %Area/100 with Natural Fire Frequency [ (field 41/100) * field 51 ]  | 92     |   |   |   |   |                 |
| Field 93  | <b>Weighted Mean Fire Frequency</b> (years). Enter the sum of field 92 for columns 1 through 5  | 93     |   |   |   |   | years           |
| Field 94  | <b>Weighted Mean Fire Frequency Class</b> . Enter "Frequent" if field 93 is 0-35 years, "Infrequent" if 36-200 years, "Rare" if more than 200 years.  | 94     |   |   |   |   |                 |
| Field 53  | <b>Natural Fire Severity</b> . Enter the % canopy replacement from field 53 on the strata worksheet.  | 53     |   |   |   |   |                 |
| Field 95  | Multiply %Area/100 with Natural Fire Severity [ (field 41/100) * field 53 ]   | 95     |   |   |   |   |                 |
| Field 96  | <b>Landscape Natural Fire Severity</b> . Enter the sum of field 95 for columns 1 through 5  | 96     |   |   |   |   | %               |
| Field 97  | <b>Landscape Natural Fire Severity Class</b> . Enter "Surface" if field 96 is 0-25%, "Mixed" if 26-75%, "Replacement" if greater than 75%.  | 97     |   |   |   |   |                 |
| Field 98  | <b>Landscape Natural Fire Regime Group</b> . Enter class based on the combination of field 94 and field 97:<br>I - frequent, surface & mixed, II - frequent, replacement, III - infrequent, mixed & surface,<br>IV - infrequent, replacement, V - rare, replacement | 98     |   |   |   |   |                 |
| Field 82  | <b>Veg- Fuel Departure</b> . Enter field 82 from the strata worksheet.  | 82     |   |   |   |   |                 |
| Field 99  | Multiply %Area/100 with Veg- Fuel Departure [ (field 41/100) * field 82 ]   | 99     |   |   |   |   |                 |
| Field 100 | <b>Veg- Fuel Weighted Departure</b> . Enter the sum of field 99 for columns 1 through 5   | 100    |   |   |   |   | %               |
| Field 86  | <b>Fire Frequency- Severity Departure</b> . Enter field 86 from the strata worksheet.   | 86     |   |   |   |   |                 |
| Field 101 | Multiply %Area/100 with Freq-Sev Departure [ (field 41/100) * field 86 ]  | 101    |   |   |   |   |                 |
| Field 102 | <b>Fire Frequency- Severity Weighted Departure</b> . Enter the sum of field 101 for columns 1- 5  | 102    |   |   |   |   | %               |
| Field 103 | Enter the higher of Veg- Fuel Weighted Departure and Fire Frequency- Severity Weighted Departure (higher of field 100 and 102.)   | 103    |   |   |   |   | %               |
| Field 104 | <b>Project Fire Regime Condition Class</b> . Enter "1-Low" if field 103 is 0-33%, "2-Moderate" if 34-66%, "3-High" if 67- 100%.   | 104    |   |   |   |   |                 |

## Fire Regime and Condition Class Strata Worksheet

|  |                   |             |                      |               |                       |                      |                       |                           |                        |                      |     |                           |    |     |         |    |
|--|-------------------|-------------|----------------------|---------------|-----------------------|----------------------|-----------------------|---------------------------|------------------------|----------------------|-----|---------------------------|----|-----|---------|----|
| <b>Strata Data</b>                     |                   |             |                      |               |                       |                      |                       |                           |                        |                      |     |                           |    |     |         |    |
| 21                                     | <b>Strata Num</b> | Strata Code | 22                   | Strata Name   | 23                    | Date                 | 24                    | <b>Bp Land Unit</b>       | 25                     | <b>BpLU Lifeform</b> | 26  | def                       |    |     |         |    |
| <b>Indicator Species Average Slope</b> | 27                | 28          | 29                   | 30            | Local BpLU            | 31                   | <b>Landform</b>       | 32                        |                        |                      |     |                           |    |     |         |    |
| <b>Insolation Class</b>                | 34                | 36          | <b>Low Elevation</b> | 38            | <b>High Elevation</b> | 39                   | (feet/ meters)        | <b>Strata Composition</b> | 41                     | % of Area            |     |                           |    |     |         |    |
| Georeferenced Strata Position:         |                   |             |                      |               |                       |                      |                       |                           |                        |                      |     |                           |    |     |         |    |
| Latitude                               | 43                | Longitude   | 44                   | Datum         | 48                    |                      |                       |                           |                        |                      |     |                           |    |     |         |    |
| Photo                                  | 49                | Photo Date  | 50                   | Ref Fire Freq | 51                    | def                  | <b>Curr Fire Freq</b> | 52                        | Natural Fire Sev       | 53                   | def | <b>Curr Fire Severity</b> | 54 |     |         |    |
| <b>Ref Comp Source</b>                 | 55                | def         | <b>Curr Comp Src</b> | 56            | def                   | <b>Nat Amer Burn</b> | 57                    | def                       | <b>B/C Class Break</b> | 58                   | def | <b>D/E Class Break</b>    | 59 | def | Comment | 60 |

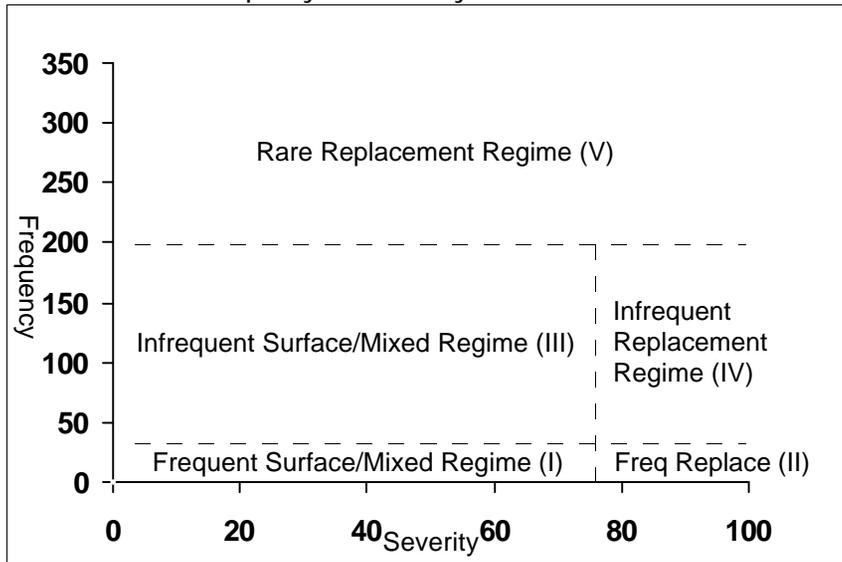
| Vegetation Fuel Class Data   |                           |                             |                                 |                                 |                                 |                                 |                                 |                   |                       |                  |                               |                                    |
|------------------------------|---------------------------|-----------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|-------------------|-----------------------|------------------|-------------------------------|------------------------------------|
| <b>Vegetation Fuel Class</b> | <b>Uppr Layr Lifeform</b> | <b>Uppr Layr Size Class</b> | <b>Uppr Layr Canopy Closure</b> | <b>Dominant Species 1 (def)</b> | <b>Dominant Species 2 (def)</b> | <b>Dominant Species 3 (def)</b> | <b>Dominant Species 4 (def)</b> | <b>Fuel Model</b> | <b>Ref Comp (def)</b> | <b>Curr Comp</b> | <b>Class Represent. Photo</b> | <b>Class Represent. Photo Date</b> |
| (62)                         | (63)                      | (64)                        | (65)                            | (66)                            | (67)                            | (68)                            | (69)                            | (70)              | (72)                  | (73)             | (74)                          | (75)                               |
| AESP                         |                           |                             |                                 |                                 |                                 |                                 |                                 |                   | %                     | %                |                               | / /                                |
| BMSC                         |                           |                             |                                 |                                 |                                 |                                 |                                 |                   | %                     | %                |                               | / /                                |
| CMSO                         |                           |                             |                                 |                                 |                                 |                                 |                                 |                   | %                     | %                |                               | / /                                |
| DLSO                         |                           |                             |                                 |                                 |                                 |                                 |                                 |                   | %                     | %                |                               | / /                                |
| ELSC                         |                           |                             |                                 |                                 |                                 |                                 |                                 |                   | %                     | %                |                               | / /                                |
|                              |                           |                             |                                 |                                 |                                 |                                 |                                 |                   |                       | %                |                               | / /                                |
|                              |                           |                             |                                 |                                 |                                 |                                 |                                 |                   |                       | %                |                               | / /                                |
|                              |                           |                             |                                 |                                 |                                 |                                 |                                 |                   |                       | %                |                               | / /                                |

|          |   |    | Veg-Fuel Types |      |      |      |      |      |      |              |
|----------|---|----|----------------|------|------|------|------|------|------|--------------|
| Field 62 | Veg-Fuel Class (rows above becomes columns here)  | 62 | AESP           | BMSC | CMSO | DLSO | ELSC |      |      | Strata Total |
| Field 72 | <b>Reference (Natural) Percent Composition.</b> Enter the values from field 72 above.   | 72 |                |      |      |      |      |      |      | 100%         |
| Field 73 | <b>Current Percent Composition.</b> Enter the values from field 73 above.   | 73 |                |      |      |      |      |      |      | 100%         |
| Field 77 | <b>Similarity.</b> Enter the smaller of field 72 (natural) and field 73 (current).  | 77 |                |      |      |      |      |      |      |              |
| Field 78 | <b>Strata Similarity.</b> Enter the sum of field 77 for all columns.  | 78 |                |      |      |      |      |      |      | %            |
| Field 79 | <b>% Difference.</b> $((\text{field } 73 - \text{field } 72) / (\text{field } 73 + \text{field } 72)) * 100$  | 79 |                |      |      |      |      | 100  | 100  | 100          |
| Field 80 | <b>Ecological Sustainability Risk.</b> "Low" if field 79 $\leq$ $\pm 25\%$ , "Moderate" if $\pm 25\%$ to $\pm 75\%$ , "High" if $\geq \pm 75\%$ . (see figure on right) | 80 |                |      |      |      |      | High | High | High         |
| Field 81 | <b>Abundance.</b> "Rare" if field 79 is $\leq -25\%$ , "Similar" if $-24$ to $24\%$ , "Moderate" if $25$ to $74\%$ , "High" if $\geq 75\%$ . (see figure on right)      | 81 |                |      |      |      |      | High | High | High         |
| Field 82 | <b>Current Veg-Fuel Departure. Subtract the value in field 78 from 100%.</b>  | 82 |                |      |      |      |      |      |      | %            |
| Field 83 | <b>Veg-Fuel Condition Class.</b> "1" if field 82 is $\leq 33\%$ , "2" if 34-66%, "3" if 67-100%.  | 83 |                |      |      |      |      |      |      |              |
| Field 84 | <b>Current Fire Frequency Departure.</b><br>Calculate: $(1 - (\text{smaller of field } 51 \& 52 / \text{larger of field } 51 \& 52)) * 100$                             | 84 |                |      |      |      |      |      |      | %            |
| Field 85 | <b>Current Fire Severity Departure.</b><br>Calculate: $(1 - (\text{smaller of field } 53 \& 54 / \text{larger of field } 53 \& 54)) * 100$                              | 85 |                |      |      |      |      |      |      | %            |
| Field 86 | <b>Current Frequency-Severity Departure.</b> Calculate: $(\text{field } 84 + \text{field } 85) / 2$   | 86 |                |      |      |      |      |      |      | %            |
| Field 87 | <b>Frequency-Severity Cond Class.</b> "1" if field 86 is $\leq 33\%$ , "2" if 34-66%, "3" if 67-100%.   | 87 |                |      |      |      |      |      |      |              |
| Field 88 | <b>Strata Fire Regime Cond Class.</b> Enter the greater of field 83 and field 87  | 88 |                |      |      |      |      |      |      |              |



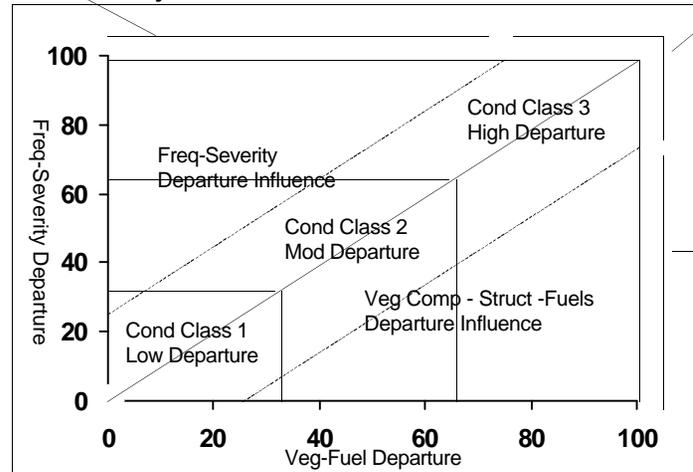
# Fire Regime and Condition Class Worksheet Graphs

Frequency and Severity Classification



Restoration of fire effects

Project Condition Class Restoration Context



Restoration of fire effects, vegetation composition, structure, and fuels

Restoration of vegetation, structure and fuels



**Strata Data**

21 **Strata Num** Strata Code 22 Strata Name 23 Date 24 **Bp Land Unit** 25 **BpLU** 26 Lifeform 26 def

**Indicator Species** 27 **Local BpLU** 31 **Landform** 32

**Average Slope** 34 **Insolation Class** 36 **Low Elevation** 38 **High Elevation** 39 (feet/ meters) **Strata Composition** 41 % of Area

Georeferenced Strata Position:

Latitude 43 Longitude 44 Datum 48 def

Photo 49 Photo Date 50 **Ref Fire Freq** 51 def **Curr Fire Freq** 52 **Natural Fire Sev** 53 def **Curr Fire Severity** 54

**Ref Comp Source** 55 def **Comp Src** 56 def **Nat Amer Burn** 57 def **B/C Class Break** 58 def **D/E Class Break** 59 def **Comment** 60

**Vegetation Fuel Class Data**

| Vegetation Fuel Class Code (62) | Uppr Layr Lifeform (63) | Uppr Layr Size Class (64) | Uppr Layr Canopy Closure (65) | Dominant Species 1 (def) (66) | Dominant Species 2 (def) (67) | Dominant Species 3 (def) (68) | Dominant Species 4 (def) (69) | Fuel Model (70) | Ref Comp (def) (72) | Curr Comp (73) | Class Represent. Photo (74) | Class Represent. Photo Date (75) |
|---------------------------------|-------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------|---------------------|----------------|-----------------------------|----------------------------------|
| AESP                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| BMSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| CMSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| DLSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| ELSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |

**Strata Data**

21 **Strata Num** Strata Code 22 Strata Name 23 Date 24 **Bp Land Unit** 25 **BpLU** 26 Lifeform 26 def

**Indicator Species** 27 **Local BpLU** 31 **Landform** 32

**Average Slope** 34 **Insolation Class** 36 **Low Elevation** 38 **High Elevation** 39 (feet/ meters) **Strata Composition** 41 % of Area

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|---------------------------------|-------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------|---------------------|----------------|-----------------------------|----------------------------------|
| AESP                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| BMSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| CMSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| DLSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| ELSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |

**Strata Data**

21 **Strata Num** Strata Code 22 Strata Name 23 Date 24 **Bp Land Unit** 25 **BpLU** 26 Lifeform 26 def

**Indicator Species** 27 **Local BpLU** 31 **Landform** 32

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|---------------------------------|-------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------|---------------------|----------------|-----------------------------|----------------------------------|
| AESP                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| BMSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| CMSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| DLSO                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
| ELSC                            |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |
|                                 |                         |                           |                               |                               |                               |                               |                               |                 | %                   | %              |                             | / /                              |

## FIRE REGIME AND CONDITION CLASS -- Code Table Summary (Western US)

### Biophysical Land Unit (25)

**Forest**

|      |  |
|------|--|
| CAME | California mixed evergreen             |
| CHDF | Cedar - Hemlock - Douglas fir          |
| CHDO | Mos. Cedar, Heml., Doug fir & Oak (OR) |
| CHPI | Cedar - Hemlock - Pine (WA)            |
| DFIR | Douglas fir                            |
| DWOA | Decid.Woodl.Oak-Aspen w/ Conif         |
| FHWO | Fir - Hemlock (WA, OR)                 |
| GBPI | Great Basin Pine (NV, UT)              |
| GFDF | Grand Fir-Douglas fir                  |
| JUPI | Juniper - Pinyon                       |
| JUST | Juniper Steepe                         |
| LPSC | Lodgepole pine - Subalpine (CA)        |
| MCAN | SW Mixed Conifer (AZ, NM)              |
| MCON | Mixed Conifer                          |
| PPDF | Pine - Douglas fir                     |
| PPIN | Pine forest                            |
| RFCA | Red fir (CA)                           |
| RWCA | Redwood (CA)                           |
| SCWO | Spruce - Cedar - Hemlock (WA, OR)      |
| SFDF | Silver fir - Douglas fir               |
| SPDF | Spruce - Fir - Douglas fir             |
| SPFI | Western spruce -fir                    |

### NonForest

|      |                         |
|------|-------------------------|
| AAOW | Alder - ash (OR, WA)    |
| AGRA | Annual grassland        |
| AMDW | Alpine Meadows - Barrer |
| BSAG | Sagebrush-Basin Big     |
| CAST | California Steppe       |
| CHAP | Chaparral               |
| CSAG | Cool Sagebrush          |
| DGRA | Desert grassland        |
| DSHB | Desert shrub            |
| MBNM | Mesquite bosques (NM)   |
| MGRA | Mountain grassland      |
| MSHB | Mountain Shrubland      |
| OKCA | Oakwoods                |
| PGRA | Plains grassland        |
| POAK | Plains Oaks             |
| PRAR | Prairie                 |
| RIPA | Riparian                |
| SAGE | Sagebrush               |
| SWSS | Southwest shrub steppe  |
| TSAV | Texas savanna           |
| WGRA | Wet grassland           |
| WSAG | Warm Sagebrush          |

**Other**

|      |        |
|------|--------|
| BARN | Barren |
| WATR | Water  |

### Average Slope Class(34)

|        |       |
|--------|-------|
| GENTL  | 0-10  |
| MOD    | 11-30 |
| STEEP  | 31-50 |
| VSTEEP | >50   |

### Current Comp Source (56)

|   |                             |
|---|-----------------------------|
| M | mapped summary              |
| R | walk through and visual est |
| V | visual estimate             |

### Landform (32)

|     |                                      |
|-----|--------------------------------------|
| GMF | Glaciated mountains-foothills        |
| BRK | Breaklands-river breaks-badland      |
| PLA | Plains-rolling plains-plains w/break |
| VAL | Valleys-swales-draws                 |
| HIL | Hills-low ridges-benches             |
| NMF | Nonglaciated Mountain                |

### Reference Composition Source (55)

|   |  |
|---|--|
| D | coarse-scale default values from lit. review/mod. Workshop |
| R | region/state default values from lit. review/mod. workshop |
| N | non-local expert estimate                                  |
| L | local expert estimate                                      |
| T | interdisciplinary team (IDT) consensus                     |
| M | expert estimate + lit. review/modeling                     |
| B | IDT consensus from lit. review/modeling workshop           |
| F | local study + lit. review/modeling workshop                |

### Natural Fire Frequency and Native American Burning (57)

|   |  |
|---|--|
| A | Substantial Native American burning influence included       |
| C | used coarse-scale default                                    |
| D | Substantial Nat.American burning influence, but not included |
| N | Nat. American burning influence not considered               |
| W | Nat. Amer. burning considered but not different than without |

### Upper Layer Majority Size Class(64)

#### Coniferous and Broadleaf Trees

|      |  |
|------|--|
| SEED | Seedling - < 4.5 feet                      |
| SAPL | Sapling - > 4.5 feet tall and <5.0 in. DBH |
| POLE | Pole - > 5 in and < 9 in DBH.              |
| MEDM | Medium - 9 - 21 in DBH.                    |
| LARG | Large -21 - 33 in DBH.                     |
| VLAR | Very large ->33 in DBH                     |

#### Shrubs

|      |                            |
|------|----------------------------|
| LOWS | Low -<3 feet tall.         |
| MEDS | Medium -3 - 6.5 feet tall. |
| TALS | Tall ->6.5 feet tall.      |

#### Herbaceous

|      |                     |
|------|---------------------|
| LOWH | Low -<=2 feet tall. |
| TALH | Tall ->2 feet tall. |

#### Other

|      |  |
|------|--|
| MMLL | Moss, Lichens, Litter/Duff             |
| BARN | Barren, Rock, Gravel, Soil             |
| NNNN | Doesn't fit any cat., Unable to Assess |

### Surface Fire Fuel Model (70)

|    |   |
|----|---|
| 1  | Peren/Annual Grasslands, Savannahs, Grass-tundra. <1/3 shrub or timber  |
| 2  | Shrub, pine, oak, pinyon-juniper with < 2/3 shrub or timber cover   |
| 3  | Tall Grassland, Prairie, and Meadow   |
| 4  | Coastal/Sierra Chaparral, Pocosin Shrub, South. Rough Shrub, Cl. Jack Pine, Pine Barren   |
| 5  | Moist or Cool Shrub Types, Forest/Shrub, Regen. Shrub fields after fire or harvest  |
| 6  | Pinyon-juniper w/ shrubs, Southern Hardwood/ Shrub w/ Pine, Frost Killed Gambel Oak, Pocosin Shrub, Chamise, Chaparral, Spruce-taiga, Shrub-tundra, Hardwood Slas |
| 7  | Palmetto-gallberry w/ or w/o Pine overstory, Black spruce/shrub, Southern Roug  |
| 8  | Closed canopy short needle conifer types, Closed canopy broadleaf or hardwood type  |
| 9  | Long needle conifer types, Oak-hickory and similar Hardwood types   |
| 10 | Any Forest type with > 3" down dead woody fuels   |
| 11 | Light Logging Slash, Partial Cut Slash  |
| 12 | Moderate and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned are:   |
| 13 | Heavy and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned are:  |

### Insolation Class(36)

|      |  |
|------|--|
| LOW  | NW, N, NE, E, or flat if cold air drainage |
| MOD  | Flat (<+ 10% slope) or all aspects         |
| HIGH | W, SW, S, SE                               |

### Upper Layer Majority Lifeform (63)

|      |                           |
|------|---------------------------|
| CONT | Coniferous Trees          |
| BRDT | Broadleaf Trees           |
| SHRB | Shrubs                    |
| HERB | Herbaceous                |
| MOSS | Moss or Lichens           |
| NVEG | Non-vegetatec             |
| NNNN | Does not fit any category |

### BpLU Lifeform (26)

|    |   |
|----|---|
| AQ | Aquatic                                 |
| BF | Broadleaf upland fores                  |
| BW | Broadleaf wetland or riparian forest    |
| CF | Coniferous upland fores                 |
| CW | Coniferous wetland or riparian fores    |
| HA | Herbaceous dominated alpine             |
| HU | Herbaceous dominated upland             |
| HW | Herbaceous dominated wetland or riparia |
| ML | Moss or lichen dom. upland or wetland   |
| NV | Non-vegetated                           |
| OT | Other potential vegetation lifeform     |
| SA | Shrub dominated alpine                  |
| SU | Shrub dominated upland                  |
| SW | Shrub dominated wetland or riparian     |

### Vegetation-Fuel Class (62)

#### Characteristic

|      |                                     |
|------|-------------------------------------|
| AESP | Post-replacement; Early Development |
| BMSC | Mid Development; Closec             |
| CMSO | Mid Development; Oper               |
| DLSO | Late Development; Oper              |
| ELSC | Late Development; Closec            |

#### Uncharacteristic

|       |  |
|-------|--|
| UCLR  | Cultural   |
| UCLRB | Cultural; Burned Area Restorator                 |
| UCLRO | Cultural; Other                                  |
| UCLRR | Cultural; Range Improvements                     |
| UCLRS | Cultural; Road Densities/Patterns                |
| UCLRT | Cultural; Timber Stand Improvements              |
| UFEF  | Post-Fire Effects                                |
| UFEFG | Post-Fire Effects; Grass/Shrub Mortality         |
| UFEFO | Post-Fire Effects; Other                         |
| UFEFS | Post-Fire Effects; Soil/HydroDegredator          |
| UFEFT | Post-Fire Effects; Large/Old Tree Mortality      |
| UFUS  | Fuel/Sucn/Lack Fire Effects                      |
| UFUSH | Fuel/Sucn/Lack Fire Effects; Higher Ignitability |
| UFUSL | Fuel/Sucn/Lack Fire Effects; Lower Ignitability  |
| UFUSO | Fuel/Sucn/Lack Fire Effects; Other               |
| UGRZ  | Grazing  |
| UGRZF | Grazing; Lack Fine Fuels                         |
| UGRZO | Grazing; Other                                   |
| UGRZS | Grazing; Soil/Hydro Degredator                   |
| UIDS  | Insects/Disease                                  |
| UIDSI | Insects/Disease; Invasive                        |
| UIDSM | Insects/Disease; Native More Severe              |
| UIDSO | Insects/Disease; Other                           |
| UINP  | Uncharacteristic                                 |
| UINPL | Invasive Plants;Fires Less Frequent              |
| UINPM | Invasive Plants;Fires More Frequent              |
| UOTH  | Other disturbances                               |
| UPAT  | Pattern  |
| UPATC | Pattern; Contiguous                              |
| UPATF | Pattern; Fragmented                              |
| USHD  | Soil/Hydrology                                   |
| USHDE | Soil/Hydrology; Soil/Hydro Erosior               |
| USHDM | Soil/Hydrology; Mech/Soil/Hydr                   |
| USHDO | Soil/Hydrology; Other                            |
| UTHV  | Timber Harvest;                                  |
| UTHVC | Timber Harvest;Change Comp Structure             |
| UTHVO | Timber Harvest;Other                             |
| UTHVT | Timber Harvest;Missing Large/Old Tree;           |

# FIRE REGIME AND CONDITION CLASS -- Code Table Summary (Eastern US)

## Biophysical Land Unit (25) **DRAFT**

**Forest**

|      |   |
|------|---|
| MABW | Maple - basswood                          |
| OKHI | Oak - hickory                             |
| ELAS | Elm - ash forest                          |
| MABB | Maple - beech - birch                     |
| MMFO | Mixed mesophytic fores                    |
| APOK | Appalachian oak                           |
| AONH | Transition Appalachian Oak - Northern Har |
| NOHW | Northern hardwoods                        |
| NHFI | Northern hardwoods - fi                   |
| NHSP | Northern hardwoods - spruce               |
| NOPI | Northeastern oak - pine                   |
| OHPI | Oak - hickory - pine                      |
| SMFO | Southern mixed fores                      |
| BLBE | Blackbelt                                 |
| OKGC | Oak - gum - cypress                       |
| NOFP | Northern Floodplain                       |
| SOFP | Southern Floodplain                       |
| CRTI | Cross timbers                             |
| GLPF | Great Lakes pine fores                    |
| ESFI | Eastern spruce-fi                         |
| LOSL | Loblolly - shortleaf                      |
| COBO | Conifer bog (MN)                          |
| MBOH | Mosaic Bluestem/Oak - hickory             |

**Other**

|      |        |
|------|--------|
| WATR | Water  |
| BARN | Barren |

## Upper Vegetation Layer Canopy Closure(65)

|     |                  |
|-----|------------------|
| 0   | Zero percent     |
| 0.5 | Trace or 0-1 %   |
| 3   | Present or 2-5 % |
| 10  | >5-15 percent    |
| 20  | >15-25 percent   |
| 30  | >25-35 percent   |
| 40  | >35-45 percent   |
| 50  | >45-55 percent   |
| 60  | >55-65 percent   |
| 70  | >65-75 percent   |
| 80  | >75-85 percent   |
| 90  | >85-95 percent   |
| 98  | >95-100 percent  |
| XX  | Could Not Asses  |

## Average Slope Class(34)

|        |       |
|--------|-------|
| GENTL  | 0-10  |
| MOD    | 11-30 |
| STEEP  | 31-50 |
| VSTEEP | >50   |

## Current Comp Source (56)

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|---|----------------------------|
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| R | walk through and visual es |
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## Landform (32)

|     |                                      |
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|---|--|
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| MEDM | Medium - 9 - 21 in DBH.                    |
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## **Shrubs**

|      |                            |
|------|----------------------------|
| LOWS | Low -<3 feet tall.         |
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## **Herbaceous**

|      |                     |
|------|---------------------|
| LOWH | Low -<=2 feet tall. |
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## **Other**

|      |                                       |
|------|---------------------------------------|
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| 7  | Palmetto-gallberry w/ or w/o Pine overstory, Black spruce/shrub, Southern Roug  |
| 8  | Closed canopy short needle conifer types, Closed canopy broadleaf or hardwood type  |
| 9  | Long needle conifer types, Oak-hickory and similar Hardwood types   |
| 10 | Any Forest type with > 3" down dead woody fuels   |
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| 12 | Moderate and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned are:   |
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## Insolation Class(36)

|      |  |
|------|--|
| LOW  | NW, N, NE, E, or flat if cold air drainage |
| MOD  | Flat (<+ 10% slope) or all aspects         |
| HIGH | W, SW, S, SE                               |

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| HU | Herbaceous dominated upland             |
| HW | Herbaceous dominated wetland or riparia |
| ML | Moss or lichen dom. upland or wetland   |
| NV | Non-vegetated                           |
| OT | Other potential vegetation lifeform     |
| SA | Shrub dominated alpine                  |
| SU | Shrub dominated upland                  |
| SW | Shrub dominated wetland or riparian     |

## Vegetation-Fuel Class (62)

### **Characteristic**

|      |                                     |
|------|-------------------------------------|
| AESP | Post-replacement; Early Development |
| BMSC | Mid Development; Closec             |
| CMSO | Mid Development; Oper               |
| DLSO | Late Development; Oper              |
| ELSC | Late Development; Closec            |

### **Uncharacteristic**

|       |  |
|-------|--|
| UCLR  | Cultural   |
| UCLRB | Cultural; Burned Area Restoratio                 |
| UCLRO | Cultural; Other                                  |
| UCLRR | Cultural; Range Improvements                     |
| UCLRS | Cultural; Road Densities/Patterns                |
| UCLRT | Cultural; Timber Stand Improvements              |
| UFEF  | Post-Fire Effects                                |
| UFEFG | Post-Fire Effects; Grass/Shrub Mortality         |
| UFEFO | Post-Fire Effects; Other                         |
| UFEFS | Post-Fire Effects; Soil/HydroDegredator          |
| UFEFT | Post-Fire Effects; Large/Old Tree Mortality      |
| UFUS  | Fuel/Sucn/Lack Fire Effects                      |
| UFUSH | Fuel/Sucn/Lack Fire Effects; Higher Ignitability |
| UFUSL | Fuel/Sucn/Lack Fire Effects; Lower Ignitability  |
| UFUSO | Fuel/Sucn/Lack Fire Effects; Other               |
| UGRZ  | Grazing  |
| UGRZF | Grazing; Lack Fine Fuels                         |
| UGRZO | Grazing; Other                                   |
| UGRZS | Grazing; Soil/Hydro Degredator                   |
| UIDS  | Insects/Disease                                  |
| UIDSI | Insects/Disease; Invasive                        |
| UIDSM | Insects/Disease; Native More Severe              |
| UIDSO | Insects/Disease; Other                           |
| UINP  | Uncharacteristic                                 |
| UINPL | Invasive Plants;Fires Less Frequent              |
| UINPM | Invasive Plants;Fires More Frequent              |
| UOTH  | Other disturbances                               |
| UPAT  | Pattern  |
| UPATC | Pattern; Contiguous                              |
| UPATF | Pattern; Fragmented                              |
| USHD  | Soil/Hydrology                                   |
| USHDE | Soil/Hydrology; Soil/Hydro Erosior               |
| USHDM | Soil/Hydrology; Mech/Soil/Hydroc                 |
| USHDO | Soil/Hydrology; Other                            |
| UTHV  | Timber Harvest;                                  |
| UTHVC | Timber Harvest;Change Comp Structure             |
| UTHVO | Timber Harvest;Other                             |
| UTHVT | Timber Harvest;Missing Large/Old Tree;           |

# FIRE REGIME AND CONDITION CLASS -- Code Sheet (Alaska US)

## Biophysical Land Units (BpLU) (25) DRAFT

### Forest

|       |                                     |
|-------|-------------------------------------|
| BSPI  | Black Spruce Interior               |
| BSPS  | Black Spruce Southcentral           |
| CBTF  | Coastal Boreal Transition           |
| CSLF  | Coastal                             |
| KMHH  | Kenai Mt Hemlock                    |
| RISH  | Riparian Spruce Hardwood            |
| RISHK | Riparian Spruce Hardwood Kenai      |
| USHS  | Upland Spruce Hardwood Southcentral |
| UWSI  | Upland White Spruce Interior        |

### Non-Woody

|      |                         |
|------|-------------------------|
| DHRM | Dry Herbaceous Meadow   |
| MEHM | Mesic Herbaceous Meadow |
| NFWL | Non-Forested Wetland    |

### Shrubland

|      |                        |
|------|------------------------|
| DSTN | Dwarf Shrub Tundra     |
| PSHN | Persistent Shrub North |
| PSHS | Persistent Shrub South |

## Upper Vegetation Layer

### Canopy Closure(65)

|     |                  |
|-----|------------------|
| 0   | Zero percent     |
| 0.5 | Trace or 0-1 %   |
| 3   | Present or 2-5 % |
| 10  | >5-15 percent    |
| 20  | >15-25 percent   |
| 30  | >25-35 percent   |
| 40  | >35-45 percent   |
| 50  | >45-55 percent   |
| 60  | >55-65 percent   |
| 70  | >65-75 percent   |
| 80  | >75-85 percent   |
| 90  | >85-95 percent   |
| 98  | >95-100 percent  |
| XX  | Could Not Assess |

### Average Slope Class(34)

|        |       |
|--------|-------|
| GENTL  | 0-10  |
| MOD    | 11-30 |
| STEEP  | 31-50 |
| VSTEEP | >50   |

### Current Comp Source (56)

|   |                             |
|---|-----------------------------|
| M | mapped summary              |
| R | walk through and visual est |
| V | visual estimate             |

### Insolation Class(36)

|      |  |
|------|--|
| LOW  | NW, N, NE, E, or flat if cold air drainage |
| MOD  | Flat (<+ 10% slope) or all aspects         |
| HIGH | W, SW, S, SE                               |

## Landform (32)

|     |                                       |
|-----|---------------------------------------|
| GMF | Glaciated mountains-foothills         |
| BRK | Breaklands-river breaks-badlands      |
| PLA | Plains-rolling plains-plains w/breaks |
| VAL | Valleys-swales-draws                  |
| HIL | Hills-low ridges-benches              |
| NMF | Nonglaciated Mountain                 |

### Reference Composition Source (55)

|   |   |
|---|---|
| D | coarse-scale default values from lit. review/mod. Workshops |
| R | region/state default values from lit. review/mod. workshops |
| N | non-local expert estimate                                   |
| L | local expert estimate                                       |
| T | interdisciplinary team (IDT) consensus                      |
| M | expert estimate + lit. review/modeling                      |
| B | IDT consensus from lit. review/modeling workshop            |
| F | local study + lit. review/modeling workshop                 |

### Natural Fire Frequency and Native American Burning (57)

|   |  |
|---|--|
| A | Substantial Native American burning influence included       |
| C | used coarse-scale default                                    |
| D | Substantial Nat.American burning influence, but not included |
| N | Nat. American burning influence not considered               |
| W | Nat. Amer. burning considered but not different than without |

## Upper Layer Size Class(64)

### Coniferous and Broadleaf Trees

|      |  |
|------|--|
| SEED | Seedling - < 4.5 feet                      |
| SAPL | Sapling - > 4.5 feet tall and <5.0 in. DBH |
| POLE | Pole - > 5 in. and < 9 in DBH.             |
| MEDM | Medium - 9 - 21 in DBH.                    |
| LARG | Large -21 - 33 in DBH.                     |
| VLAR | Very large ->33 in DBH                     |

### Shrubs

|      |                            |
|------|----------------------------|
| LOWS | Low -<3 feet tall.         |
| MEDS | Medium -3 - 6.5 feet tall. |
| TALS | Tall ->6.5 feet tall.      |

### Herbaceous

|      |                     |
|------|---------------------|
| LOWH | Low -<=2 feet tall. |
| TALH | Tall ->2 feet tall. |

### Other

|      |  |
|------|--|
| MMLL | Moss, Lichens, Litter/Duff             |
| BARN | Barren, Rock, Gravel, Soil             |
| NNNN | Doesn't fit any cat., Unable to Assess |

## Surface Fire Fuel Model (70)

|    |  |
|----|--|
| 1  | Peren/Annual Grasslands, Savannahs, Grass-tundra. <1/3 shrub or timber   |
| 2  | Shrub, pine, oak, pinyon-juniper with < 2/3 shrub or timber cover  |
| 3  | Tall Grassland, Prairie, and Meadow  |
| 4  | Coastal/Sierra Chaparral, Pocosin Shrub, South. Rough Shrub, Cl. Jack Pine, Pine Bar.  |
| 5  | Moist or Cool Shrub Types, Forest/Shrub, Regen. Shrub fields after fire or harvest   |
| 6  | Pinyon-juniper w/ shrubs, Southern Hardwood/ Shrub w/ Pine, Frost Killed Gambel Oak, Pocosin Shrub, Chamise, Chaparral, Spruce-taiga, Shrub-tundra, Hardwood Slash |
| 7  | Palmetto-gallberry w/ or w/o Pine overstory, Black spruce/shrub, Southern Rough  |
| 8  | Closed canopy short needle conifer types, Closed canopy broadleaf or hardwood types  |
| 9  | Long needle conifer types, Oak-hickory and similar Hardwood types  |
| 10 | Any Forest type with > 3" down dead woody fuels  |
| 11 | Light Logging Slash, Partial Cut Slash   |
| 12 | Moderate and Continuous Logging Slash in Clearcuts or Heavy Partial Cuts and Thinned areas   |

FRCC Code Table Summary Software version 1.0.5 (9/08/2004)

## Upper Layer Lifeform (63)

|      |                           |
|------|---------------------------|
| CONT | Coniferous Trees          |
| BRDT | Broadleaf Trees           |
| SHRB | Shrubs                    |
| HERB | Herbaceous                |
| MOSS | Moss or Lichens           |
| NVEG | Non-vegetated             |
| NNNN | Does not fit any category |

## BpLU Lifeform (26)

|    |  |
|----|--|
| AQ | Aquatic                                  |
| BF | Broadleaf upland forest                  |
| BW | Broadleaf wetland or riparian forest     |
| CF | Coniferous upland forest                 |
| CW | Coniferous wetland or riparian forest    |
| HA | Herbaceous dominated alpine              |
| HU | Herbaceous dominated upland              |
| HW | Herbaceous dominated wetland or riparian |
| ML | Moss or lichen dom. upland or wetland    |
| NV | Non-vegetated                            |
| OT | Other potential vegetation lifeform      |
| SA | Shrub dominated alpine                   |
| SU | Shrub dominated upland                   |
| SW | Shrub dominated wetland or riparian      |

## Vegetation-Fuel Class (62)

### Characteristic

|      |                                     |
|------|-------------------------------------|
| AESP | Post-replacement; Early Development |
| BMSC | Mid Development; Closed             |
| CMSO | Mid Development; Open               |
| DLSO | Late Development; Open              |
| ELSC | Late Development; Closed            |

### Uncharacteristic

|       |  |
|-------|--|
| UCLR  | Cultural   |
| UCLRB | Cultural; Burned Area Restoration                |
| UCLRO | Cultural; Other                                  |
| UCLRR | Cultural; Range Improvements                     |
| UCLRS | Cultural; Road Densities/Patterns                |
| UCLRT | Cultural; Timber Stand Improvements              |
| UFEF  | Post-Fire Effects                                |
| UFEFG | Post-Fire Effects; Grass/Shrub Mortality         |
| UFEFO | Post-Fire Effects; Other                         |
| UFEFS | Post-Fire Effects; Soil/HydroDegredation         |
| UFEFT | Post-Fire Effects; Large/Old Tree Mortality      |
| UFUS  | Fuel/Sucn/Lack Fire Effects                      |
| UFUSH | Fuel/Sucn/Lack Fire Effects; Higher Ignitability |
| UFUSL | Fuel/Sucn/Lack Fire Effects; Lower Ignitability  |
| UFUSO | Fuel/Sucn/Lack Fire Effects; Other               |
| UGRZ  | Grazing  |
| UGRZF | Grazing; Lack Fine Fuels                         |
| UGRZO | Grazing; Other                                   |
| UGRZS | Grazing; Soil/Hydro Degredation                  |
| UIDS  | Insects/Disease                                  |
| UIDSI | Insects/Disease; Invasive                        |
| UIDSM | Insects/Disease; Native More Severe              |
| UIDSO | Insects/Disease; Other                           |
| UINP  | Uncharacteristic                                 |
| UINPL | Invasive Plants; Fires Less Frequent             |
| UINPM | Invasive Plants; Fires More Frequent             |
| UOTH  | Other disturbances                               |
| UPAT  | Pattern  |
| UPATC | Pattern; Contiguous                              |
| UPATF | Pattern; Fragmented                              |
| USHD  | Soil/Hydrology                                   |
| USHDE | Soil/Hydrology; Soil/Hydro Erosion               |
| USHDM | Soil/Hydrology; Mech/Soil/Hydro                  |
| USHDO | Soil/Hydrology; Other                            |
| UTHV  | Timber Harvest;                                  |
| UTHVC | Timber Harvest; Change Comp Structure            |
| UTHVO | Timber Harvest; Other                            |
| UTHVT | Timber Harvest; Missing Large/Old Trees          |

## CHAPTER 4 - LANDSCAPE SCORECARD METHOD

The Landscape Scorecard (qualitative) Method provides a quick approach for field determination of the natural fire regime and the associated fire regime condition class (FRCC) at landscape scales. The Standard Landscape (quantitative) Method for landscape fire regime and FRCC (see Chapter 3) provides the training and validation for the Landscape Scorecard Method.

The field methods described here are the recommended procedures for conducting the scorecard method for determination of landscape fire regime and FRCC.

### *Field Numbers*

Fields are generally numbered sequentially. However, often there are field numbers that are not used. These are numbers that are retained for use by the computer or for storage of data from a former version.

### **Landscape Scorecard Procedure Summary Fields (Fields 1-14)**

The first four fields (Registration Code ID, Project Code, Project Number and Sampling Date) allow the unique identification of a landscape or project area, they also tie the scorecard to the Standard Landscape Method where applicable.

**Registration Code ID (Field 1-REGCOD) – Required – Required** – For federal agency and TNC personnel using the web version or downloading the stand alone version the Registration Code is a 4-character code assigned from the FRCC help desk based on your agency affiliation. Standard codes are assigned to all federal agency and TNC units that cannot be used by other units (check the website at <http://frcc.gov/> for an updated list, contact the help desk at [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov) if your land management unit is not listed). For users that do not have web access and for non-federal agency users contact your federal, state, TNC or private agency coordinator (a list is provided on the training CD).. We encourage non-federal agency users to use one Registration Code per “group”, and then use a Project Code for separate monitoring projects.

**Project Code (Field 2-PROCOD) – Required** – The Project Code is an 8-character code used to identify project work that is done within the unit. You are not required to use all eight characters. Some examples of Project Codes are:

TCRESTOR = Tenderfoot Creek Restoration

BurntFk = Burnt Fork Project

SCPF1 = Swan Creek Prescribed Fire, Unit 1

You may want to use the same code you would use in the National Fire Plan Operations Reporting System (NFPORS) or, if you are a non-federal employee, link it to whatever reporting system you may use.

It will be easier to read sorted results if you do not include digits in the left most position of the project code. For instance, if two of your projects are 22Lolo and 9Lolo, when sorted 22Lolo will come before 9Lolo. The preferred option would be to name the projects Lolo09 and Lolo22, although Lolo9 and Lolo22 will sort in the proper order, also.

**Project Number (Field 3 – PLOJID) – Required** – Identifier that corresponds to the fire, vegetation, and fuel management landscape or project area. Integer value.

**Project Characterization Date (Field 4-SDATE) – Required** – The characterization date is the date you want assigned to the landscape or project summary as a whole that makes this data unique from previous or subsequent characterization. The date of characterization should be entered in Field 4 of the FRCC sampling form as an 8-digit number in the MM/DD/YYYY format where MM is the month number, DD is the day of the month, and YYYY is the current year. So, April 10, 2001 would be entered 04/10/2001.

If the same landscape or project is being re-measured after treatment of one or more units or to update condition class following a period of succession or unplanned disturbances, be sure to keep the same project code and project number. The only item to change will be the project characterization date. Strata or treatment units within the landscape or project that have not changed can be copied in the data entry program from the previous project code/project number date of characterization to the new date and only those strata or treatment units that have changed need to be entered as new data.

**Examiner Name (Field 5-NAME) – Required** – The Examiner code is the email address of the crew boss or lead examiner. The examiner's email address corresponds to the Examiner's UserID in the central FRCC database at <http://frcc.gov/>.

If the project is exported to the central database, the website will verify that the examiner is a certified FRCC user or trainer. If the examiner is not certified, the FRCC website will not allow the project to be viewed by other users or exported to the NFPORS or LANDFIRE databases.

For users that do not have an email address, but have downloaded software, enter a UserID assigned to you by the help desk at the time you receive your registration ID.

For users that do not have an email address, do not have software, and have not been assigned a UserID by the help desk, but are using the field forms and worksheets to hand calculate FRCC, enter your first and last name.

**Project Name (Field 6-PROJECT) – Required** – The name of the project can be up to 50- characters. The project name is the name of the overall landscape or project area where you will be applying the field procedures for FRCC. This project is usually named by the major drainage or other prominent feature.

You may want to cross reference this with your NFPORS “Project” or “Treatment Unit Name” or another reporting system if you are a non-federal employee.

**Project Area (Field 7-AREA) – Required** - The area of the project in an integer value. The project area is the size of the overall landscape or project area where you will be applying the field procedures for FRCC.

**Project Area Units (Field 8-UNITS)- Required** - Choose either acres or hectares for the size of the project area from field 7.

#### *Recording a Georeferenced Project Position*

The next set of fields provides georeferencing for your Project area. These fields are not required, but can be important for re-taking photographs, for placing the Project in a Geographic Information System, and for cross-walking to the NFPORS database.

We recommend using a GPS receiver to record latitude and longitude, in decimals rather than degrees. Try to select a central position with a good panoramic view. Then record the GPS coordinates to the sixth decimal place.

**Latitude (Field 9-LATC) – Not Required** -- Enter the latitude of the landscape or project in decimal degrees to the sixth decimal place (e.g., 45.951234).

**Longitude (Field 10-LONGC) – Not Required** -- Enter the longitude of the landscape or project in decimal degrees to the sixth decimal place (e.g., 95.951234).

**Datum (Field 11) – Not Required** – Enter the Datum for the coordinates. Datum is a model used to represent map coordinates on the Earth's surface. If you are unsure of which to use contact your local GIS coordinator to see what datum they prefer you use.

*Documenting Project Landscape with Current and Historic Photos*

Digital photographs and scans are a useful means to document the project a number of ways. They provide a unique opportunity to visually assess the landscape or project area or vegetation class in a database format for both local and regional/national use. Of particular value are digital photos and scans showing current and historic oblique views or current and historic aerial views. In addition, previously established projects can be found by orienting the landmarks in photos to visual cues in the field. Photos can be compared to determine important changes after project implementation or an unplanned fire or other disturbance event. Photos provide excellent communication tools for describing project rationale to the public and fire and fuels personnel. Possibly the most important use of these photos will be to develop a photo series once your data and photos are uploaded to central data storage.

Document the landscape or project using a current landscape view photograph. If available, scan a historic picture of the landscape project area from a similar view or for a landscape with similar potential vegetation or vegetation land types. You can also document the current and historic conditions using digital photographs or scans of aerial photographs from current and historic (such as 1930s) aerial photography. Enter the file name path of the digital picture or scan.

**Photo (Field 12-LSCPHOTO) – Not Required** – Use the browser to enter the file name path. The digital photo file will be uploaded with the database when you upload to the central location.

**Photo Date (Field 13-LSCPHOTODT) – Not Required** – Enter the date the Photo was taken.

*Entering Comments about the Landscape or project*

The Comments field is provided so that the field examiner or crew can record any information associated with the landscape or project that cannot be recorded elsewhere on the form. For example, you can record ecological conditions, dates of wildland fire or fire use occurrence, directions, historic information, and/or other important attributes.

**Comments (Field 14-COMMENTS) – Not Required** – Enter up to a 256-character comment. Try to use shorthand and abbreviations to reduce space as long as the comments are still understandable. You might try to organize comments in a standard order with appropriate punctuation. For example, you might describe history of the area first and only use colons to separate the next major category of comments.

## **Landscape Scorecard Procedure Strata Fields (Fields 16-20)**

The Strata fields describe the biological, physical, and fire regime characteristics of the management unit for each of the Project Landscape stratifications. These stratifications would be the same as the stratifications on the Standard Landscape Method.

Through review of existing data, current management plans, field reconnaissance, or assessment of treatment units delineate the landscape or project area into strata by differences in fire regime groups, current conditions (physical and/or biological), and treatment or non-treatment units.

You can delineate as many strata as you would like as long as strata percent composition sum to 100% of the landscape or project area and they are characterized for one time (date). Do not include strata that mix characterization dates. To characterize strata for a different time period or for re-measurement enter the same project code and number, but change the date of characterization. Then copy those strata that have not changed and enter new data for the strata that have changed.

If you are conducting a rapid reconnaissance we suggest you do not include types that make up less than 20 percent of the project area (thus with 5 each at 20% you can only have up to 5 strata for 100% of the project area) unless the type has very important management implications. Keep it simple by stratifying only the dominant 2-3 types.

### *Landscape Fire Regime Scorecard Process*

All definitions and terms are same as described for the Standard Landscape Method. Identify the potential natural vegetation group (PNVG) that has the greater amount within the landscape strata. Check PNVG identification by using the key and descriptions from the guidebook. Enter the name of the PNVG at the top of the landscape fire regime table (table 4-1). Read the PNVG description of the successional stages, disturbance regime, and reference values from the guidebook. Choose (circle) the applicable categorical rating for fire interval group and fire severity class. For evidence choose (circle) a relative rating of 0, 1, 2 for the indicators and then sum the relative rating. Relative rankings of 0, 1, and 2 are assigned as: 0 – no evidence or not applicable; 1- some evidence; 2 – substantial evidence. Use the landscape fire regime chart (graph 1) by connecting the left and right variables with a single line using the class and “sum” from table 4-1. Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the fire regime.

**Strata Number (Field 15- STRATANUM) – Required** – Strata number is provided on the worksheet and in the software. This would be the same as Field 21 in the Standard Landscape Method.

**Strata Code (Field 16-CODE) – Required** – Code that may be used to crosswalk the strata to a reporting system, such as NFPORS (e.g. This can be linked to the “Treatment Unit Name” in NFPORS).

**Strata Name (Field 17-NAME) - Not Required** -- Name associated with the strata.

**Strata Characterization Date (Field 18-STDATE) – Required** – Date the strata data was collected. This date can be different from the project characterization date because of a different date of sampling, but should characterize the strata for the same general time period.

**Strata Bp Land Unit Code (Field 19-BpLU) – Required** – Enter the 4-6 character code for the coarse scale BpLU (Potential Natural Vegetation Group (PNVG)), from table 4-3 or 4-4, from the pop down menu that best describes the BpLU-PNVG indicator species, or from you Standard Landscape Method analysis (field 25). Use the Schmidt et al. (2002) GTR and this document as descriptive references, along with Bailey (1995), Kuchler (1975), and Brown and Smith (2000).

*Identifying the Coarse-scale PNVG*  
Review the following terms:

**Natural cover** – the assemblage of species, usually named by the most common or dominating species, that occupies the area for the majority of time during the normal ( $\pm$  33% of the central tendency measure) disturbance and succession regime cycles, in the absence of modern human mechanized intervention.

**Historical cover** – the assemblage of species, usually named by the most common or dominating species, that occupied the area for the majority of time during the normal ( $\pm$  33% of the central tendency measure) disturbance and succession regime cycles, prior to Euro-American settlement and modern mechanized intervention.

**Importance** – natural (or historical as a proxy) is important to understand because this is the assemblage of species and their amounts that would be in sync with the normal disturbance and succession regime cycles, given no management and no investment; this provides a baseline reference for quantifying disturbance and succession outcomes, and associated diversity of species without management, that can be compared to outcomes with management and varying levels of investment.

**Forest** – conifer or broadleaf trees with a general average height to the top of the upper layer greater than 30 feet (approximately 9 meters) with fairly continuous and complete canopy closure occupy the majority of succession from post-replacement disturbance to maturity.

**Woodland** - conifer or broadleaf trees with an average height to the top of the upper layer less than 30 feet (approximately 9 meters) with non continuous canopy closure occupy the majority of succession from post-replacement disturbance to maturity.

**Cover** – canopy cover is approximately twice (2x) foliar cover (e.g. 30% canopy cover of sagebrush is approximately 15% foliar cover using line intercept).

*Key to Potential Natural Lifeforms*

A. Natural average potential height (height of most mature successional stage) of upper layer greater than 30 feet (approx 9 meters) and canopy cover of forest typically greater than 15% - -- Forest – The most common error in potential natural lifeform identification is selection of “Forest” because there are currently trees present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the current trees are one size class that is a younger age than the time since Euro-American settlement. This is a good indicator the area may not have natural forest potential.

AA. Natural average potential height (height of most mature successional stage) of upper layer less than 30 feet (approx 9 meters) and canopy cover of forest less than 15% -- Non-forest – go to B.

B. Natural canopy cover of woodland greater than 15% -- Woodland - The second most common error in potential natural lifeform identification is selection of “Woodland” because there are currently woodland trees present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the trees are one size class that is a younger age than the time since Euro-American settlement. This is a good indicator the area may not have natural forest potential.

BB. Natural canopy cover of woodland less than 15% -- Non-woodland – Go to C.

C. Natural foliar cover of shrubs greater than 5% -- Shrubland - The third most common error in potential natural lifeform identification is selection of “Shrubland” because there are currently shrubs present. Before moving forward check this call by looking at historical oblique or air photos to confirm this call. Another cross check is to determine if all or most of the shrubs are of a size class and age that could not be achieved within the natural fire frequency. This is a good indicator the area may not have natural forest potential.

C1. Potential for forest and woodland species greater than 15% canopy cover with removal of natural disturbance – Shrubland with Trees

- C2. Potential for forest and woodland less than 15% canopy cover with removal of natural disturbance -- Shrubland
- CC. Natural foliar cover of shrubs less than 5% -- Non-shrubland – go to D.
- D. Natural canopy cover of grasses, forbs, and other herbs greater than 5% -- Grassland
  - D1. Potential for forest and woodland species greater than 15% canopy cover with removal of natural disturbance -- Grassland with Trees
  - D2. Potential for shrub species greater than 5% foliar cover with removal of natural disturbance -- Grassland with Shrubs
  - D3. Potential for shrub species less than 5% without natural disturbance – Grassland
- DD. Natural cover of grasses, forbs, and other herbs less than 5% -- Barren

Once you have identified the lifeform proceed to the appropriate table (table 4-3 for western U. S. forest and table 4-4 for western U.S. woodland, shrubland, or grassland – Appendix C) to select the PNVG. If you are from the **East** use the coarse-scale GTR-87 list, also provided on the code sheet and in the pop down menu of the software. An effort is underway to refine the PNVG classification and develop the reference values for the East. Be sure to check for updates. If you are from Alaska enter a local code. An effort is underway to develop a PNVG classification and the associated reference values for Alaska. Be sure to check for updates. For selection of the PNVG in table 4-4 (western U.S. woodland, shrubland, and grassland) you will need to determine if the **natural cover is shrubland or grassland PNVG influenced by tree or shrub**. Use the following interpretations to help you make this determination.

**Forest or woodland tree in shrubland or grassland**

- Shrubland or grassland is the **natural cover**
- Trees currently present on the strata land unit
- Trees not currently present, but have potential and available seed source

**Shrub encroachment in grassland**

- Grassland is the **natural cover**
- Shrubs currently present on the strata land unit
- Shrubs not currently present, but have potential and available seed source

The PNVG classifications and associated reference values (tables 4-3 and 4-4) for the western U.S. are from version 1.0.5. These values are in a review and refinement process. To make sure you have the most recent values, users with internet access should check the FRCC website (<http://frcc.gov/>) or contact the help desk ([helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)). Users without web access should

contact their federal, state, TNC or private agency coordinator (a list is provided on the training CD).

**Strata Composition (Field 20 - COMP) – Required** - enter a local estimate or map summary of the percent composition for this vegetation-fuel class within its strata and project area. The sum of entries for the five characteristic classes AESP, BMSC, CMSO, DLSSO, ELSC, and any uncharacteristic classes must equal 100 percent. Any one patch (stand) of vegetation-fuel can only have one characteristic or uncharacteristic vegetation-fuel code. You cannot double count such that the sum is greater than 100 percent. For example if uncharacteristic timber harvest (UTHV) has affected vegetation-fuel patches (stands) that make up 20% of the area and those same patches (stands) have an uncharacteristic pattern (UPAT) you must select the primary effect, which in this case would be the UTHV.

### **Landscape Scorecard Procedure Strata Natural Fire Regime Fields** **(Fields 21-33)**

Fields 21-31 are values related to the Natural Fire Regime which may be different from the current Fire Regime.

**Strata Fire Interval Group (Field 21 - FIG) – Required** – enter the applicable fire interval group value.

- 0 – frequent
- 1 – infrequent
- 2 - rare

Refer to the landscape fire regime scorecard for graph input (table 4-1). Select the fire interval group that fits a similar landscape or project area where you have used the Standard Landscape Method and classified a similar fire regime.

If you are using the worksheet determine this score and enter on the worksheet.

**Strata Weighted Fire Interval Group (Field 22 - WFIG) – From Fields 20 and 21** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 21).

If you are using the worksheet determine this value and enter on the worksheet.

**Landscape or Project Fire Interval Group (Field 23 - WFIGS) – From Field 22** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 22, columns 1-5).

Classify as follows:

0 - Frequent -  $\leq .5$

1 - Infrequent -  $> .5$  and  $\leq 1.5$

2 - Rare -  $> 1.5$

If you are using the worksheet determine this code and enter on the worksheet.

**Strata Frequent Fire Evidence (Field 24 – FFE) – From table 4-1** - enter the sum score of frequent fire evidence.

Refer to the landscape fire regime scorecard for graph input (table 4-1). Circle the level of evidence appropriate for each evidence category. For each category of evidence choose (circle) a relative rating of 0, 1, 2 for the indicators and then sum the relative rating. Relative rankings of 0, 1, and 2 are assigned as: 0 – no evidence or not applicable; 1- some evidence; 2 – substantial evidence.

If you are using the worksheet determine this score and enter on the worksheet.

**Strata Weighted Frequent Fire Evidence (Field 25 - WFFE) – From Fields 20 and 24** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 24).

If you are using the worksheet determine this value and enter on the worksheet.

**Landscape or Project Frequent Fire Evidence (Field 26 - WFFES) – From Field 25** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 25, columns 1-5).

If you are using the worksheet determine this value and enter on the worksheet.

**Strata Fire Severity Evidence (Field 27 – FSE) - From table 4-1** - enter the sum score of frequent fire evidence.

Refer to the landscape fire regime scorecard for graph input (table 4-1). Circle the level of evidence appropriate for each evidence category. For each category of evidence choose (circle) a relative rating of 0, 1, 2 for the indicators and then sum the relative rating. Relative rankings of 0, 1, and 2 are assigned as: 0 – no evidence or not applicable; 1- some evidence; 2 – substantial evidence.

If you are using the worksheet determine this score and enter on the worksheet.

**Strata Project Weighted Fire Severity Evidence (Field 28 - WFSE) – From Fields 20 and 27 –**

You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 27).

If you are using the worksheet determine this value and enter on the worksheet.

**Landscape or Project Fire Severity Evidence (Field 29 - WFSES) – From Field 28 -** You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 28, columns 1-5).

If you are using the worksheet determine this value and enter on the worksheet.

**Strata Fire Severity Class (Field 30 - FSC) – Required –** enter the applicable fire interval group value.

- 0 – surface
- 1 – mixed
- 2 - replacement

Refer to the landscape fire regime scorecard for graph input (table 4-1). Select the fire severity class that fits a similar landscape or project area where you have used the Standard Landscape Method and classified a similar fire regime

**Strata Weighted Fire Severity Class (Field 31 - WFSC) – From Fields 20 and 30 –** You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 30).

If you are using the worksheet determine this value and enter on the worksheet.

**Landscape or Project Fire Severity Class (Field 32 - WFSCS) – From Field 31** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 31, columns 1-5).

Classify as follows:

- 0 - Surface -  $\leq .5$
- 1 - Mixed -  $> .5$  and  $\leq 1.5$
- 2 - Replacement -  $> 1.5$

If you are using the worksheet determine this value and enter the code on the worksheet.

**Landscape or Project Fire Regime Group (Field 33 - WFRG) – From Graph 1** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The fire regime group is determined from the intersection of the 2 nomogram lines.

If using the worksheet enter the code for the fire regime group:

- 1 - Fire Regime Group I – Frequent (0-35 years) surface & mixed
- 2 - Fire Regime Group II – Frequent (0-35 years) replacement
- 3 - Fire Regime Group III – Infrequent (35-100+ years) mixed
- 4 - Fire Regime Group IV – Infrequent (35-100+ years) replacement
- 5 - Fire Regime Group V – Rare (200+ years) replacement

### **Landscape Scorecard Procedure Strata Fire Regime Condition Class Fields** **(Fields 34-47)**

Fields 34-47 are based on current conditions which may differ from natural conditions.

**Strata Characteristic Vegetation-Fuel Class Departure (Field 34– CVCD) – From table 4-2** - enter the sum score of characteristic vegetation-fuel class departure.

Refer to the landscape fire regime condition class scorecard for graph inputs (table 4-2). For the characteristic vegetation-fuel classes (successional stages) assign (circle) relative rankings of 0 and 1 to current amounts based on their difference in comparison to reference condition central tendency; 0 – similar (within  $\pm 25\%$  difference); 1 – high or low ( $< - 25\%$  difference or  $> + 25\%$  difference).

More than one characteristic or uncharacteristic vegetation-fuel class cannot occur on any given patch (stand) of vegetation-fuel. You can only assign the dominant characteristic or uncharacteristic condition to a given patch (stand) of vegetation-fuel. Consequently, the sum composition of characteristic and uncharacteristic vegetation-fuel cannot exceed 100% of the strata or landscape. Do not duplicate characteristic or uncharacteristic class assignments for a given vegetation-fuel condition. Assign the dominant condition to that patch (stand) of land. For example, a closed sapling tree stand where the large trees have been harvested in a pattern uncharacteristic of the natural regime and the small trees have increased due to fire exclusion cannot be assigned to 4 possible classes that could apply: i.e. uncharacteristic timber management, uncharacteristic fuel accumulation, uncharacteristic fuel accumulation, or characteristic mid-seral closed. The vegetation-fuel class that identifies the dominant process causing the condition must be selected; in this example the uncharacteristic timber management.

If you are using the worksheet determine this value and enter the score on the worksheet.

**Strata Weighted Vegetation-Fuel Class Departure (Field 35- WCVCD) – From Fields 20 and 34**– You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 34).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Landscape or Project Vegetation-Fuel Class Departure (Field 36 - WFFES) – From Field 35 -** You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 35, columns 1-5).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Strata Uncharacteristic Vegetation-Fuel Class Departure (Field 37 – CVCD) – From table 4-2** - enter the sum score of uncharacteristic vegetation-fuel class composition.

Refer to the landscape scorecard for graph inputs (table 4-2). For the uncharacteristic vegetation-fuel classes assign (circle) relative rankings of current amount: 0 – none (0%); 1 – some (> 0 – 25%); 2 – moderate (> 25%).

When you choose (circle) relative ratings from the scorecard choose all uncharacteristic vegetation-fuel class conditions that apply.

If you are using the worksheet determine this value and enter the sum on the worksheet.

**Strata Weighted Uncharacteristic Vegetation-Fuel Departure (Field 38 - WFSE) – From Fields 20 and 37** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation =  $((\text{field } 20/100) * \text{field } 37)$ .

**Landscape or Project Uncharacteristic Vegetation-Fuel Departure (Field 39 - WFSES) – From Field 38** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 38, columns 1-5).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Strata Fire Severity Departure (Field 40 – FSD) – From table 4-2** - enter the score for fire severity departure.

Refer to the landscape fire regime condition class scorecard for graph inputs (table 4-2). For fire severity departure choose: fire less or more severe than natural (0 – similar (0-25% difference) to the natural/historical regime; 1 – somewhat (25-50% difference) more or less severe than natural/historical regime; 2 – moderately (50-75% difference) more or less severe than natural/historical regime) 3 – substantially (> 75% difference) more or less severe than natural/historical regime).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Strata Weighted Fire Severity Departure (Field 41 - SWFSD) – From Fields 20 and 40** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation =  $((\text{field } 20/100) * \text{field } 40)$ .

If you are using the worksheet determine this value and enter the code on the worksheet.

**Landscape or Project Fire Severity Departure (Field 42 - LFSD) – From Field 41** - You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 41, columns 1-5).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Strata Fire Frequency Departure (Field 43 – FFD)** – enter the score for fire frequency departure.

Refer to the landscape fire regime condition class scorecard for graph inputs (table 4-2). For fire frequency departure choose fire less or more frequent than natural: 0 – has not missed an interval and is not more frequent; 1 - missed one interval or twice as frequent; 2 – missed two to three intervals or more than twice as frequent); 3 – missed more than three intervals.

If you are using the worksheet determine this value and enter the score on the worksheet.

**Strata Weighted Fire Frequency Departure (Field 44 - SWFFD) – From Fields 20 and 43 –**

You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = ((field 20/100) \* field 43).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Landscape or Project Fire Frequency Departure (Field 45 - LFSD) – From Field 44 -**

You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The formula for calculation = (sum field 44, columns 1-5).

If you are using the worksheet determine this value and enter the code on the worksheet.

**Strata and Landscape or Project Fire Regime Condition Class (Field 46 – LFRCC) –**

You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The fire regime group is determined from the intersection of the 2 nomogram lines on graph 2.

If you are using the worksheet determine the condition class where the 2 nomogram lines intersect and enter the code for the condition class onto the worksheet:

1 – FRCC 1 = 0 – 33% departure from central tendency – within the natural range

2 – FRCC 2 = 34 – 66% departure – moderately outside the natural range

3 – FRCC 3 = > 66% departure – substantially outside the natural range

**Strata and Landscape or Project fire Regime Condition Class Departure (Field 47 -**

**LFRCCD)** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The fire regime departure value is determined by interpolating a departure value of 0 to 100 percent based on the distance of the intersection of the 2

nomogram lines between the condition class breaks (graph 2). The percentage departure of the condition class breaks are 0 to 33 for class 1, 34-66 for class 2, and 67-100 for class 3. Values determined by the computer will be rounded to the nearest 1 percent.

If you are using the worksheet determine if the intersection of the nomogram lines is closer to the Y axis (right side), center axis (diagonal from lower right to upper left), or X axis (bottom side). Each axis is marked on the graph with the class breaks (0, 33, 66, and 100). Based on the point where your nomograms lines intersect estimate the value between the class breaks rounded off to the nearest 5 or 10 percent.

Enter this value on the worksheet.

**This field will be the FRCC value entered or exported into the NFPORS data base in the future.** Since this is a continuous value and not a class, the value can be used to classify FRCC (1,2,3) or determine a trend in FRCC.

Trend to condition class 1 will be calculated using pre-treatment and post-treatment assessments or estimates using the “difference” formula. The software program will determine this value for you. If you would like to determine this yourself you will need a pre and post assessment and use the following formula (note this is not a field found on your worksheet – it is an output from the software).

Difference is calculated as: % Difference =  $((\text{Pretreatment} - \text{Posttreatment}) / (\text{Pretreatment})) * 100$ .

The results from the “difference” calculation will be used to classify trend as follows:

D – Degradation in Condition Class =  $\leq - 10\%$

N – No change in Condition Class =  $> - 10\%$  and  $< + 10\%$

I – Improvement in Condition Class =  $\geq + 10\%$

## Landscape Calibration

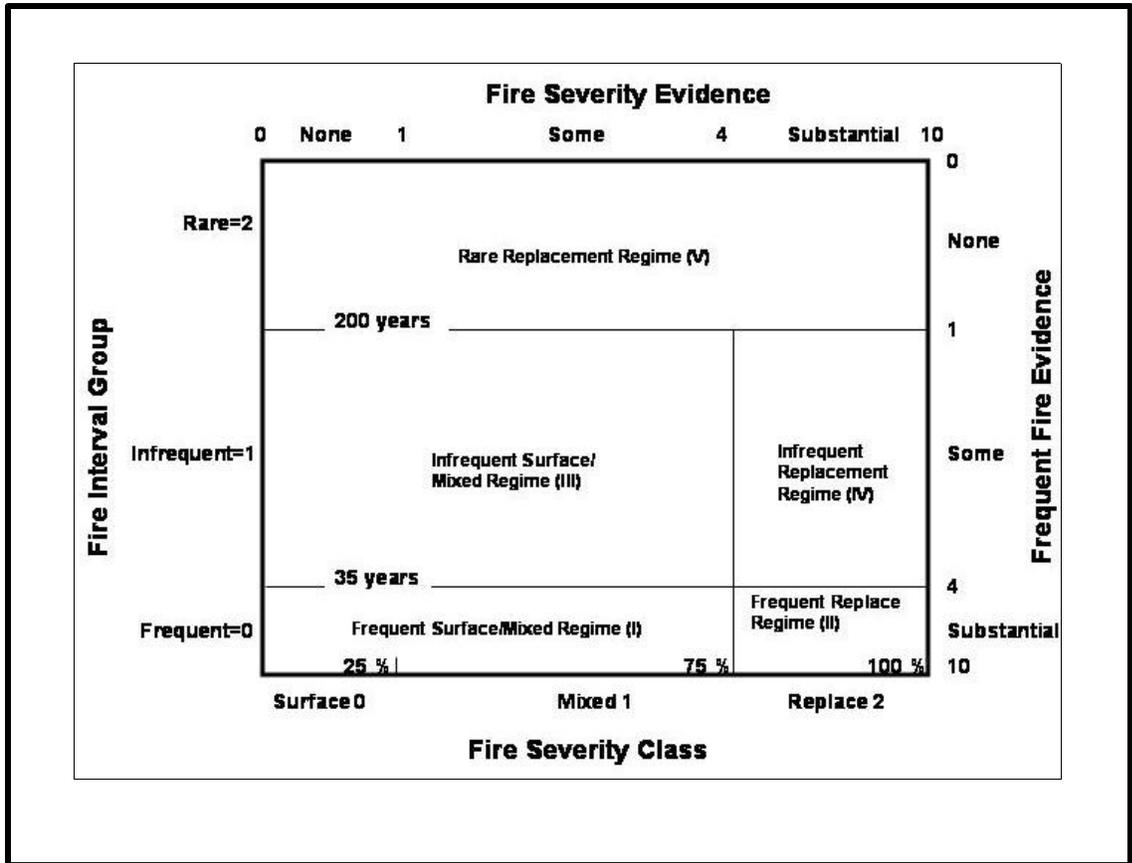
Scorecard landscape calibration – It is highly important to calibrate the landscape scorecard with results from the Standard Landscape Method for a similar landscape. Without this calibration, a user has little chance of determining the correct FRCC (1, 2, or 3) or the measure of departure (0 to 100) from reference conditions. Calibration should follow consistent steps:

- 1) Identify a landscape with similar PNVG's and current conditions to other landscapes where you will be using the scorecard.

- 2) Conduct the Standard Landscape Method.
- 3) Conduct the Landscape Scorecard Method for the same area.
- 4) Compare the graph results of the Landscape Scorecard Method to the Standard Landscape Method for fire regime, FRCC, and measure of departure. Identify if the scorecard has under- or over-estimated the departure measure, and if it has resulted in determination of the wrong FRCC.
- 5) If user scorecard results are similar to Standard Landscape Method for fire regime: proceed with use of the landscape scorecard in other landscapes.
- 6) If user scorecard results are different from Standard Landscape Method for fire regime: check to make sure you have identified the correct PNVG and associated reference conditions. Check your initial classification of frequency and severity against the standard method. Check your selection of frequency and severity evidence to improve emulation of results from the Standard Landscape Method. Recalibrate to achieve scorecard results similar to the Standard Landscape Method.
- 7) If user scorecard results are similar to the Standard Landscape Method for the FRCC and departure measure -- If your use of the scorecard has resulted in the correct FRCC and relative close estimate (within plus or minus 10%) of the departure measure proceed with use of the landscape scorecard in other landscapes.
- 8) If user scorecard results are different from the Standard Landscape Method for FRCC and departure measure -- If your use of the scorecard has resulted in the incorrect FRCC or different estimate (outside plus or minus 10%) of the departure measure recalibrate your use of the scorecard.
- 9) Recalibration of the FRCC scorecard – The most common need for recalibration is when scorecard results underestimate FRCC and the associated departure measure. This underestimation occurs when only one “uncharacteristic” class occupies the majority of the PNVG within the landscape and the departure in fire frequency and severity are low to moderate. When this occurs the maximum rating for uncharacteristic is a “2” while the scorecard graph requires a rating of “4” to push the nomogram result to an FRCC of 3. When this occurs the user should assure they have identified and rated all “uncharacteristic” conditions. If there still is only one “uncharacteristic” class then double count the effect using “uncharacteristic pattern” or “uncharacteristic other” to result in a sum that pushes the FRCC and departure measure to better reflect that from the Standard Landscape Method. To account for other differences between scorecard and Standard Landscape Methods results, use a similar process to adjust your scorecard ratings to better reflect the results from the Standard Landscape Method.

**Table 4-1.** Landscape fire regime scorecard for graph inputs. All definitions and terms are same as described for the Standard Landscape Method. Identify the potential natural vegetation (PNVG) that has the greater amount within the landscape strata. Check PNVG identification by using the key and descriptions from the guidebook. Enter the name of the PNVG at the top of the table. Read the PNVG description of the successional stages, disturbance regime, and reference values from the guidebook. Choose (circle) the applicable categorical rating for fire interval group and fire severity class. For evidence choose (circle) a relative rating of 0, 1, 2 for the indicators and then sum the relative rating. Relative rankings of 0, 1, and 2 are assigned as: 0 – no evidence or not applicable; 1- some evidence; 2 – substantial evidence. Optional – enter the values for different strata in the box below.

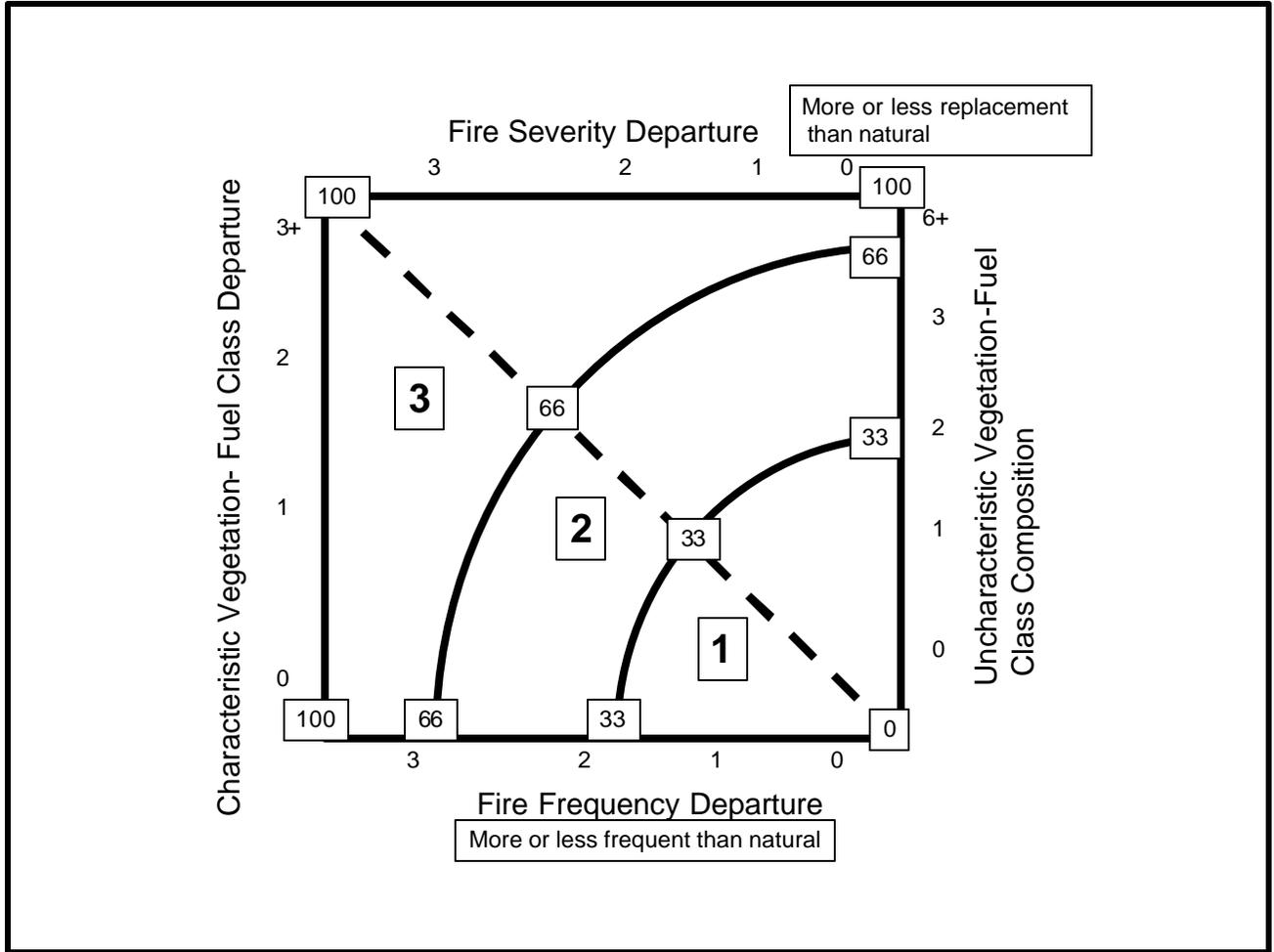
|  |  | Rating                                     |
|--|--|--|
| <b>Fire Interval Group<br/>Field 21</b>    | 0 – 35 years = Frequent  | 0  |
|  | 35+ – 200 years = Infrequent                                   | 1  |
|  | 200+ years = Rare  | 2  |
|  |  | 0=n/a or NoEvidence, 1=Some, 2=Substantial |
| <b>Frequent Fire Evidence<br/>Field 24</b> | Forest - fire scars  | 0, 1, 2                                    |
|  | Forest - No deep litter/duff, lack of large logs               | 0, 1, 2                                    |
|  | Forest - relatively large/old upper layer trees                | 0, 1, 2                                    |
|  | Forest - fire tolerant   | 0, 1, 2                                    |
|  | Shrub/grassland – adjacent to forest w/ frequent fire evidence | 0, 1, 2                                    |
|  | Shrub/grassland – Fire tolerant shrubs                         | 0, 1, 2                                    |
|  | Shrub/grassland - Fire tolerant graminoids                     | 0, 1, 2                                    |
|  | Native American burning  | 0, 1, 2                                    |
|  | Burning days/yr 0=<30, 1=30-60, 2=>60                          | 0, 1, 2                                    |
|  | Other – describe -   | 0, 1, 2                                    |
|  | Sum  |  |
|  |  | 0=n/a or NoEvidence, 1=Some, 2=Substantial |
| <b>Fire Severity Evidence<br/>Field 27</b> | Continuous fuels   | 0, 1, 2                                    |
|  | Steep and concave slopes                                       | 0, 1, 2                                    |
|  | Forest – uniform size, lack of large trees                     | 0, 1, 2                                    |
|  | Forest – small snags & down logs                               | 0, 1, 2                                    |
|  | Shrub/grassland – uniform upper layer size                     | 0, 1, 2                                    |
|  | Shrub/grassland – continuous herb. fuels                       | 0, 1, 2                                    |
|  | Other – describe -   | 0, 1, 2                                    |
| Sum  |  |  |
|  |  |  |
| <b>Fire Severity Class<br/>Field 30</b>    | <25% replacement of upper layer                                | Surface                                    |
|  | 25% - 75% replacement of upper layer                           | Mixed                                      |
|  | >75% - fire burns most of the upper layer                      | Replace                                    |



**Graph 4-1.** Nomogram style chart for classifying the fire regime group (FR). Use the chart by connecting the left and right variables with a single line using the class and “sum” from table 4-1. Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the FR.

**Table 4-2.** Landscape fire regime condition class scorecard for graph inputs. All definitions and terms are same as described for the Standard Landscape Method. Check your identification of the potential natural vegetation by using the key and descriptions from the guidebook. Enter the name of the potential natural vegetation at the top of the table. Read the description of the successional stages, disturbance regime, and reference values from the guidebook. For the characteristic vegetation-fuel classes (successional stages) assign (circle) relative rankings of 0 and 1 to current amounts based on their difference in comparison to reference condition central tendency; 0 – similar (within  $\pm$  25% difference); 1 – high or low. For the uncharacteristic vegetation-fuel classes assign (circle) relative rankings of current amount: 0 – none (> 0 – 25%); 1 – some (> 25%); 2 – moderate (> 25%). For fire severity departure choose: fire less or more severe than natural (0 – similar (0-25% difference) to the natural/historical regime; 1 – somewhat (25-50% difference) more or less severe than natural/historical regime; 2 – moderately (50-75% difference) more or less severe than natural/historical regime) 3 – substantially (> 75% difference) more or less severe than natural/historical regime). For fire frequency departure choose fire less or more frequent than natural: 0 – has not missed an interval and is not more frequent; 1 - missed one interval or twice as frequent; 2 – missed two to three intervals or more than twice as frequent); 3 – missed more than three intervals.

|   | 0=Similar(within 25%) 1=high or low   | Rating     |
|---|---|------------|
| <b>Charact. Veg-Fuel Class</b><br><b>Departure Field 34</b>                                   | Early Seral (A)   | 0, 1       |
|   | Mid Seral Closed (B)  | 0, 1       |
|   | Mid Seral Open (C)  | 0, 1       |
|   | Late Seral Open (D)   | 0, 1       |
|   | Late Seral Closed (E)   | 0, 1       |
|   | Sum   |            |
|   | 0=none, 1=some (0-25%), 2=moderate (>25%)   |            |
| <b>Uncharact. Veg-Fuel Class Comp.</b><br><b>Field 37</b><br><br><b>Choose all that apply</b> | Invasive exotic plants  | 0, 1, 2    |
|   | Timber management not resulting in natural comp/structure/fuels                                     | 0, 1, 2    |
|   | Grazing management not resulting in natural comp/structure/fuels                                    | 0, 1, 2    |
|   | Fuel accumulation, successional development, lack fire effects                                      | 0, 1, 2    |
|   | Fire effects more severe than natural/historical regime   | 0, 1, 2    |
|   | Soil disturbance more severe than natural/historical regime   | 0, 1, 2    |
|   | Insect-disease more severe or invasive  | 0, 1, 2    |
|   | Cultural improvements, restoration, or road densities not resulting in natural comp/structure/fuels | 0, 1, 2    |
|   | Pattern of mosaic and patch size and shape  | 0, 1, 2    |
|   | Other – Describe -  | 0, 1, 2    |
| Sum   |   |            |
| <b>Fire Severity Departure</b><br><b>Field 40</b>   | Fire less or more severe than natural:<br>0 – similar to the natural/historical regime;             | 0, 1, 2, 3 |
|   | 1 – somewhat more or less severe than natural/historical regime;                                    |            |
|   | 2 – moderately more or less severe than natural/historical regime)                                  |            |
|   | 3 – substantially more or less severe than natural/historical regime)                               |            |
|   |   |            |
| <b>Fire Frequency Departure</b><br><b>Field 43</b>  | Fire less or more frequent than natural   | 0, 1, 2, 3 |
|   | 0 – has not missed an interval and is not more frequent;  |            |
|   | 1 - missed one interval or twice as frequent;   |            |
|   | 2 – missed two to three intervals or more than twice as frequent);                                  |            |
|   | 3 – missed more than three intervals  |            |



**Graph 4-2.** Nomogram style chart for classifying the landscape fire regime condition class (FRCC) and determining FRCC departure. Use the chart by connecting the left and right variables with a single line using the “sum”s from table 4-2. Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the landscape FRCC. Determine if the intersection of the nomogram lines is closer to the Y axis (right side), center axis (diagonal from lower right to upper left), or X axis (bottom side). Each axis is marked on the graph with the class breaks (0, 33, 66, and 100). Based on the point where your nomograms lines intersect estimate the value between the class breaks rounded off to the nearest 5 or 10 percent.

**Table 4-3.** Reference Condition Characteristics for 34 Forested PNVGs, Western U.S.

| PNVG_Name  | Code  | A:                   | B:             | C:             | D:              | E:                | Fire Freq (MFI) | Fire Regime <sup>1</sup> | Repl. Fire % |
|--|-------|----------------------|----------------|----------------|-----------------|-------------------|-----------------|--------------------------|--------------|
|  |       | Early Seral Closed % | MidSer. Open % | MidSer. Open % | LateSer. Open % | LateSer. Closed % |                 |                          |              |
| California Mixed Conifer                             | MCON  | 5                    | 15             | 35             | 40              | 5                 | 15              | I                        | 5            |
| California Mixed Evergreen                           | CAME  | 10                   | 30             | 15             | 20              | 25                | 17              | I                        | 17           |
| Cedar-Hemlock_Douglas-fir                            | CHDF  | 10                   | 35             | 5              | 5               | 45                | 233             | V                        | 77           |
| Cedar-Hemlock-Pine (Washington)                      | CHPI  | 15                   | 49             | 1              | 5               | 30                | 125             | IV                       | 75           |
| Decid. Woodland Oak-Asp. with Conifer                | DWOA  | 15                   | 15             | 40             | 25              | 5                 | 10              | I                        | 15           |
| Douglas-fir Interior Pacific Northwest               | DFIR1 | 10                   | 10             | 20             | 45              | 15                | 15              | I                        | 5            |
| Douglas-fir Interior Rocky Mountains                 | DFIR2 | 15                   | 25             | 20             | 25              | 15                | 30              | III                      | 10           |
| Fir-Hemlock (Wash., Oreg), Forest                    | FHWO1 | 15                   | 25             | 5              | 10              | 45                | 769             | V                        | 85           |
| Fir-Hemlock (Wash., Oreg), Parkland                  | FHWO2 | 44                   | 25             | 1              | 1               | 29                | 769             | V                        | 92           |
| Grand Fir-Douglas fir                                | GFDF  | 15                   | 45             | 10             | 5               | 25                | 59              | III                      | 30           |
| Great Basin Pine (Nevada, Utah)                      | GBPI  | 25                   | 0              | 12             | 54              | 9                 | 400             | III, V                   | 12           |
| Lodgepole Pine-Subalpine Calif.                      | LPSC  | 20                   | 10             | 30             | 30              | 10                | 77              | III                      | 25           |
| Mosaic Cedar-Hemlock – DFir/Oak (Oreg)               | CHDO  | 10                   | 30             | 5              | 15              | 40                | 200             | V, III                   | 60           |
| Pine- Douglas fir-Central Rockies                    | PPDF3 | 15                   | 10             | 20             | 45              | 10                | 33              | I                        | 15           |
| Pine- Douglas fir-Colorado Plateau                   | PPDF5 | 15                   | 10             | 20             | 50              | 5                 | 12              | I                        | 10           |
| Pine- Douglas fir-Southwest                          | PPDF7 | 15                   | 5              | 15             | 60              | 5                 | 10              | I                        | 5            |
| Ponderosa Pine Black Hills                           | PPIN9 | 10                   | 15             | 25             | 40              | 10                | 23              | I                        | 12           |
| Ponderosa Pine Colorado Plateau                      | PPIN5 | 5                    | 5              | 15             | 65              | 10                | 6               | I                        | 5            |
| Ponderosa Pine Northern & C.Rockies                  | PPIN2 | 10                   | 10             | 20             | 55              | 5                 | 17              | I                        | 7            |
| Ponderosa Pine PNW/Great Basin                       | PPIN1 | 10                   | 5              | 20             | 55              | 10                | 15              | I                        | 10           |
| Ponderosa Pine Southern Rockies                      | PPIN6 | 15                   | 5              | 25             | 50              | 5                 | 17              | I                        | 10           |
| Ponderosa Pine Southwest                             | PPIN7 | 15                   | 4              | 20             | 60              | 1                 | 4               | I                        | 5            |
| Ponderosa Pine-Douglas-fir (Inland NW)               | PPDF1 | 15                   | 10             | 25             | 40              | 10                | 22              | I                        | 24           |
| Ponderosa Pine-Douglas-fir S.Rockies                 | PPDF6 | 15                   | 10             | 30             | 35              | 10                | 38              | III                      | 10           |
| Red Fir-California                                   | RFCA  | 10                   | 10             | 5              | 40              | 35                | 44              | III                      | 10           |
| Redwood-California                                   | RWCA  | 10                   | 20             | 5              | 5               | 60                | 32              | I                        | 16           |
| Silver Fir_Douglas-fir                               | SFDF  | 5                    | 20             | 5              | 5               | 65                | 625             | V                        | 88           |
| Southwestern Mixed Conifer                           | MCAN  | 10                   | 5              | 20             | 60              | 5                 | 10              | I                        | 5            |
| Spruce-Cedar-Hemlock (Wash., Oreg.)                  | SCWO  | 5                    | 30             | 10             | 10              | 45                | 833             | V                        | 100          |
| Spruce-fir Douglas-fir                               | SPDF  | 5                    | 25             | 28             | 22              | 20                | 19              | III                      | 6            |
| Interior West Lower Subalpine Forest #1 <sup>2</sup> | SPFI1 | 20                   | 35             | 15             | 10              | 20                | 111             | IV                       | 67           |
| Interior West Lower Subalpine Forest #2              | SPFI5 | 20                   | 40             | 10             | 5               | 25                | 167             | V                        | 83           |
| Interior West Lower Subalpine Forest #3              | SPFI7 | 25                   | 35             | 20             | 10              | 10                | 91              | III, IV                  | 46           |
| Interior West Upper Subalpine Forest                 | SPFI2 | 20                   | 25             | 25             | 15              | 15                | 143             | III-V                    | 57           |

<sup>1</sup> I (0-35 yr/Low Severity); II (0-35 yr/Std. Replacmt); III (35-100+/Mixed Severity); IV (35-100+/Std. Replacemt); V (200+ yr/Std. Replacemt).

<sup>2</sup> Interior West Lower Subalpine Forest #1 = Moderately frequent fire (e.g., Northern Rockies & west side of Central/Southern Rockies).

Interior West Lower Subalpine Forest #2 = Relatively infrequent fire (e.g., Pacific Northwest & east side of Central/Southern Rockies).

Interior West Lower Subalpine Forest #3 = Relatively frequent fire (e.g., Southwestern U.S.)

**Table 4-4.** Reference Condition Characteristics for 52 Non-forested PNVGs, Western U.S.

| PNVG_Name                             | Code  | A:            | B:               | C:             | D:              | E:                | Fire Freq (MFI) | Repl. Fire % | Dominant Fire Regime <sup>3</sup> |
|---------------------------------------|-------|---------------|------------------|----------------|-----------------|-------------------|-----------------|--------------|-----------------------------------|
|                                       |       | Early Seral % | MidSer. Closed % | MidSer. Open % | LateSer. Open % | LateSer. Closed % |                 |              |                                   |
| Alder-Ash (Oregon, Washington)        | AAOW  | 22            | 52               | 3              | 2               | 21                | 63              | 80           | IV                                |
| Alpine Meadows-Barren                 | AMDW  | 2             | 20               | 78             | 0               | 0                 | 120             | 80           | IV                                |
| Blue Oak Woodlands                    | OKCA1 | 5             | 10               | 20             | 55              | 10                | 10              | 5            | I                                 |
| Calif. Annual Grassland               | AGRA1 | 40            | 60               | 0              | 0               | 0                 | 5               | 100          | II                                |
| Calif. Annual Grassland With Shrubs   | AGRA2 | 35            | 50               | 0              | 10              | 5                 | 5               | 95           | II                                |
| Calif Steppe Grassland                | CAST1 | 30            | 40               | 30             | 0               | 0                 | 5               | 100          | II                                |
| Calif. Steppe Grassland with Shrubs   | CAST2 | 30            | 25               | 30             | 10              | 5                 | 5               | 95           | II                                |
| Chaparral, Interior                   | CHAP5 | 20            | 45               | 5              | 5               | 25                | 45              | 90           | IV                                |
| Chaparral, Mesic (Coastal California) | CHAP2 | 20            | 50               | 15             | 5               | 10                | 8               | 20           | III                               |
| Chaparral, Montane                    | CHAP4 | 25            | 35               | 9              | 1               | 30                | 31              | 85           | II                                |
| Chaparral, Xeric (Coastal California) | CHAP1 | 20            | 45               | 25             | 5               | 5                 | 8               | 77           | II                                |
| Desert Grassland                      | DGRA1 | 15            | 20               | 65             | 0               | 0                 | 10              | 93           | II                                |
| Desert Grassland With Shrubs          | DGRA3 | 3             | 20               | 65             | 8               | 4                 | 10              | 93           | II                                |
| Desert Grassland With Trees           | DGRA2 | 5             | 25               | 67             | 2               | 1                 | 8               | 99           | II                                |
| Desert Shrubland, No Grasses          | DSHB4 | 5             | 15               | 80             | 0               | 0                 | 77              | 55           | III, IV                           |
| Desert Shrubland With Grasses         | DSHB2 | 10            | 15               | 75             | 0               | 0                 | 43              | 60           | III, IV                           |
| Desert Shrubland With Trees           | DSHB3 | 7             | 25               | 65             | 2               | 1                 | 40              | 60           | III, IV                           |
| Desert Shrub-Salt Desert Shrub        | DSHB1 | 5             | 40               | 55             | 0               | 0                 | 40              | 60           | III, IV                           |
| Juniper Steppe-Ancient                | JUST2 | 4             | 4                | 10             | 80              | 2                 | 286             | 43           | III, V                            |
| Juniper Steppe-Infrequent Fire        | JUST1 | 5             | 5                | 20             | 55              | 15                | 118             | 35           | III, IV                           |
| Juniper-Pinyon Frequent Fire          | JUPI1 | 20            | 10               | 20             | 40              | 10                | 31              | 41           | III, IV                           |
| Juniper-Pinyon Infrequent Fire        | JUPI2 | 10            | 15               | 5              | 10              | 60                | 400             | 92           | V                                 |
| Mesquite Bosques (New Mexico)         | MBNM  | 10            | 35               | 20             | 15              | 20                | 46              | 32           | III                               |
| Mtn. Grassland                        | MGRA1 | 15            | 15               | 45             | 20              | 5                 | 16              | 80           | II                                |
| Mtn. Grassland With Shrubs            | MGRA3 | 5             | 90               | 5              | 0               | 0                 | 20              | 99           | II                                |
| Mtn. Grassland With Trees             | MGRA2 | 15            | 10               | 60             | 10              | 5                 | 15              | 60           | II, I                             |
| Mtn. Shrubland                        | MSHB2 | 25            | 25               | 10             | 10              | 30                | 42              | 100          | IV                                |
| Mtn. Shrubland With Trees             | MSHB1 | 40            | 20               | 10             | 5               | 25                | 19              | 90           | II                                |
| Northern California Garry Oak         | OKCA2 | 5             | 10               | 20             | 55              | 10                | 10              | 5            | I                                 |
| Northern Plains Grassland             | PGRA1 | 15            | 25               | 15             | 30              | 15                | 11              | 80           | II                                |
| N. Plains Grassland With Shrubs       | PGRA3 | 13            | 35               | 50             | 2               | 0                 | 9               | 80           | II                                |
| N. Plains Grassland With Trees        | PGRA2 | 8             | 35               | 15             | 40              | 2                 | 10              | 55           | III, II                           |
| Plains Oaks/Shinnery                  | POAK  | 55            | 30               | 5              | 5               | 5                 | 13              | 75           | II                                |
| Prairie Grassland                     | PRAR1 | 1             | 44               | 55             | 0               | 0                 | 8               | 90           | II                                |
| Prairie Grassland With Shrubs         | PRAR3 | 2             | 50               | 45             | 3               | 0                 | 8               | 85           | II                                |
| Prairie Grassland With Trees          | PRAR2 | 2             | 53               | 40             | 4               | 1                 | 8               | 80           | II                                |
| Riparian (willow -sedge) <sup>4</sup> | RIPA  | Var.          | Var.             | Var.           | Var.            | Var.              | Var.            | Var.         | Var.                              |

<sup>3</sup> I (0-35 yr/Low Severity); II (0-35 yr/Std. Replacmt); III (35-100+/Mixed Severity); IV (35-100+/Std. Replacmt); V (200+ yr/Std. Replacmt).

<sup>4</sup> NOTE: Riparian PNVG currently too variable for development of a default model.

| PNVG_Name                               | Code  | A:            | B:               | C:             | D:              | E:                | Fire Freq (MFI) | Repl. Fire % | Dominant Fire Regime <sup>3</sup> |
|---|-------|---------------|------------------|----------------|-----------------|-------------------|-----------------|--------------|-----------------------------------|
|   |       | Early Seral % | MidSer. Closed % | MidSer. Open % | LateSer. Open % | LateSer. Closed % |                 |              |                                   |
| Sagebrush-Basin Big                     | BSAG1 | 25            | 20               | 25             | 15              | 15                | 24              | 61           | II                                |
| Sagebrush-Basin Big, With Trees         | BSAG2 | 25            | 20               | 35             | 15              | 5                 | 24              | 51           | II, III                           |
| Sagebrush-Warm (Wyoming big sagebrush)  | WSAG1 | 15            | 5                | 15             | 50              | 15                | 54              | 54           | III, II                           |
| Sagebrush-Warm, With Trees              | WSAG2 | 15            | 5                | 10             | 50              | 20                | 60              | 46           | III, IV                           |
| Sagebrush-Cool (Mountain Big Sagebrush) | CSAG1 | 20            | 25               | 40             | 10              | 5                 | 17              | 40           | III, II                           |
| Sagebrush-Cool, With Trees              | CSAG2 | 20            | 20               | 35             | 15              | 10                | 20              | 40           | III, IV                           |
| Sagebrush-Other (Silver, Wyoming)       | SAGE1 | 25            | 20               | 30             | 10              | 15                | 25              | 75           | II                                |
| Sagebrush-Other, With Trees             | SAGE2 | 15            | 5                | 35             | 40              | 5                 | 25              | 45           | III, II                           |
| Southern Plains Grassland               | PGRA4 | 5             | 20               | 75             | 0               | 0                 | 10              | 90           | II                                |
| S. Plains Grassland With Shrubs         | PGRA6 | 5             | 20               | 70             | 5               | 0                 | 10              | 86           | II                                |
| S. Plains Grassland With Trees          | PGRA5 | 5             | 20               | 70             | 4               | 1                 | 10              | 83           | II                                |
| Southwest Shrub Steppe                  | SWSS1 | 5             | 10               | 85             | 0               | 0                 | 10              | 90           | II                                |
| Southwest Shrub Steppe With Trees       | SWSS2 | 4             | 15               | 75             | 5               | 1                 | 8               | 85           | II                                |
| Texas Savanna                           | TSAV  | 45            | 20               | 20             | 5               | 10                | 10              | 50           | II, III                           |
| Wet Grassland                           | WGRA  | 15            | 80               | 5              | 0               | 0                 | 5               | 75           | II                                |

**APPENDIX 4-A**

**LANDSCAPE SCORECARD METHOD**  
**FORMS AND CODE SHEETS**

# Fire Regime Condition Class Landscape Scorecard Worksheet



## Landscape Project:

Reg Code(1): \_\_\_\_\_ Proj Code(2): \_\_\_\_\_ Proj Num(3): \_\_\_\_\_ Charact Dt(4): \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 ExaminerName(5): \_\_\_\_\_ ProjectName(6): \_\_\_\_\_ Area(7): \_\_\_\_\_ acres/hectares(8)  
 Latitude(9): \_\_\_\_\_ Longitude(10): \_\_\_\_\_ Datum(11): WGS84/NAD83/NAD27  
 Photo(12): \_\_\_\_\_ Photo Date(13): \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 Comments(14): \_\_\_\_\_

| Strata   |  | Strata Num (Field 15) | 1 | 2 | 3 | 4 | 5 | Project |
|--|--|-----------------------|---|---|---|---|---|---------|
| Field 16   | Strata Code  |                       |   |   |   |   |   |         |
| Field 17   | Strata Name  |                       |   |   |   |   |   |         |
| Field 18   | Strata Characterization Date                                   |                       |   |   |   |   |   |         |
| Field 19   | Strata Bp Land Unit (PNVG)                                     |                       |   |   |   |   |   |         |
| Field 20   | Strata Composition (%)   |                       |   |   |   |   |   |         |
| <b>Strata Natural Fire Regime (From Table 1)</b>         |  |                       |   |   |   |   |   |         |
| Field 21   | <b>Fire Interval Group</b> (from table 1)                      |                       |   |   |   |   |   |         |
| Field 22   | Multiply above by Comp %/100 [field 21 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 23   | Landscape Fire Interval Group (sum field 22 column 1 - 5)      |                       |   |   |   |   |   |         |
| Field 24   | <b>Frequent Fire Evidence</b> (from table 1 - sum)             |                       |   |   |   |   |   |         |
| Field 25   | Multiply above by Comp %/100 [field 24 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 26   | Landscape Frequent Fire Evidence (sum field 25 column 1 - 5)   |                       |   |   |   |   |   |         |
| Field 27   | <b>Fire Severity Evidence</b> (from table 1 - sum)             |                       |   |   |   |   |   |         |
| Field 28   | Multiply above by Comp %/100 [field 27 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 29   | Landscape Fire Severity Evidence (sum field 28 column 1 - 5)   |                       |   |   |   |   |   |         |
| Field 30   | <b>Fire Severity Class</b> (from table 1)                      |                       |   |   |   |   |   |         |
| Field 31   | Multiply above by Comp %/100 [field 30 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 32   | Landscape Fire Severity Class (sum field 31 column 1 - 5)      |                       |   |   |   |   |   |         |
| Field 33   | <b>Landscape Natural Fire Regime</b> (from Graph 1)            |                       |   |   |   |   |   |         |
| <b>Strata Fire Regime Condition Class (From Table 2)</b> |  |                       |   |   |   |   |   |         |
| Field 34   | <b>Char. Veg-Fuel Departure</b> (from table 2 - sum)           |                       |   |   |   |   |   |         |
| Field 35   | Multiply above by Comp %/100 [field 34 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 36   | Landscape Char. Veg-Fuel Departure (sumfield 35 column 1 - 5)  |                       |   |   |   |   |   |         |
| Field 37   | <b>Uncharacteristic Veg-Fuel</b> (from table 2 - sum)          |                       |   |   |   |   |   |         |
| Field 38   | Multiply above by Comp %/100 [field 37 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 39   | Landscape Uncharacteristic Veg-Fuel (sumfield 38 column 1 - 5) |                       |   |   |   |   |   |         |
| Field 40   | <b>Fire Severity Departure</b> (from table 2 - sum)            |                       |   |   |   |   |   |         |
| Field 41   | Multiply above by Comp %/100 [field 40 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 42   | Landscape Fire Severity Departure (sum field 41 column 1 - 5)  |                       |   |   |   |   |   |         |
| Field 43   | <b>Fire Frequency Departure</b> (from table 2 - sum)           |                       |   |   |   |   |   |         |
| Field 44   | Multiply above by Comp %/100 [field 43 * field 20/100]         |                       |   |   |   |   |   |         |
| Field 45   | Landscape Fire Frequency Departure (sumfield 44 column 1 - 5)  |                       |   |   |   |   |   |         |
| Field 46   | <b>Landscape FRCC</b> (from graph 2)                           |                       |   |   |   |   |   |         |
| Field 47   | <b>Landscape FRCC Departure</b> (from graph 2)                 |                       |   |   |   |   |   |         |

# Fire Regime Condition Class



## Landscape Scorecard Graph Input Table Summaries

All definitions and terms are the same as described for the Standard Landscape Method.

Use these tables for input into the Landscape Scorecard Worksheet (fields 21-43).

The small tables below Tables 1 and 2 can be used to fill in the sums for each strata. Once each strata is complete, these numbers can be transferred to the worksheet.

**Natural Fire Regime - Table 1 (table 4-1 in guidebook)**

|   |  | Rating      |
|---|--|-------------|
| <b>Fire Interval Group</b><br>Field 21    | 0 – 35 years = Frequent<br>35+ – 200 years = Infrequent<br>200+ years = Rare | 0<br>1<br>2 |
|   | 0=n/a or NoEvidence, 1=Some, 2=Substantial                                   |             |
| <b>Frequent Fire Evidence</b><br>Field 24 | Forest - fire scars  | 0, 1, 2     |
|   | Forest - No deep litter/duff, lack of large logs                             | 0, 1, 2     |
|   | Forest - relatively large/old upper layer trees                              | 0, 1, 2     |
|   | Forest - fire tolerant   | 0, 1, 2     |
|   | Shrub/grassland – adjacent to forest w/ frequent fire evidence               | 0, 1, 2     |
|   | Shrub/grassland – Fire tolerant shrubs                                       | 0, 1, 2     |
|   | Shrub/grassland - Fire tolerant graminoids                                   | 0, 1, 2     |
|   | Native American burning  | 0, 1, 2     |
|   | Burning days/yr 0=<30, 1=30-60, 2=>60  | 0, 1, 2     |
|   | Other – describe -   | 0, 1, 2     |
|   | Sum  |             |
|   | 0=n/a or NoEvidence, 1=Some, 2=Substantial                                   |             |
| <b>Fire Severity Evidence</b><br>Field 27 | Continuous fuels   | 0, 1, 2     |
|   | Steep and concave slopes   | 0, 1, 2     |
|   | Forest – uniform size, lack of large trees                                   | 0, 1, 2     |
|   | Forest – small snags & down logs   | 0, 1, 2     |
|   | Shrub/grassland – uniform upper layer size                                   | 0, 1, 2     |
|   | Shrub/grassland – continuous herb. fuels                                     | 0, 1, 2     |
|   | Other – describe -   | 0, 1, 2     |
|   | Sum  |             |
|   |  |             |
| <b>Fire Severity Class</b><br>Field 30    | <25% replacement of upper layer - Surface                                    | 0           |
|   | 25% - 75% replacement of upper layer - Mixed                                 | 1           |
|   | >75% - fire burns most of the upper layer - Replacement                      | 2           |

Rating Totals From Table 1 For Worksheet Strata

| Field name                   | Strata 1 | Strata 2 | Strata 3 | Strata 4 | Strata 5 |
|------------------------------|----------|----------|----------|----------|----------|
| Fire Interval Group          |          |          |          |          |          |
| Freq Fire Evidence (sum)     |          |          |          |          |          |
| Fire Severity Evidence (sum) |          |          |          |          |          |
| Fire Severity Class          |          |          |          |          |          |

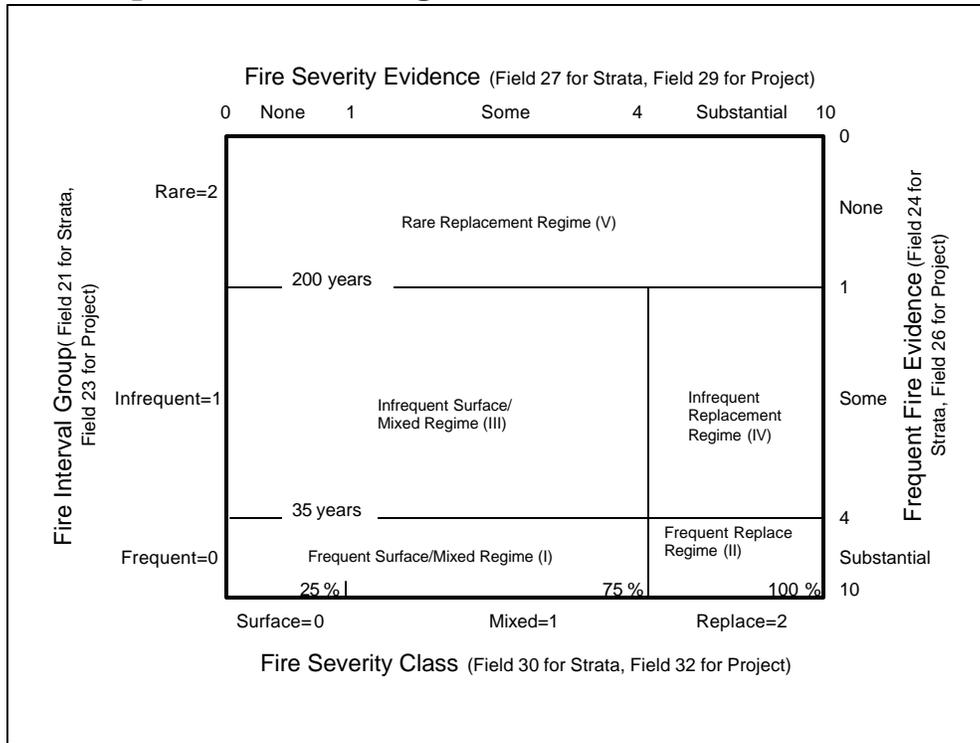
**Fire Regime Condition Class - Table 2 (table 4-2 in guide book)**

|  | 0=Similar(within 25%) 1=high or low   | Rating     |
|--|---|------------|
| <b>Charact. Veg-Fuel Class Departure</b><br>Field 34 | Early Seral (A)   | 0, 1       |
|  | Mid Seral Closed (B)  | 0, 1       |
|  | Mid Seral Open (C)  | 0, 1       |
|  | Late Seral Open (D)   | 0, 1       |
|  | Late Seral Closed (E)   | 0, 1       |
|  | Sum   |            |
|  | 0=none, 1=some (0-25%), 2=moderate (>25%)   |            |
| <b>Uncharact. Veg-Fuel Class Comp.</b><br>Field 37   | Invasive exotic plants  | 0, 1, 2    |
|  | Timber management not resulting in natural comp/structure/fuels                                     | 0, 1, 2    |
|  | Grazing management not resulting in natural comp/structure/fuels                                    | 0, 1, 2    |
|  | Choose all that apply   |            |
|  | Fuel accumulation, successional development, lack fire effects                                      | 0, 1, 2    |
|  | Fire effects more severe than natural/historical regime   | 0, 1, 2    |
|  | Soil disturbance more severe than natural/historical regime   | 0, 1, 2    |
|  | Insect-disease more severe or invasive  | 0, 1, 2    |
|  | Cultural improvements, restoration, or road densities not resulting in natural comp/structure/fuels | 0, 1, 2    |
|  | Pattern of mosaic and patch size and shape  | 0, 1, 2    |
| Other – Describe -                                   | 0, 1, 2   |            |
|  | Sum   |            |
|  |   |            |
| <b>Fire Severity Departure</b><br>Field 40           | Fire less or more severe than natural:  | 0, 1, 2, 3 |
|  | 0 – similar to the natural/historical regime;   |            |
|  | 1 – somewhat more or less severe than natural/historical regime;                                    |            |
|  | 2 – moderately more or less severe than natural/historical regime)                                  |            |
|  | 3 – substantially more or less severe than natural/historical regime)                               |            |
|  |   |            |
| <b>Fire Frequency Departure</b><br>Field 43          | Fire less or more frequent than natural   | 0, 1, 2, 3 |
|  | 0 – has not missed an interval and is not more frequent;  |            |
|  | 1 - missed one interval or twice as frequent;   |            |
|  | 2 – missed two to three intervals or more than twice as frequent);                                  |            |
|  | 3 – missed more than three intervals  |            |

Rating Totals From Table 2 For Worksheet Strata

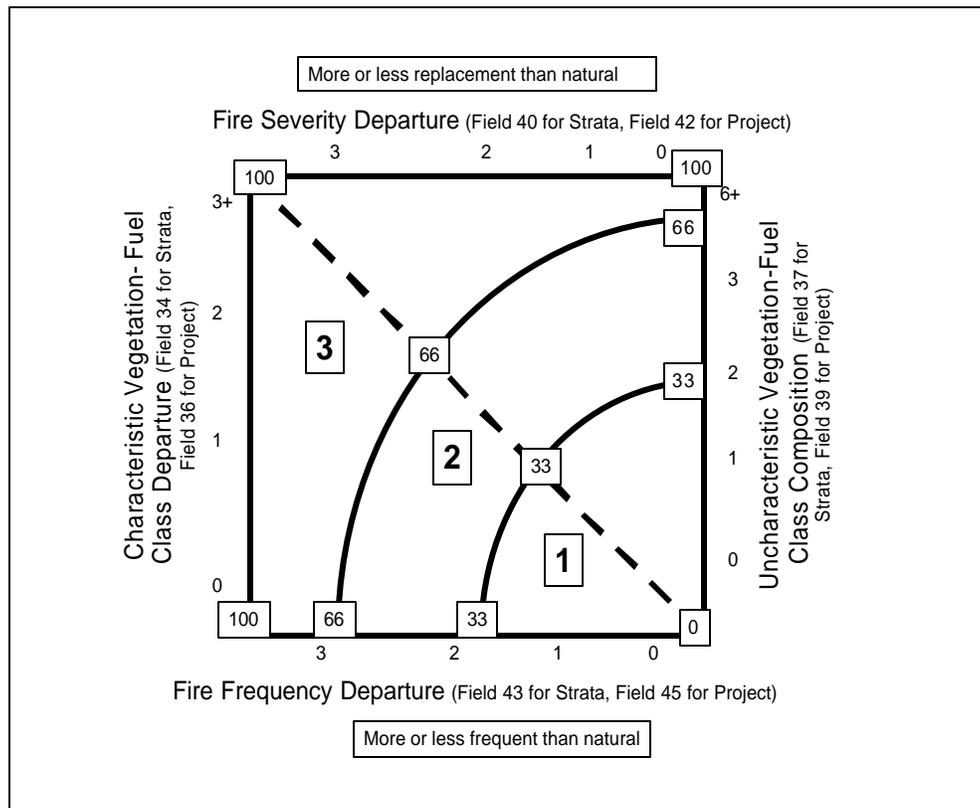
| Field name                              | Strata 1 | Strata 2 | Strata 3 | Strata 4 | Strata 5 |
|---|----------|----------|----------|----------|----------|
| Charact. Veg-Fuel Class Departure (sum) |          |          |          |          |          |
| Uncharact. Veg-Fuel Class Comp (sum)    |          |          |          |          |          |
| Fire Severity Departure                 |          |          |          |          |          |
| Fire Freq Departure                     |          |          |          |          |          |

## Landscape Natural Fire Regime - Graph 1 (Graph 4-1 in guidebook)



Nomogram style chart for classifying the fire regime group. Use the chart by connecting the left and right variables with a single line using the class and “sum” from table 1 (for project Fire Regime) or the individual strata values (for strata Fire Regimes - determining strata Fire Regimes is optional). Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the fire regime group. Enter value in field 33.

## Landscape Fire Regime Condition Class - Graph 2 (Graph 4-2 in guidebook)



Nomogram style chart for classifying the landscape fire regime condition class (FRCC) and determining FRCC departure. Use the chart by connecting the left and right variables with a single line using the “sum”s from table 2 (for project FRCC) or the individual strata values (for strata FRCC - determining strata FRCC is optional). Enter value in field 46. Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the landscape FRCC. Determine if the intersection of the nomogram lines is closer to the Y axis (right side), center axis (diagonal from lower right to upper left), or X axis (bottom side). Each axis is marked on the graph with the class breaks (0, 33, 66, and 100). Based on the point where your nomograms lines intersect estimate the value between the class breaks rounded off to the nearest 5 or 10 percent. Enter the value in field 47.

Please email your comments and suggestions to [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov)

## CHAPTER 5 – STAND SCORECARD METHOD

This scorecard (qualitative) method provides a quick approach for field determination of the fire regime condition class (FRCC) at size scales of patch, stand or small project areas that do not meet the definition of a landscape. You must complete the standard (chapter 3) or landscape scorecard (chapter 4) determination of landscape fire regime and FRCC prior to using this method. Two of the inputs for the stand FRCC come from the landscape FRCC determination and provide the context for the stand. These are the landscape abundance of the vegetation-fuel class that the stand is in and the landscape FRCC. The other two inputs for the stand FRCC come from assessment of within stand conditions and include a rating of the restoration difficulty based on the combination of characteristic and uncharacteristic conditions that occur, and an estimate of the amount of uncharacteristic conditions that occur within the stand.

The field methods described here are the recommended procedures for conducting the scorecard method for determination of stand FRCC. The stand fire regime is the same as that for the landscape fire regime.

### *Field Numbers*

Fields are generally numbered sequentially. However, often there are field numbers that are not used. These are numbers that are retained for use by the computer or for storage of data from a former version.

### **Stand Scorecard Procedure Summary Fields (Fields 1 - 5)**

The first four fields (Registration Code ID, Project Code, Project Number, Project Characterization Date) allow the unique cross-reference to the landscape FRCC project area, which provide the context and 2 of the inputs for the stand FRCC.

These data provide the information for characterization of the stand FRCC. The stand fire regime is the same as that for the landscape fire regime

**Registration Code ID (Field 1-REGCOD) – Required**— For federal agency and TNC personnel using the web version or downloading the stand alone version the Registration Code is a 4-character code assigned from the FRCC help desk based on your agency affiliation. Standard codes are assigned to all federal agency and TNC units that cannot be used by other units (check the website at <http://frcc.gov/> for an updated list, contact the help desk at [helpdesk@frcc.gov](mailto:helpdesk@frcc.gov) if your land management unit is not listed). For users that do not have web access and for non-

federal agency users contact your federal, state, TNC or private agency coordinator (a list is provided on the training CD). We encourage non-federal agency users to use one Registration Code per “group”, and then use a Project Code for separate monitoring projects.

**Project Code (Field 2-PROCOD) – Required** – The Project Code is an 8-character code used to identify project work that is done within the unit. You are not required to use all eight characters.

Some examples of Project Codes are:

TCRESTOR = Tenderfoot Creek Restoration

BurntFk = Burnt Fork Project

SCPF1 = Swan Creek Prescribed Fire, Unit 1

BoxCkDem = Box Creek Demonstration Project

You may want to use the same code you would use in the National Fire Plan Operations Reporting System (NFPORS) or, if you are a non-federal employee, link it to whatever reporting system you may use.

It will be easier to read sorted results if you do not include digits in the left most position of the project code. For instance, if two of your projects are 22Lolo and 9Lolo, when sorted 22Lolo will come before 9Lolo. The preferred option would be to name the projects Lolo09 and Lolo22, although Lolo9 and Lolo22 will sort in the proper order, also.

**Project Number (Field 3 – PLOJID) – Required** – Identifier that corresponds to the fire, vegetation, and fuel management landscape or project area. Integer value.

**Landscape Characterization Date (Field 4)** - The landscape characterization date is the date you assigned to the landscape or project summary as a whole that makes this data unique from previous or subsequent characterization. The date of characterization should be entered in Field 4 of the FRCC sampling form as an 8-digit number in the MM/DD/YYYY format where MM is the month number, DD is the day of the month, and YYYY is the current year. So, April 10, 2001 would be entered 04/10/2001. You would get this data from Field 4 of the landscape method you used.

**Landscape Methodology (Field 5-METHD) – Required** – Landscape Methodology used to calculate the Project FRCC. Enter or circle either “Standard” or “Scorecard” for the landscape method used.

## **Stand Procedure Stand Fields (Fields 6- 28)**

**Stand Number (Field 6 – STDNUM) – Required** – Stand number is provided on the worksheet and in the software. If you have more than 5 stands and are not using the software you will need to cross out the numbers on the worksheet and change them to 6-10 and so on (i.e. the worksheet only had room for 5 stands and they are labeled 1-5, the software will automatically label them incrementally for you).

**Examiner Name (Field 7-NAME) – Required** – The Examiner code is the email address of the crew boss or lead examiner. The examiner's email address corresponds to the Examiner's UserID in the central FRCC database at <http://frcc.gov/>. There is only one examiner per worksheet allowed. If another examiner is assessing stands in the same project, another worksheet needs to be initiated. Be sure not to duplicate stand #'s when multiple examiners are assessing the same project (i.e. there can only be one stand 1 per project).

If the project is exported to the central database, the website will verify that the examiner is a certified FRCC user or trainer. If the examiner is not certified, the FRCC website will not allow the project to be viewed by other users or exported to the NFPORS or LANDFIRE databases.

For users that do not have an email address, but have downloaded software, enter a UserID assigned to you by the help desk at the time you receive your registration ID.

For users that do not have an email address, do not have software, and have not been assigned a UserID by the help desk, but are using the field forms and worksheets to hand calculate FRCC, enter your first and last name.

If multiple users are filling out stand worksheets for a project, each user must have their own worksheet as only one user name can be entered.

**Stand Area (Field 8-AREA) – Required** – The area of the project is an integer value. The project area is the size of the overall landscape or project area where you will be applying the field procedures for FRCC.

**Stand Area Units (Field 9-UNITS) – Required** - Choose either acres or hectares for the size of the stand.

**Stand Characterization Date (Field 10-SDATE) – Required** – The characterization date is the date you want assigned to the stand that makes this data unique from previous or subsequent characterization. The date of characterization should be entered in Field 10 of the FRCC stand scorecard worksheet as an 8-digit number in the MM/DD/YYYY format where MM is the month number, DD is the day of the month, and YYYY is the current year. So, April 10, 2001 would be entered 04/10/2001.

If the same stand is being re-measured after treatment of one or more units or to update condition class following a period of succession or unplanned disturbances, be sure to keep the same project code and project number. The only item to change will be the stand characterization date.

**Strata Bp Land Unit Code (Field 11-BpLU) – Required** - Enter the PNVG code. You get this from either the Standard Landscape (field 25) or the Landscape Scorecard (field 19) Method.

**Strata Number (Field 12- STRATANUM) – Required** – Enter the number of the Strata. This is the project strata that contains the stand. If you used the Standard Landscape Method you would get this number from field 21. If you used the Landscape Scorecard Method you would get this number from field 15.

**Crosswalk Code 1 (Field 14-CODE1) – Not Required** – Code that is used to crosswalk the strata to a reporting system, such as NFPORS.

**Crosswalk Code 2 (Field 15-CODE2) – Not Required** – Code that is used to crosswalk the strata to a mapping system, such as for Forest Service FSVEG.

**Stand Name (Field 16-NAME) – Not Required** – Name associated with the stand.

**Latitude (Field 17-LATC) – Not Required** – Enter the latitude for a central point in the stand in decimal degrees to the sixth decimal place (e.g., 45.951234).

**Longitude (Field 18-LONGC) – Not Required** – Enter the longitude for a central point in the stand in decimal degrees to the sixth decimal place (e.g., 95.951234).

**Datum (Field 19) – Not Required** – Enter the Datum for the coordinates. Datum is a model used to represent map coordinates on the earth's surface. If unsure of what datum to use, we recommend WGS84 which is commonly used in fire management.

**Current Photo (Field 20-STDPHOTO) – Not Required** – Use the browser to enter the file name path. The digital photo file will be uploaded with the database when you upload to the central location.

**Current Photo Date (Field 21-STDHOTODT) – Not Required** – Enter the date the Current Photo was taken.

**Landscape Vegetation-Fuel Class of Stand (Field 22) – Required** – Enter the code for the landscape vegetation-fuel class in which the stand resides. This will be one of the vegetation-fuel classes identified for the current condition from your landscape fire regime and FRCC determination.

If you are entering your stand data into computer software and you used the Standard Landscape Method you must enter a current vegetation-fuel class for which you determined an amount and entered into that database.

If you are entering your stand data into computer software and you used the Landscape Scorecard Method then review your landscape scorecard field forms, photos, table 5-2 characteristic and uncharacteristic ratings, return to the landscape view point if necessary, use air photos if needed, and determine the landscape vegetation-fuel class in which the stand is within. Make sure that this is one of the vegetation-fuel classes assessed from your standard or scorecard landscape FRCC assessment.

#### Codes

| Code | Composition-<br>Structure | Class Name                |
|------|---------------------------|---------------------------|
| AESP | Characteristic            | Early Seral               |
| BMSC | Characteristic            | Mid Seral Closed          |
| CMSO | Characteristic            | Mid Seral Open            |
| DLSO | Characteristic            | Late Seral Open           |
| ELSC | Characteristic            | Late Seral Closed         |
| UINP | Uncharacteristic          | Invasive Plants           |
| UTHV | Uncharacteristic          | Timber Harvest            |
| UGRZ | Uncharacteristic          | Grazing                   |
| UFUS | Uncharacteristic          | Fuel/Sucn/LackFireEffects |
| UFEF | Uncharacteristic          | Post-Fire Effects         |
| USHD | Uncharacteristic          | Soil/Hydrology            |
| UIDS | Uncharacteristic          | Insects/Disease           |
| UOTH | Uncharacteristic          | Other disturbances        |
| UCLR | Uncharacteristic          | Cultural                  |
| UPAT | Uncharacteristic          | Pattern                   |

**Landscape Vegetation-Fuel Class Abundance (field 23)** – if you used the Standard Landscape Method for your landscape assessment, copy the information from field 81 here.

If you used the Landscape Scorecard Method for your landscape assessment, you must enter an estimated abundance of the vegetation-fuel class that your stand is occurs within.

Review your landscape scorecard field forms, photos, table 5-2 characteristic and uncharacteristic ratings, return to the landscape view point if necessary, use air photos if needed, and estimate the abundance class.

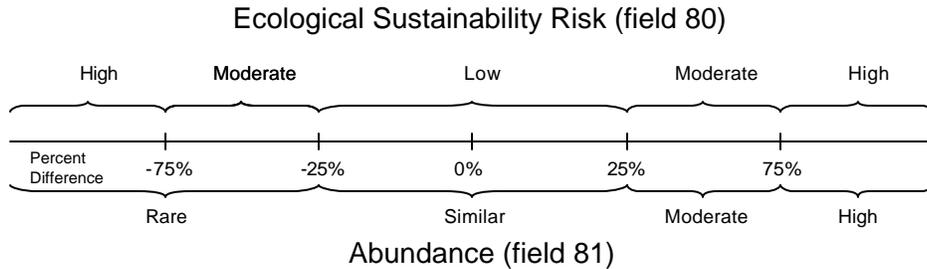
Abundance Classes:

R - RARE ( $\leq -25\%$  Diff);

S - SIMILAR ( $> -25\%$  &  $< +25\%$  Diff);

M - MODERATE ( $\geq +25\%$  and  $\leq +75\%$  Diff);

H - HIGH ( $> +75\%$  Difference or  $> 0\%$  Uncharacteristic).



Similar implies that the abundance is within the natural or historical range of variability, while rare implies that the class is below the amount characteristic of that range and moderate and high is above that amount.

Difference is calculated as:  $\% \text{ Difference} = ((\text{Current} - \text{reference}) / (\text{Current} + \text{Reference})) * 100$ .

**Strata FRCC (field 24)** – Review the FRCC determination from the standard or scorecard landscape FRCC process for the strata FRCC. If you used the Standard Landscape Method enter the value from field 88. If you used the Landscape Scorecard Method enter the value from field 46.

Enter the class (1, 2, or 3).

**Uncharacteristic Amount Within the Stand (field 25)** – Estimate the percent of the area within the stand that is occupied by uncharacteristic vegetation-fuel conditions.

Enter the code for amount:

N – none;

Sm – some (> 0 – 25%)

M – moderate (>25-45%)

S – substantial (> 45%)

**Stand Restoration Difficulty (field 26)** – for guidance review table 5-2 and suggested guidelines below to estimate a level of difficulty for either your characteristic or uncharacteristic type and enter the code L, M, or H (Low, Moderate, High). Use the highest rating for the final input (e.g. if you have 3 L's and one H enter the H into Field 26). Focus on which ones are relevant you do not have to fill out all categories.

Codes:

L – relatively easy to restore or maintain

M – moderately difficult to restore or maintain

H – very difficult to restore or maintain

Develop local guidelines such as:

Level of difficulty can relate to length of time to achieve success:

L – less than 5 years (e.g. thin small trees, leave large trees)

M – 5 – 35 years

H – greater than 35 years (e.g. thin small trees, but need long time to grow large trees)

Level of difficulty can relate to cost:

L – less than \$100 per acre

M – \$100-500 per acre

H – greater than \$500 per acre

Level of difficulty can relate to needing multiple treatments to achieve objectives:

L – one or no treatments

M – two treatments

H – more than two treatments

Level of difficulty can relate to lack of technology to achieve objectives

L – technology available and proven (low risk of not meeting objectives)

M – technology available but not prove (risk of not meeting objectives)

H – technology not available

Level of difficulty can relate to other factors required to achieve objectives, such as lack of access or land designations that limit the treatment options.

**Stand Fire Regime Condition Class (Field 27 – SFRCC)** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The stand FRCC is determined from the intersection of the 2 nomogram lines.

If you are using the worksheet determine the FRCC where the 2 nomogram lines intersect and enter the code for the condition class onto the worksheet:

- 1 – FRCC 1 =  $\leq$  33% departure from central tendency & low difficulty to restore
- 2 – FRCC 2 = 34 – 66% departure & moderate difficulty to restore
- 3 – FRCC 3 =  $>$  66% departure & high difficulty to restore

**Stand Fire Regime Condition Class Departure (Field 28 - SFRCCD)** – You do not need to enter this data unless you are doing this as a worksheet. The computer will do this automatically. The FRCC departure value is determined by interpolating a departure value of 0 to 100 percent based on the distance of the intersection of the 2 nomogram lines between the FRCC breaks (graph 5-1). The percentage departures of the FRCC breaks are 0 to 33 for class 1, 34-66 for class 2, and 67-100 for class 3. Values determined by the computer will be rounded to the nearest 1 percent.

If you are using the worksheet determine if the intersection of the nomogram lines is closer to the right side axis, center axis (diagonal from lower right to upper left), or bottom side axis. Each axis is marked on the graph with the class breaks (0, 33, 66, and 100). Based on the point where your nomograms lines intersect estimate the value between the class breaks rounded off to the nearest 5 or 10 percent.

Enter this value on the worksheet.

This field will be the FRCC value entered or exported into the NFPORS data base in the future. Since this is a continuous value and not a class, the value can be used to classify FRCC (1,2,3) or determine a trend in FRCC.

Trend to condition class 1 will be calculated using pre-treatment and post-treatment assessments or estimates using the “difference” formula. The software program will determine this value for you. If you would like to determine this yourself you will need a pre and post assessment and use the following formula (note this is not a field found on your worksheet – it is an output from the software).

Difference is calculated as: % Difference = ((Pretreatment - Posttreatment)/(Pretreatment)) \* 100.

The results from the “difference” calculation will be used to classify trend as follows:

D – Degradation in Condition Class =  $\leq - 10\%$

N – No change in Condition Class =  $> - 10\%$  and  $< + 10\%$

I – Improvement in Condition Class =  $\geq + 10\%$

## **Landscape Calibration**

There is little need for calibration of the stand scorecard if the two landscape inputs to the stand scorecard come from the Standard Landscape Method or a calibrated Landscape Scorecard Method. Most errors in use of the Stand Scorecard Method come from wrong determination of the PNVG at the landscape scale (resulting in wrong determination of FRCC and departure measure) or wrong determination of the vegetation-fuel abundance class at the landscape scale, of which the stand is a component.

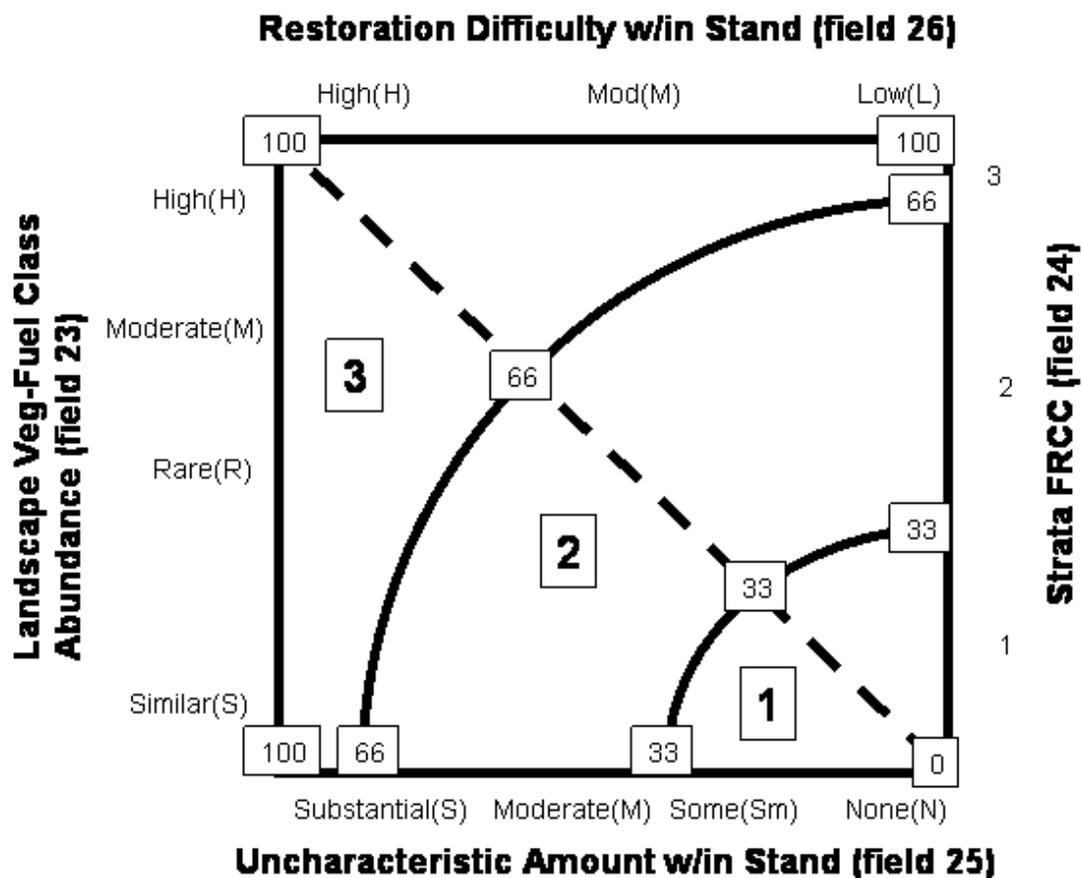
At this time there is no standard (quantitative) method at the stand scale to compare the scorecard results against. However, the two stand variables determined from within stand (restoration difficulty and uncharacteristic amount) that feed in to the stand scorecard are relatively simple stand scale ratings. Increased consistency and accuracy in the “restoration difficulty” rating can be achieved through development of regional or subregional guidelines and descriptions.

Table 5-1. Stand Scale (small area) Fire Regime Condition Class Scorecard for Graph Inputs. All definitions and terms are same as described for the standard guidebook method. Identify the majority vegetation-fuel class for each stand. This is the class that has the greatest amount within the stand scale (small area) unit. Determine if this class has an “abundance” rating of “rare”, “similar”, “moderate”, or “high” and circle the category. Review you Standard Landscape or Landscape Scorecard FRCC determination and circle the Strata FRCC (1, 2, or 3). Determine if the stand scale (small area) unit contains “uncharacteristic” conditions. Rate (circle) the amount of uncharacteristic conditions (N – none; Sm – some (> 0 – 25%); M – moderate (25-45%); S – substantial (> 45%)). Based on the vegetation-fuel class that is the primary restoration concern, identify the type as characteristic or select one of the uncharacteristic conditions; then circle the difficulty to restore rating (L – low; M – moderate; H – high) based on review of information in table 5-2.

| Graph Axis  | Indicator Variable Definition   | Stand Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|--------------|---|---|---|---|---|
| <b>Field 23 -Landscape Vegetation-Fuel Class Abundance (circle the rating)</b>  | ≤ - 25% difference from reference central tendency                              | Rare (R)     |   |   |   |   |   |
|   | -24% to 24% of reference central tendency                                       | Similar (S)  |   |   |   |   |   |
|   | + 25% to 74% difference from reference central tendency                         | Mod (M)      |   |   |   |   |   |
|   | ≥ 75% difference from reference central tendency or uncharacteristic            | High (H)     |   |   |   |   |   |
| <b>Field 24—Strata FRCC</b>   | From field 46 on Landscape Scorecard, field 88 on Standard Landscape            | 1, 2, 3      |   |   |   |   |   |
| <b>Field 25— Uncharacteristic Amount w/in Stand</b>   | N = none; Sm = some (> 0 – 25%); M = moderate (25-45%); S = substantial (> 45%) | N, Sm, M, S  |   |   |   |   |   |
| <b>Field 26 -Restoration Difficulty within Stand (identify the primary characteristic OR uncharacteristic vegetation-fuel class of concern for restoration; circle the appropriate rating – L = low; M = moderate; H = high); modify based on guidebook guidelines and your experience to select between L, M, and H. Use the highest rating for the final input (e.g. if you have 3 L’s and 1 H – use the H for field 26 and graph input).</b> | Characteristic types  | L, M, H      |   |   |   |   |   |
|   | Uncharacteristic types:   |              |   |   |   |   |   |
|   | Invasive Plants   | L, M, H      |   |   |   |   |   |
|   | Timber Harvest  | L, M, H      |   |   |   |   |   |
|   | Grazing   | L, M, H      |   |   |   |   |   |
|   | Fuel/Succession/Lack Fire Effects   | L, M, H      |   |   |   |   |   |
|   | Post-Fire Effects   | L, M, H      |   |   |   |   |   |
|   | Soil/Hydrology  | L, M, H      |   |   |   |   |   |
|   | Insects/Disease   | L, M, H      |   |   |   |   |   |
| Cultural  | L, M, H   |              |   |   |   |   |   |
| Other uncharacteristic types – define –   | L, M, H   |              |   |   |   |   |   |

Table 5-2. Characteristic and uncharacteristic vegetation-fuel classes and subclasses with associated restoration difficulty and description of process.

| Composition-Structure | Class Name                | Subclass Name           | Class Code | Subclass Code | Restoratr Difficulty | Description   |
|-----------------------|---------------------------|-------------------------|------------|---------------|----------------------|---|
| Characteristic        | Early Seral               |                         | AESP       |               | 1, 2, 3              | Characteristic post stand replacement vegetation and fuel composition and structure   |
| Characteristic        | Mid Seral Closed          |                         | BMSC       |               | 1, 2, 3              | Characteristic mid development composition and structure (age and size) that has a relatively closed canopy                           |
| Characteristic        | Mid Seral Open            |                         | CMSO       |               | 1, 2, 3              | Characteristic mid development composition and structure (age and size) that has a relatively open canopy                             |
| Characteristic        | Late Seral Open           |                         | DLSO       |               | 1, 2, 3              | Characteristic late development composition and structure (age and size) that has a relatively open canopy                            |
| Characteristic        | Late Seral Closed         |                         | ELSC       |               | 1, 2, 3              | Characteristic late development composition and structure (age and size) that has a relatively closed canopy                          |
| Uncharacteristic      | Invasive Plants           |                         | UINP       |               | 3                    | Invasive (exotic) plants  |
| Uncharacteristic      | Invasive Plants           | Fires More Frequent     | UINP       | UINVPM        | 3                    | Invasive (exotic) plants increase the fire frequency due to higher ignitability/ flammability   |
| Uncharacteristic      | Invasive Plants           | Fires Less Frequent     | UINP       | UINVPL        | 3                    | Invasive (exotic) plants decrease the fire frequency due to lower ignitability/ flammability  |
| Uncharacteristic      | Timber Harvest            |                         | UTHV       |               | 1, 2                 | Timber harvest does not result in the natural composition/structure/fuels   |
| Uncharacteristic      | Timber Harvest            | MissingLarge/Old Trees  | UTHV       | UTHVT         | 3                    | Timber harvest selectively removes large/old fire tolerant trees and leaves the smaller and less fire tolerant trees                  |
| Uncharacteristic      | Timber Harvest            | Other                   | UTHV       | UTHVO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Grazing                   |                         | UGRZ       |               | 1, 2                 | Ong-term grazing system and effects does not result in the natural comp/structure/fuels   |
| Uncharacteristic      | Grazing                   | Soil/HydroDegredation   | UGRZ       | UGRZS         | 3                    | Excessive grazing has caused soil erosion or degradation of soil/hydrologic processes   |
| Uncharacteristic      | Grazing                   | LackFineFuels           | UGRZ       | UGRZF         | 1, 2                 | Grazing utilization reduces fine fuels to levels that won't sustain the fire regime; or change composition                            |
| Uncharacteristic      | Grazing                   | Other                   | UGRZ       | UGRZO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Fuel/Sucn/LackFireEffects |                         | UFUS       |               | 1, 2                 | Fuel and vegetation composition and structure develops as a result of fire exclusion that is not characteristic of the natural regime |
| Uncharacteristic      | Fuel/Sucn/LackFireEffects | LowerIgnitability       | UFUS       | UFUSL         | 3                    | Fuel and vegetation composition and structure develops that has lowerflammabilityignitability than types in natural regime            |
| Uncharacteristic      | Fuel/Sucn/LackFireEffects | HigherIgnitability      | UFUS       | UFUSH         | 3                    | Fuel and vegetation composition and structure develops that has higher ignitability/ flammability than types in natural regime        |
| Uncharacteristic      | Fuel/Sucn/LackFireEffects | Other                   | UFUS       | UFUSO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Post-Fire Effects         |                         | UFEF       |               | 1, 2                 | Fire effects more severe than the natural regime  |
| Uncharacteristic      | Post-Fire Effects         | Soil/HydroDegredation   | UFEF       | UFEFS         | 3                    | Fire effects more sever causing soil erosion and hydrologic degradation   |
| Uncharacteristic      | Post-Fire Effects         | Large/OldTreeMortality  | UFEF       | UFEFT         | 3                    | Fire effects more severe causing mortality to large old trees that would survive in the natural regime                                |
| Uncharacteristic      | Post-Fire Effects         | Grass/ShrubMortality    | UFEF       | UFEFG         | 3                    | Fire effects more severe causing mortality to grasses & shrubs that would resprout in the natural regime                              |
| Uncharacteristic      | Post-Fire Effects         | Other                   | UFEF       | UFEFO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Soil/Hydrology            |                         | USHD       |               | 1, 2                 | Erosion, sedimentation, reduced water flow  |
| Uncharacteristic      | Soil/Hydrology            | Mech/Soil/Hydro         | USHD       | USHDM         | 3                    | Mechanical displacement or erosion of soil and impacts on hydrologic system more severe than the natural regime                       |
| Uncharacteristic      | Soil/Hydrology            | Soil/HydroErosion       | USHD       | USHDE         | 3                    | Erosion of soil typically caused by uncharacteristic fuel/succession development that results in a lack of soil cover                 |
| Uncharacteristic      | Soil/Hydrology            | Other                   | USHD       | USHDO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Insects/Disease           |                         | UIDS       |               | 1, 2                 | Insects or disease uncharacteristic of the natural regime   |
| Uncharacteristic      | Insects/Disease           | Invasive                | UIDS       | UIDSI         | 3                    | Invasive (exotic) insects or disease  |
| Uncharacteristic      | Insects/Disease           | NativeMoreSevere        | UIDS       | UIDSM         | 1, 2                 | Native insects or disease more severe than the natural regime   |
| Uncharacteristic      | Insects/Disease           | Other                   | UIDS       | UIDSO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Other disturbances        |                         | UOTH       |               | 1, 2, 3              | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Cultural                  |                         | UCLR       |               | 1, 2                 | Cultural treatments that do not mimic the natural regime  |
| Uncharacteristic      | Cultural                  | TimberStandImprovements | UCLR       | UCLRT         | 1, 2                 | Timber stand improvements (thinning, planting, etc.) that do not result in the natural composition/structure/fuels                    |
| Uncharacteristic      | Cultural                  | RangelImprovements      | UCLR       | UCLRR         | 1, 2                 | Range improvements (chaining, seeding, etc.) that do not result in the natural composition/structure/fuels                            |
| Uncharacteristic      | Cultural                  | BurnedArea Restoration  | UCLR       | UCLRB         | 1, 2                 | Burned area restoration (seeding, planting, etc.) that compete with the native seed bank or precludes natural successional stages     |
| Uncharacteristic      | Cultural                  | RoadDensities/Patterns  | UCLR       | UCLRS         | 1, 2                 | Road densities or patterns that do not allow natural processes to function  |
| Uncharacteristic      | Cultural                  | Other                   | UCLR       | UCLRO         | 1, 2                 | Other disturbances uncharacteristic of the natural regime - describe  |
| Uncharacteristic      | Pattern                   |                         | UPAT       |               | 1, 2                 | Mosaic pattern and patch size and shape uncharacteristic of the natural regime  |
| Uncharacteristic      | Pattern                   | Fragmented              | UPAT       | UPATF         | 1, 2, 3              | More fragmented mosaic pattern with smaller patch sizes than the natural regime   |
| Uncharacteristic      | Pattern                   | Contiguous              | UPAT       | UPATC         | 1, 2, 3              | More contiguous mosaic pattern with larger patch sizes than the natural regime  |

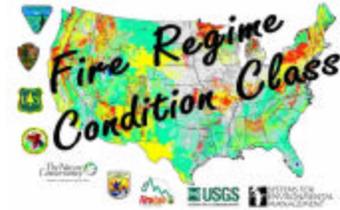


Graph 5-1. Nomogram style chart for classifying the stand-small area fire regime condition class (FRCC) and determining FRCC departure. Use the chart by connecting the left and right variables with a single line using the “sum’s” from table 5-1. Then connect the bottom and top variables with a similar line. Where the two lines cross indicates the stand-small area FRCC. Determine the departure by identifying the axis (bottom, center, or right) closest to the point where the lines cross. Interpolate between the class breaks (0, 33, 66, and 100) to estimate a departure value between 0 and 100, and round off to the nearest 5 to 10 percent.

**APPENDIX 5-A**

**STAND SCORECARD METHOD**  
**FORMS AND CODE SHEETS**

# Fire Regime Condition Class Stand Scorecard Worksheet



## Landscape Project Data:

|                            |   |                    |
|----------------------------|---|--------------------|
| Reg Code(1): _____         | Proj Code(2): _____                     | Proj Num(3): _____ |
| Proj Char Dt(4):    /    / | Landscape Method(5): Standard/Scorecard |                    |

## Stand Data:

| Stand number (6)  | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Examiner Name (7)   |   |   |   |   |   |
| Stand Area (8)<br>acres/hectares (9)  |   |   |   |   |   |
| Stand Char Date (10)  |   |   |   |   |   |
| Strata BP Land Unit (11)<br>field 25 on Standard Landscape<br>field 19 on Landscape Scorecard |   |   |   |   |   |
| Strata Num (12)<br>field 21 on Standard Landscape<br>field 15 on Landscape Scorecard          |   |   |   |   |   |
| Xwalk Code 1 (14)   |   |   |   |   |   |
| Xwalk Code 2 (15)   |   |   |   |   |   |
| Stand Name (16)   |   |   |   |   |   |
| Latitude (17)   |   |   |   |   |   |
| Longitude (18)  |   |   |   |   |   |
| Datum (19)  |   |   |   |   |   |
| Photo (20)  |   |   |   |   |   |
| Photo Date (21)   |   |   |   |   |   |
| Veg-Fuel Class (22)   |   |   |   |   |   |
| VFC Abundance (23)<br>field 81 on Standard Landscape<br>or estimate (table 1)                 |   |   |   |   |   |
| Strata FRCC (24)<br>field 88 on Standard Landscape<br>field 46 on Landscape Scorecard         |   |   |   |   |   |
| Uncharacteristic Amount<br>(25) None, Some, Moderate,<br>Substantial (table 1)                |   |   |   |   |   |
| Restoration Difficulty (26)<br>Low, Moderate, High (table 1)                                  |   |   |   |   |   |
|   |   |   |   |   |   |
| Stand FRCC (27)<br>from Graph 1   |   |   |   |   |   |
| Stand FRCC Departure<br>(28) from Graph 1   |   |   |   |   |   |



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# FRCC Glossary of Terms – Version 1.1

## Fire Regime Condition Class

Please see the FRCC Methods Document for more detailed information.

**Biophysical Unit:** a division of the landscape with similar biological and physical characteristics.

**Box Model:** a standardized PNVG dynamics model with vegetation-fuel classes (boxes or states) and defined pathways (transitions) that move vegetation-fuel from one class to another—via disturbance or succession. Based on state/transition modeling concepts. Utilizes the Vegetation Dynamics Development Tool (VDDT) software.

**Characteristic/Uncharacteristic:** characteristic conditions and processes are those similar to those occurring in the natural or historical regime, while uncharacteristic do not occur. See uncharacteristic.

**Class:** the box model vegetation-fuel class within each PNVG, based on successional (seral) stage, composition, and structure (see table below). Reference conditions for each PNVG are based on 5 characteristic classes (AESP, BMSC, CMSO, DLSC, ELSC); current conditions might have more classes (called “uncharacteristic”).

| Seral Stage          | Composition & Structure        |                                  |
|----------------------|--------------------------------|----------------------------------|
|                      | Attribute<br>(such as<br>Open) | Attribute<br>(such as<br>Closed) |
| Post-<br>Replacement | A (AESP)                       |                                  |
| Mid-<br>Development  | C (CMSO)                       | B (BMSC)                         |
| Late-<br>Development | D (DLSC)                       | E (ELSC)                         |

**Closed:** a vegetation-fuel class characteristic based on upper layer vegetation canopy cover that is relatively closed. Default values for closed forest, woodland, or herbaceous classes are greater than 40% if based on canopy cover. Default values for closed shrub classes are greater than 15% if based on line intercept cover. These commonly are applied as structure attributes for classes B and E. (Percent canopy closure threshold values may be changed from default values for individual classes).

**Coarse Scale FRCC Mapping:** GTR RMRS-87 (Schmidt et al. 2001). This document outlines the methodology used to map Fire Regime Condition Class and associated attributes at a coarse scale (1 km pixel resolution) for the conterminous 48 states. Available at: <http://www.fs.fed.us/fire/fuelman/>

**Cover:** the percent of upper layer canopy. Commonly based on canopy cover estimate for forest, woodland, and herbaceous types and line intercept for shrub and grass types.

**Condition Class:** In FRCC methodology, a synonym for Fire Regime Condition Class. (NOTE: also see *fire regime condition class*)

**Default Reference Values:** results from national, regional, or subregional modeling of PNVG reference conditions using the box model and Vegetation Dynamics Development Tool (VDDT) modeling software. Includes an estimate of the average percent of the landscape in each of the 5 characteristic vegetation-fuel classes, the fire frequency, and the fire severity for the natural regime. Pathway, successional rates, and disturbance probability inputs to the modeling are derived from literature and expert opinion. These reference values are defaults in FRCC methodology and can be adjusted by the user when local data permits.

**Desired future conditions (DFC):** a characterization of future conditions commonly designed as a goal for management that integrates ecological and social factors. It is not synonymous with condition class or the end state of succession for PNVGs. DFC may not be the same as reference conditions or condition class 1 because of social and economic factors.

**Departure:** Is the inverse of similarity. For the vegetation-fuel classes and the fire frequency-severity variables, this is the percent difference between the current and reference. (NOTE: also see *similarity*)

**Emulate, Mimic, Represent, or Simulate Natural Conditions and Processes** various terms to indicate the use of management activities, such as timber harvest, thinning, grazing, prescribed fire, restoration, and wildland fire, to change landscape composition and associated disturbance regimes to be more similar to the natural reference conditions or trend towards the natural reference conditions.

**Fire Frequency:** for FRCC methodology, the average number of years between fires. In FRCC methodology, this is a measure of central tendency (average, midpoint, median) and will be entered both for reference fire frequency (default values will be used if the user does not specify a value) and for current fire frequency. In FRCC methodology frequency is years between all types of fires

(replacement, surface, and mixed) that change the landscape mosaic of vegetation-fuel classes. A fire must affect 5% or more of the fire perimeter to be counted.

**Fire Regime:** for FRCC methodology, the combination of fire frequency and fire severity. Natural or historical fire regimes may differ from current fire regimes, measured by Fire Regime Condition Class.

**Fire Regime Condition Class:** A classification of the amount of departure of conditions at a given time period (such as current or future) from the ecological reference conditions. Reference conditions include the amounts for the 5 characteristic vegetation-fuel classes, the fire frequency, and the fire severity in the absence of modern Euro-American influence for the climate of the period being assessed (such as historic, current, or future). Historical conditions are commonly used as a best estimate for the reference conditions. Native American or anthropogenic influences are commonly included. Fire regime condition class is a relatively complete measure of the departure from the natural system. Named “fire regime” because of the keystone nature of fire.

**Fire Regime Condition Class Characteristics:** A measure of departure from natural or historical ecological reference conditions that typically result in alterations of native ecosystem components. These ecosystem components include attributes such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused departures: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or diseases, or other management activities. There are three classes:

| Class | Description  |
|-------|--|
| 1     | Fire regimes are within the natural or historical range and risk of losing key ecosystem components is low. Vegetation attributes (composition and structure) are intact and functioning.  |
| 2     | Fire regimes have been moderately altered. Risk of losing key ecosystem components is moderate. Fire frequencies may have departed by one or more return intervals (either increased or decreased). This may result in moderate changes in fire and vegetation attributes. |
| 3     | Fire regimes have been substantially altered. Risk of losing key ecosystem components is high. Fire frequencies may have departed by multiple return intervals. This may result in dramatic changes in fire size, fire intensity and                                       |

|  |
|--|
| severity, and landscape patterns. Vegetation attributes have been substantially altered. |
|--|

**Fire Regime Condition Class Field Methods:** designed for on the ground assessment and reporting of projects, field assessment of management strategies, or mapping ground truth. They can be conducted at two scales. The **landscape FRCC** for assessment of departure of the vegetation-fuel class composition and fire frequency-severity, and the **stand or small project FRCC** for assessment of restoration difficulty in the context of landscape scale FRCC. The landscape scale FRCC must be conducted first in order to generate context inputs for the stand FRCC. Two procedures are available for FRCC field determination, the **standard** (quantified) **FRCC** method and the **scorecard** (nomogram) **FRCC** method.

**Fire Regime Condition Class Mapping Methods:** designed for assessment, prioritization, and planning. These methods follow the same process as the field procedures, but in a mapping environment. FRCC can be summarized for a PNV across its extent or stratified by hydrologic units of different scales, management area, ownership, or other delineations.

**Fire Regime Group:** A categorization of historical fire regimes to describe the frequency and intensity of fires (based on Heinselman 1973). There are five fire regime groups:

| Group | Frequency     | Severity  |
|-------|---------------|---|
| I     | 0-35 years    | Low and Mixed   |
| II    | 0-35 years    | Replacement   |
| III   | 35-100+ years | Mixed and Low   |
| IV    | 35-100+ years | Replacement   |
| V     | 200+ years    | Replacement and other fires occurring within this frequency range |

**Fire Severity:** for FRCC methodology, this is the effect of fire within the fire perimeter of replacing/removing the upper layer vegetation and burning the surface. Replacement/removal may or may not cause a lethal effect on the plants. For example, replacement fire in grassland removes the leaves, but leaves resprout from the basal crown, while replacement fire in most conifers causes mortality of the plant. A fire must affect 5% or more of the fire perimeter to be counted.

| Severity Class         | Effects   |
|------------------------|---|
| <b>No Fire Effects</b> | < 5% replacement or surface   |
| <b>Surface or Low</b>  | ≤ 25% replacement<br><b>Surface</b> - > 50% surface burned<br><b>Low</b> - ≤ 50% surface burned |
| <b>Mixed</b>           | ≥ 5% replacement or surface & < 75% replacement   |
| <b>Replacement</b>     | ≥ 75% replacement   |

**Historical Conditions:** See reference conditions.

**Historical (or historic) Range of Variability (HRV):**  
See natural range of variability for comparison.

**LANDFIRE:** a multi-agency, inter-disciplinary research and development activity designed to develop a consistent mid-scale inventory of current vegetation and fuel conditions, and the associated natural or historical reference conditions, for forest and rangeland biophysical settings. LANDFIRE geospatial data will be fine resolution (30 m<sup>2</sup> pixels), wall-to-wall for the entire U.S., and will include a Fire Regime Condition Class layer. For more information, visit [www.landfire.gov](http://www.landfire.gov).

**Late-Development:** the stage in a PNVG where vegetation is in late successional or mature stage for a given successional path. Ages will vary greatly depending on individual PNVGs. Typically associated with classes D and E in FRCC methodology.

**Map or Method Consistency/Accuracy:** consistency for FRCC is a measure of agreement between the departure measure and class assignment across different geographic areas given the same combinations of inputs. Accuracy for FRCC is a determination of input similarity to ground truth.

**Mid-Development:** the stage in a PNVG where vegetation is in mid successional or immature stage for a given successional path. Ages will vary greatly depending on individual PNVGs. Typically associated with classes B and C in FRCC methodology.

**Mixed Severity Fire:** any fire that does not qualify as a replacement fire or as a surface or low intensity fire. Mixed fires can open or maintain a vegetation-fuel class. A general category of fire severity that excludes surface and replacement fires, but includes mosaic and other fires that are intermediate in effects.

**Mosaic Fire:** any landscape scale mixed fire that has scattered patches across the fire perimeter, resulting in a mosaic of burned and unburned patches.

**National Fire Plan Operations & Reporting System (NFPORS):** NFPORS is an interagency system designed for submission and reporting of accomplishments for work conducted under the National Fire Plan and other agency fuels and resource programs.

**Natural Conditions:** see reference conditions.

**Natural Fire Regime:** the fire regime of the natural system in absence of modern human interference. Assumed to include native anthropogenic influences that may have contributed to development of native species fire adaptations.

**Natural Range of Variability (NRV):** the variability and central tendencies of biophysical, disturbance, and climatic systems, across landscapes and through time, in the absence of modern human interference. Natural disturbances include native anthropogenic influences that have contributed to development of native species adaptations and natural disturbance regimes. In comparison, the historical range of variability (HRV) refers to the same measure, but for a historical (or historic) time period with associated historical climate. NRV is preferred as it provides the reference most applicable to current or future climates, but HRV can be more easily characterized by studies of historical vegetation and disturbance.

**Open:** a structural class where the upper layer of vegetation canopy is relatively open. Default values for open forest, woodland, or herbaceous classes are less than 40% if based on canopy cover. Default values for open shrub classes are less than 15% if based on line intercept cover. These commonly are applied as structure attributes for classes B and E. (Percent canopy closure threshold values may be changed from default values for individual classes).

**Patch:** see stand.

**Post-Replacement:** the stage in a PNVG where vegetation is in early successional or a young stage. In forested and woodland PNVGs, this type will typically have less than 10% tree canopy cover and less than 5% canopy cover in shrubland PNVGs. Ages will vary greatly depending on individual PNVGs. Typically class A in FRCC methodology.

**Potential Natural Vegetation (PNV):** the land area with potential to support a type of natural vegetation and associated disturbance processes. This is the biophysical classification used by the FRCC handbook based on Kuchler's Potential Natural Vegetation (1964). It refers to the composition of successional stages that would occur in the absence of modern human interference in response to natural disturbances, such as fire and anthropogenic burning, for a given climatic period. The PNV is

typically named by the plant species, complex of species, or life forms that occupy the majority of the landscape through the successional cycles (See PVT for comparison of difference)

**Potential Natural Vegetation Group (PNVG):** a grouping of ecologically similar PNV types for coarse-scale assessment.

**Potential Vegetation Type (PVT):** the land area with potential to support one or a group of climax plant associations. This is based on identification of land that will support climax plant association indicator species. This plant association concept is based on the traditional Clementsian view of succession continuing to an end climax condition in the absence of disturbance. The plant association is typically named by the climax plant indicator species. (See PNV for comparison of difference).

**Potential Vegetation Type Group (PVTG):** a grouping of PVTs for coarse-scale assessment.

**Project Area or Landscape:** for FRCC methodology this area encompasses a minimum dynamic area adequate to sustain the natural vegetation mosaic and disturbance regime.

**Reference Conditions:** an estimate of the central tendency of natural or historical (or historic) vegetation-fuel class composition, fire frequency, and fire severity for a biophysical unit or landscape area. Reference conditions are the basis for calculating the ecological departure used to determine the Fire Regime Condition Class. Reference conditions characterize the central tendency of the natural range of variability (NRV) when they are determined for a time period (such as current or future) with the associated climatic regime. Reference conditions characterize the central tendency of the historical range of variability (HRV) when they are determined for a historical time period with the associated climatic regime. NRV is preferred as it provides the reference most applicable to current or future climates, but HRV can be more easily characterized by studies of historical vegetation and disturbance.

**Reference Condition Model:** the box model of succession and disturbance pathways calibrated to characterize the natural or historic range of variability (NRV or HRV) and central tendencies for reference conditions for a PNVG. Reference Condition Models are used to determine the default reference values for Reference Percent Composition in classes A-E, Fire Frequency, and Fire Severity in the FRCC methodology, although users may customize these values using local information and modeling.

**Reference Condition Refinement:** a consistent process for refinement of the PNV classification and

the associated reference conditions. Involves a systematic procedure of gathering together area vegetation and fire ecology experts for an initial workshop, reviewing literature and area data, developing written descriptions of the PNV vegetation-fuel classes and disturbance regime, attributing and sensitivity testing using the “box model”, informal internal peer review and consensus, and finalization of the reference conditions.

**Reference Condition State/Transition Model:** see box model.

**Replacement Severity Fire:** Any fire that causes greater than 75% top removal of a vegetation-fuel type, resulting in general replacement of existing vegetation. May or may not cause a lethal effect on the plants. For example, replacement fire in grassland removes the leaves, but leaves resprout from the basal crown, while replacement fire in most conifers causes mortality of the plant.

**Scale:** there are two types of scale. **Scale of map** pixels or polygons, ranging from coarse at 1 square kilometer (250 acres) or more, to fine ranging from 30 meter by 30 meter (900 square meters or .22 acres) to 1 meter by 1 meter (1 square meter or .0002 acres). **Scale of classification map legend.** For example vegetation mapping can range from coarse-scale lifeform to fine-scale plant community types. For fire regime condition class mapping the scale of determination of departure from reference conditions has a sliding scale that depends on the application.

**Similarity:** A comparison of one set of conditions to another set of conditions. The FRCC methodology compares time period (historic, current, future) conditions across a landscape to a central tendency estimate for the natural or historical reference conditions of the PNV. In FRCC, this is determined for the vegetation-fuel class composition across the landscape and for changes in fire frequency and fire severity. The method used to determine vegetation-fuel class composition similarity was developed by Clements (1934) and is a relatively simple formula that can be hand calculated in the field. The method used to determine fire frequency and severity similarity is a simple ratio of the smallest to the largest (Mueller-Dombois and Ellenberg 1974) that can also be hand calculated in the field. (Note: also see *departure*)

**Small Area:** see stand.

**Stand:** a delineated fine-scale area too small to contain the natural variation of the veg/fuel mosaic and disturbance regime. It is often dominated by one vegetation-fuel class that can range in size from as little as 1 hectare (2 acres) to 100 hectares (250 acres) or more in size.

**Stand Scorecard:** method for determining Fire Regime Condition Class in a stand, patch, or small area that does not meet the Project area/Landscape definition. Requires input from the surrounding landscape Fire Regime Condition Class determination.

**Standard Landscape Method:** quantified landscape assessment for determining Fire Regime Condition Class. Provides the most accurate and consistent estimate of FRCC for field procedures. Used as the ground truth for calibrating the landscape scorecard.

**Strata (Stratum):** a division of the landscape based on biophysical or management criteria.

**Succession:** the natural progression of change in the composition, structure, and processes of a community through time.

**State/Transition Model:** see box model.

**Surface or Low Severity Fire:** any fire that causes less than 25% upper layer replacement/removal in a vegetation-fuel class, but burns 5% or more as replacement or surface within the fire perimeter. Surface and low intensity fires can open or maintain a vegetation-fuel class. Surface fire burns more than 50% of the surface, while a low intensity fire burns 50% or less of the surface.

**Sustainability Risk/Abundance Class:** the sustainability risk is an index based on difference of Vegetation-Fuel Class amount from the reference amount. This index indicates the level of key ecosystem component risk from unplanned disturbances, such as wildfire, or of having already been lost from the landscape, such as large old trees. Classified into low, moderate, and high risk. The abundance class is the amount of a vegetation-fuel class compared to the reference condition amount. Classified into rare, similar, moderate, and high. The management implications of recruit for rare, maintain for similar, and reduce for moderate and high have may be applied where the DFC is a shift or trend to FRCC 1.

**Uncharacteristic:** a vegetation class that would not have been found within the natural or historical range of variability. Uncharacteristic classes include invasive plants, timber or grazing management that doesn't emulate the natural regime, and fire effects, soil disturbance, insects, or diseases that are more or less severe than the natural regime.

**VDDT:** Vegetation Dynamics Development Tool. A public domain software program created by the company ESSA. This tool provides software for

reference condition modeling. Available at: <http://www.essa.com>

**Vegetation-Fuel Class:** for FRCC methodology, a standardized type classification based on description of vegetation and fuel composition, structure, process, and pattern. Classes are grouped into those that are characteristic of the natural or historical conditions or uncharacteristic of these conditions.