



***WILDERNESS CHARACTER MONITORING
IN THE FOREST SERVICE: WHY AND HOW***

- **Who developed this monitoring?**
- **Why monitor wilderness character?**
- **How will wilderness character be monitored?**
- **Overview of pilot test goals and results**

Peter Landres

Aldo Leopold Wilderness Research Institute

Rocky Mountain Research Station, US Forest Service

***THE USFS WILDERNESS MONITORING
COMMITTEE DEVELOPED THIS MONITORING***

A team chartered to develop a program of wilderness monitoring that provides information to assist and improve wilderness stewardship

- Dominated by FS field wilderness managers
- Included representatives from each of the other federal wilderness managing agencies

This team developed the rationale for this monitoring and met twice a year from 2001 through the beginning of 2006. The team was dominated by field managers because our primary goal was to improve on-the-ground wilderness stewardship. We also wanted representatives from the other wilderness management agencies for two reasons: because all wildernesses are part of the National Wilderness Preservation System so the other agencies need to be aware of what we're doing; and to facilitate communication about the needs of the other agencies regarding wilderness stewardship and to communicate what we were doing in this Committee to the other agencies.

WHY MONITOR WILDERNESS CHARACTER?

Wilderness Act of 1964

- Statement of Policy, Section 2(a):

“a National Wilderness Preservation System...shall be administered...so as to provide for the protection of these areas, *the preservation of their wilderness character*”

- Use of Wilderness Areas, Section 4(b):

“each agency administering any area designated as wilderness shall be responsible for *preserving the wilderness character of the area*”

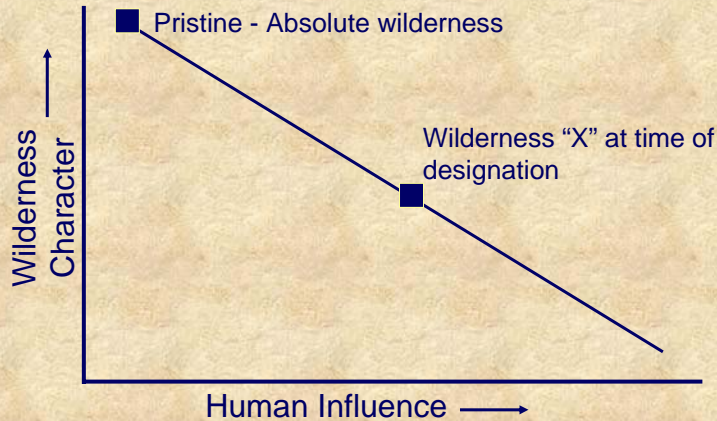
There are two primary reasons for monitoring wilderness character: 1) fulfill the statutory requirements of the Wilderness Act, 2) improve wilderness stewardship.

First, what are the statutory requirements of the 1964 Wilderness Act? Legal scholars uniformly agree that THE principal mandate to the agencies is that they administer wilderness to preserve wilderness character.

The Section 4(b) acknowledges the variety of uses in wilderness (“recreational, scenic, scientific, educational, conservation, and historical use”) and in allowing these uses, the agencies must also preserve the wilderness character of the area.

THE WILDERNESS MANAGEMENT MODEL **FS Wilderness Management Policy – FSM 2320.6**

“...protect and perpetuate wilderness character...”



Forest Service wilderness policy supports the statutory requirement from the Wilderness Act to preserve wilderness character.

This graph, modified from Forest Service policy, shows how increasing human influence negatively affects wilderness character. Forest Service wilderness policy is to at least maintain wilderness character as it was at the time of Congressional designation.

One of the primary reasons why we are developing this new monitoring program is to fulfill the statutory requirements of the Wilderness Act and Forest Service policy to preserve the wilderness character, to be able to assess where Forest Service wildernesses are on this graph and ensure that agency management preserves wilderness character.

STATEMENT OF NEED

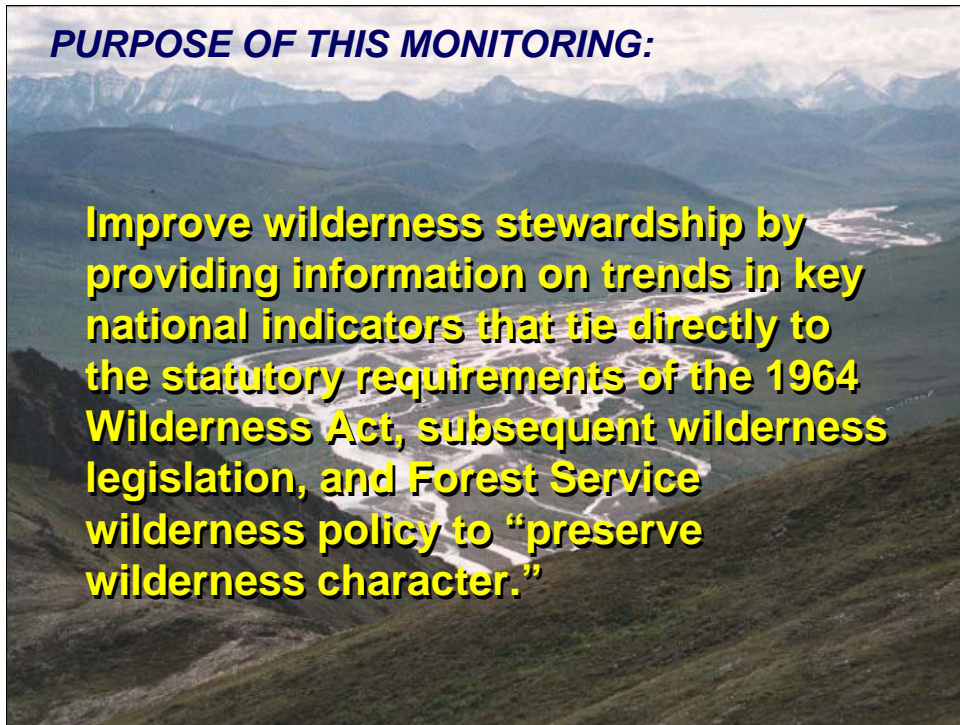
- The phrase “wilderness character” has never been sufficiently defined to monitor management success at preserving it
- Many wilderness managers sense that wilderness character is degrading in the areas they manage
- Managers and line officers need a tool to assess their accomplishments fulfilling agency policy and the legal mandate to preserve wilderness character
- Need an integrated view of how what is unique about wilderness is changing over time

First bullet: As already seen, wilderness character isn't defined in the Wilderness Act and there was no discussion of it's meaning in the Congressional Committee's that debated the Wilderness Act.

Second bullet: in our discussions with many wilderness managers, we've often heard something like “I've been working in and managing this wilderness for 20 years, and my strong sense is that wilderness character is not what it used to be, but I don't have any way to show this degradation.” Also, several wilderness managers have told us that wilderness character has improved through their stewardship actions and they'd like a tool to show this improvement in wilderness character.

Third bullet: What we're trying to do is tool to improve accountability to assess if what we're doing is working.

Last bullet: “integrated” because wilderness character is not just clean air or pure water or large predators or solitude or beautiful scenery; it's an amalgam of all of these things. We have some data on individual resources, but absolutely nothing on wilderness character. “Unique” because wilderness character is what is truly unique in wilderness; clean air, pure water, large predators are not unique to wilderness because all of these occur elsewhere.



Fundamental purpose: improve on-the-ground wilderness stewardship

How: by providing information on trends in wilderness character

We can't do it all so we're selecting "key" indicators that apply across the nation, to all 407 FS wildernesses.

WHY MONITOR WILDERNESS CHARACTER: SO WHAT? WHY SHOULD WE CARE?

- Improve stewardship: understand consequences, and prioritize decisions and actions



The second reason for monitoring wilderness character is to improve on-the-ground wilderness stewardship.

Every wilderness is beset with a host of problems, challenges, and issues that may require decisions and actions, and several examples are shown in this slide. How do these decisions and actions affect wilderness character? How should wilderness managers prioritize their time and effort among all the competing demands?

Making the need to preserve wilderness character explicit in day-to-day management will allow managers to better understand the consequences of their decisions and actions, and to prioritize their efforts to ensure the preservation of wilderness character.

**WHY MONITOR WILDERNESS CHARACTER:
SO WHAT? WHY SHOULD WE CARE?**

- Improve stewardship: understand consequences, and prioritize decisions and actions
- Improve accountability: evaluate success in preserving wilderness character
- Guard against legal vulnerability
- Provide legacy information that will endure over time when personnel change
- Articulate a positive vision for what wilderness is instead of what it is not

Accountability – agency programs require accountability: have we done what we said we are going to do? This monitoring allows, for the first time, managers to assess their success (or failure) in preserving wilderness character

Legal vulnerability – to date there have been 54 District Court cases citing the “preservation of wilderness character” from the Wilderness Act, and the number of cases has increased in recent years. Right now no agency has defined the basis for their management to preserve wilderness character, so this monitoring should help improve agency defensibility, although nothing is certain until it has gone to court.

Legacy information – right now when a wilderness manager leaves their position, their years of accumulated knowledge and experience—their wisdom—is lost. This monitoring provides a place to capture at least some of this wisdom so future managers can learn and to a better job managing the wilderness.

Positive vision – right now wilderness is largely perceived as a place where there are lots of rules and regulations prohibiting one thing and another. This monitoring creates a positive vision for what wilderness is.

SIDEBOARDS FOR WHAT THIS MONITORING DOES

- Evaluate change over time within a wilderness, not in comparison to other wildernesses or to a benchmark
- Provide data that will be locally meaningful at the level of the wilderness, not at a project scale
- Minimize budget and workforce impacts by using data from corporate and national datasets, with no new field data collection
- Assess wilderness character for all FS wildernesses – this information is compiled for regional and national assessment of trends

As a team we made certain decisions early on that define the scope of what this monitoring does and does not do:

1. Basis for assessing trends is the individual wilderness itself; in other words, change is assessed only within a single wilderness. Because every wilderness is unique in its combination of enabling legislation, social and cultural context, ecological conditions, and administrative planning direction, wildernesses are not compared with another, and no national benchmark is used to assess change.
2. Wilderness character is assessed across the entire wilderness, not a portion of the wilderness.
3. To be successful this monitoring has to be cost-effective, i.e., impose minimal budget and workforce impacts. One way to make this monitoring cost-effective is NOT require new field data collection, but instead use already collected data within a conceptual model of wilderness character.
4. Trends in wilderness character are assessed for every FS wilderness, not a sampling of wildernesses. Why? Because the Wilderness Act requires the preservation of wilderness character in every wilderness, not a sample of them. This information on trend for each wilderness is then compiled for regional and national reporting. Ultimately, the FS will be able to say that wilderness character is being preserved in XX% of 407 Forest Service wildernesses.

SIDEBARDS FOR WHAT THIS MONITORING DOES NOT DO

- Does *not* monitor the full range of meanings of wilderness character, or the depth of specific resources required by other legislation
- Does *not* replace site, resource, or project monitoring
- Does *not* provide a numerical index or report card grade of wilderness character
- Does *not* establish a national standard or benchmark for wilderness character

There are many things this monitoring does NOT do:

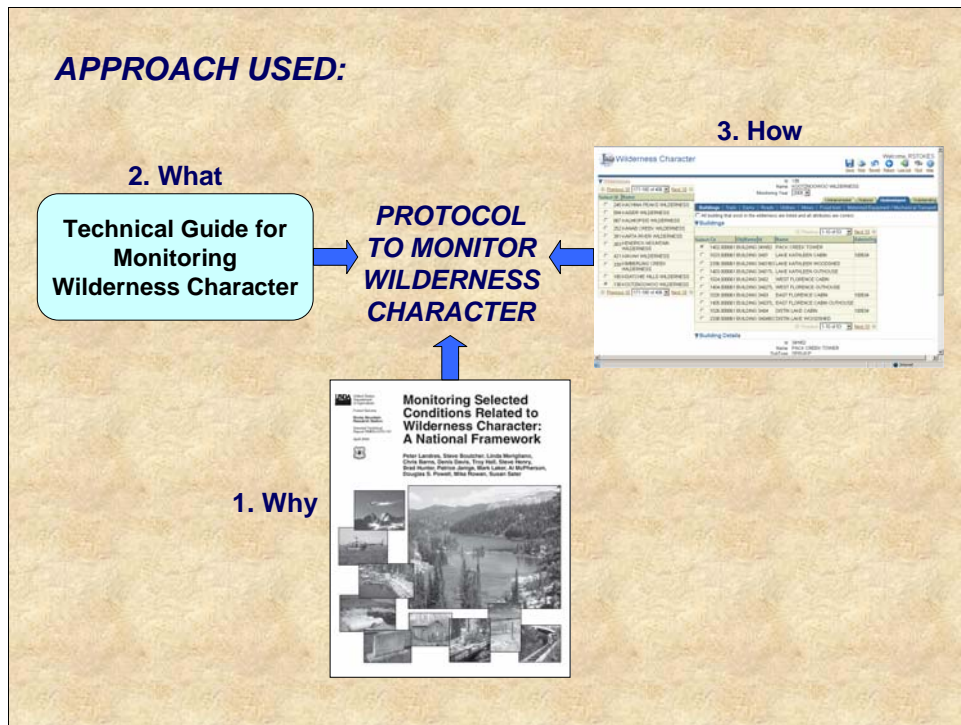
1. Wilderness character is vastly more complex and intangible than can, or could ever be monitored. Olaus Murie talked about the “precious intangible values of wilderness” and this monitoring does NOT monitor these important values of wilderness. This monitoring also does NOT monitor any particular resource in the depth required by other legislation, e.g., endangered species or air quality.
2. This monitoring complements and does NOT replace the specific site monitoring that is currently being done in many wildernesses. For example, monitoring to assess campsite conditions or campsite recovery in specific places in the wilderness is beyond the scope of this monitoring.
3. This monitoring does NOT develop a numerical index or report card grade because this distills too much the different aspects of wilderness character.
4. No national standard or benchmark is used to compare a particular wilderness against because every wilderness is unique. For example, the enabling legislation for some wilderness (Fitzpatrick in WY) allows state game and fish departments to have structures or use motorized vehicles inside a wilderness. These uses in this wilderness should not be compared to another wilderness with no such legislation.

**HOW TO
MONITOR
WILDERNESS
CHARACTER?**



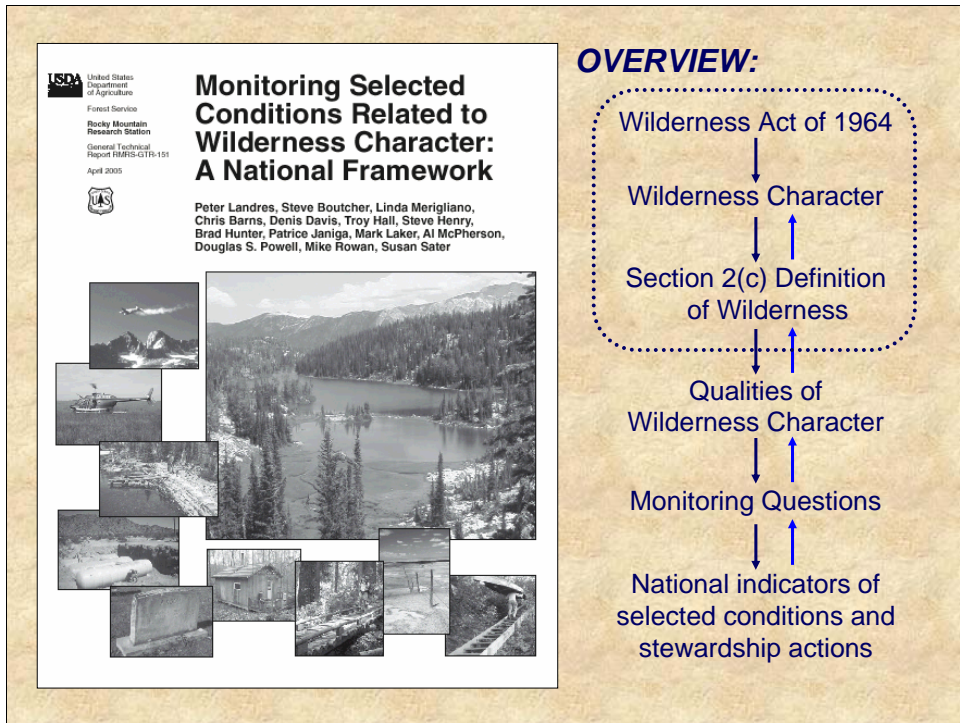
"That's why I never walk in front."

The big and difficult question is HOW to monitor wilderness character...



There are three relatively distinct phases or aspects of developing this monitoring:

1. The conceptual foundation to answer the question “Why?” (since no one has ever defined wilderness character before and there's no off-the-shelf ways of monitoring it).
2. The Technical Guide that lays out the detailed protocols.
3. The computer application that pulls data from other databases and puts these data into the appropriate organization for assessing trends. In addition to this computer application, we'll also be developing a DeskGuide that provides step-by-step instructions.



The WHY. The Framework lays out the conceptual foundation and uses the Section 2(c) Definition of Wilderness from the Act to identify four “qualities” of wilderness character. Using the Wilderness Act as the basis for these qualities allows us to derive qualities that apply to every wilderness, no matter legislated special provisions or any other unique aspect about the wilderness.

Each quality is in turn further divided into “monitoring questions” or monitoring goals. Each monitoring question is then divided into indicators, and indicators are divided into measures, as appropriate.

This hierarchical conceptual model allows us to aggregate the data back up from the measures to wilderness character, as shown by the blue arrows.

QUALITIES OF WILDERNESS CHARACTER

- **“Untrammeled”**

“...an area where the earth and its community of life are untrammeled by man...”

and

“...generally appears to have been affected primarily by the forces of nature.”

Wilderness is essentially unhindered and free from modern human control or manipulation



Quotes are from the Wilderness Act, and the text in green is our Committee's interpretation to develop monitoring goals.

For example, naturally ignited fires are allowed to burn and play their natural role in the ecosystems.

QUALITIES OF WILDERNESS CHARACTER

- “Untrammeled”

- **“Natural”**

“...is protected and managed so as to preserve its natural conditions.”



Wilderness ecological systems are substantially free from the effects of modern civilization

Quotes are from the Wilderness Act, and the text in green is our Committee's interpretation to develop monitoring goals.

For example, wilderness should be free from non-indigenous invasive plants and animals.

QUALITIES OF WILDERNESS CHARACTER

- “Untrammeled”
- “Natural”
- **“Undeveloped”**

“...an area of undeveloped Federal land...without permanent improvement or human habitation”

and

“...where man himself is a visitor who does not remain.”



Wilderness is essentially without permanent improvements or modern occupation

Quotes are from the Wilderness Act, and the text in green is our Committee's interpretation to develop monitoring goals.

For example, wilderness should not have physical evidence of modern structures.

QUALITIES OF WILDERNESS CHARACTER

- “Untrammeled”
- “Natural”
- “Undeveloped”
- **“Outstanding opportunities for solitude or a primitive and unconfined type of recreation”**



Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge



Quotes are from the Wilderness Act, and the text in green is our Committee's interpretation to develop monitoring goals.

For example, people have outstanding opportunities to experience solitude and the inspiration that comes from indigenous cultures and stories about the land.

QUALITIES, QUESTIONS, INDICATORS, MEASURES

	Quality	Question	Indicator	Measure
Wilderness Character	Untrammelled	Manipulations	Actions	# management actions that manipulate
				# fires suppressed
	Natural	Threats	Air pollutants	N100 ozone concentration
				W126 ozone concentration
				mg/l sulfur concentration
				mg/l nitrogen concentration
				# dams
		Biophysical conditions	Visual air quality	% acres non-indigenous invasive plants
				# other non-indigenous species
				# grazing allotments
				µm fine nitrate and sulfate
				Deciview
	Undeveloped	Occupation	Physical evidence	# extirpated species
		Motorized and mechanical uses	Use authorizations	Index of physical evidence
				# mechanical transport use days
		Inholdings	Inholdings	# motorized equipment use days
Outstanding Opportunities	Solitude	Visitors	# acres inholdings	
			Remoteness	
			# acres away from travel routes	
	Primitive	Facilities	# visiting parties (Option 1a)	
			Trails	
			# users residing in service area (Option 1b)	
Unconfined	Restrictions	Trails		
		Restrictions		

These questions, indicators, and measures capture a subset of things that are relevant to most wildernesses, that are tangible, and that managers can influence. This list DOES NOT quantify all the different aspects of wilderness character. And this list does NOT quantify the full set of attributes that managers need to understand to manage a wilderness.

WILDERNESS CHARACTER TECHNICAL GUIDE

- Developed using FS template for Technical Guides
- Technical Guide Development Team had input from 40 agency subject-matter-experts and 12 scientists nationwide
- Draft completed January 2006
- For each of the 25 measures, describe:
 - Why it's important
 - What type of data will be collected
 - How the data will be collected
 - How complete the data are
 - How the data will be processed and analyzed
 - What the cautions are about interpreting and using the results

The WHAT. The Technical Guide details exactly what will be monitored, the protocols used, how the data will be gathered, processed, and assessed.

Infra-WILD Wilderness Character Module

Wildernesses

Id: 138
Name: KOOTZNOOWOO WILDERNESS
Monitoring Year: 2005

Untrammelled | Natural | **Undeveloped** | Outstanding

Buildings | Trails | Dams | Roads | Utilities | Mines | Fixed Instr | Motorized Equipment / Mechanical Transport

All building that exist in the wilderness are listed and all attributes are correct.

Buildings

Select	Cn	ObjName	Id	Name	AdminOrg
<input checked="" type="radio"/>	1402.008061	BUILDING 34W02		PACK CREEK TOWER	
<input type="radio"/>	1023.008061	BUILDING 3A01		LAKE KATHLEEN CABIN	100534
<input type="radio"/>	2336.008061	BUILDING 3A01BO		LAKE KATHLEEN WOODSHED	
<input type="radio"/>	1403.008061	BUILDING 3A01TL		LAKE KATHLEEN OUTHOUSE	
<input type="radio"/>	1024.008061	BUILDING 3A02		WEST FLORENCE CABIN	
<input type="radio"/>	1404.008061	BUILDING 3A02TL		WEST FLORENCE OUTHOUSE	
<input type="radio"/>	1025.008061	BUILDING 3A03		EAST FLORENCE CABIN	100534
<input type="radio"/>	1405.008061	BUILDING 3A03TL		EAST FLORENCE CABIN OUTHOUSE	
<input type="radio"/>	1026.008061	BUILDING 3A04		DISTIN LAKE CABIN	100534
<input type="radio"/>	2338.008061	BUILDING 3A04BO		DISTIN LAKE WOODSHED	

Building Details

Id: 34W02
Name: PACK CREEK TOWER
SubType: SFRVICF

The HOW. The computer application used to gather, enter, validate, store, analyze, and report.

PILOT TESTING

- Pilot testing conducted in all nine FS regions, completed in mid-2006
- Pilot test sites chosen to fill six specific criteria
- Pilot testing goals:
 - Test relevance of measures
 - Test monitoring protocols
 - Test organization and writing of Technical Guide
 - Validate monitoring benefits
 - Assess workload impacts on staff and training needs



Pilot test sites were chosen to fit the following criteria:

- Forest Service “workload complexity classes” (in four categories ranging from simple to highly complex)
- Size of the wilderness (small, medium, large)
- Distance from urban areas (urban-proximate, remote)
- Age since designation (old, new)
- Administrative complexity (managed by one administrative unit, managed by more than one administrative unit)
- Special provisions (few legislated special provisions, many legislated special provisions)

PILOT TESTING RESULTS

- All pilot tests felt that implementation of the protocol would improve their understanding of wilderness character
- 8 of the 9 pilot tests felt that wilderness character monitoring was worthwhile because it will provide:
 - Useful information for guiding stewardship actions
 - Visibility to the wilderness program
 - A powerful tool for encouraging integration with other resources
- Not all measures were relevant in every wilderness, but all measures had relevance in a majority of the pilot tests
- All pilot tests felt that the monitoring was do-able and the anticipated workload was reasonable

Other primary pilot test results include:

1. Despite the diversity of wilderness across the country, the rationale for this monitoring made sense and was applicable across the entire system of 407 Forest Service wildernesses.
2. The completeness and accuracy of data currently stored in corporate and external information systems varies greatly.
3. The Technical Guide was well organized and clearly written, though the need for a shorter, more user friendly version was voiced by many.
4. Staff preferred to receive training in different formats, including both classroom and remote offerings.
5. The proposed use of centralized project staff to improve efficiency and reduce local workload made sense was supported by the test participants.
6. Estimate of hours required to implement this monitoring once every five years:
 - Workload Complexity Class A wilderness (most simple) = 33 hours
 - Workload Complexity Class B wilderness = 54 hours
 - Workload Complexity Class C wilderness = 59 hours
 - Workload Complexity Class D wilderness (most complex) = 130 hours



FOR MORE INFORMATION

GO TO: <http://www.wilderness.net/index.cfm?fuse=WC>

- **National Framework Publication**
- **Executive Summary**
- **Frequently Asked Questions**
- **Table of Qualities, Questions, Indicators, Measures**
- **Technical Guide (by December)**

GO TO:

<http://leopold.wilderness.net/research/fprojects/F014.htm>

The wilderness.net website has the basic material and the Leopold Institute has extensive material on wilderness character, this monitoring protocol, pilot test results, and much more. This Leopold Institute website should be functional by mid-November.