Project Visual Analysis for the Allegheny National Forest[1]

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Abstract: The Project Visual Analysis is a landscape assessment procedure involving forest vegetative manipulation. A logical step by step analysis leads the user to a specific set of landscape management guidelines to be used as an aid in designing a project or in evaluating whether the proposed project impacts will meet visual objectives. Key elements within the procedure are: the establishment of a visual quality objective based on landscape variety, observer sensitivity, and observer distance; the identification of the visual absorption capability using 5 factors and a numerical rating system; and the evaluation of the proposed project against guidelines relating to shadow zone, size, shape and line.

INTRODUCTION

Originally developed in 1974, the methodology of the Project Visual Analysis was born out of several premises:

- Visual assessment techniques and consequent guideline formulation for vegetative impacts over recent years have been inconsistent.
- Most inventory and assessment approaches to the visual resource answer the questions of what and why, but not how.
- Few of the current approaches are easily grasped by field personnel and translated into meaningful input for implementation.
- The availability of visual resource data and the understanding of that data are lacking, yet very critical at the field level where most of the design decisions are made.
- Most proposed activities on public land require assessment of the visual resource but not all require the same depth of analysis.
- Professional expertise is not available in the field for every project.

In light of these major points a visual assessment procedure has been developed that can be applied by field personnel. The procedure is methodical, flexible and specific in application.

The Project Visual Analysis is designed for use on projects involving vegetative manipulation where the individual impact covers an area of about 100 acres or less. It will be applied on projects such as timber cuttings, right-of-way clearings, oil well clearings and borrow source clearings that are beyond the immediate foreground. Removal of vegetation was chosen as the main thrust of the analysis because it is the most frequent and significant visual impact on the forest environment. Other project impacts, such as landform alteration, addition of structures, water impoundments and recreation developments must be dealt with using other approaches.

The results of the procedure are landscape management guides determined through two key analyses. They are the Visual Quality Objective (USDA 1974), which establishes the degree of acceptable alteration of the natural landscape and the Visual Absorption Capability (USDA 1976), which indicates the capability of a specific project area to absorb certain kinds

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of management activities.

One of 5 brief and simple sets of guides can be chosen and used either as an evaluation of a proposed project's ability to meet the recommended visual quality objective or as an aid in designing the project. With experience, we may add other guides as well as develop inventory criteria and guides for impacts other than vegetative manipulations.

PROCEDURE

The Project Visual Analysis for the Allegheny National Forest takes the user through a logical step by step assessment, requiring the completion of up to 5 forms and 2 maps. Under the premise that the level of analysis should be commensurate with the level of visual resource sensitivity and the magnitude of the proposed impacts, the procedure was designed such that the actual number will vary with the situation. Figure 1 illustrates the steps that may be completed and their interrelationships.

In the following explanation of each step, it is assumed that a project has been proposed by the land manager and a visual assessment must be made. The term "project area" means the general area where impacts are proposed to occur. The term "impact" refers to a site specific vegetative cutting.

Step 1 - Inventory

Inventory data, based on existing ground conditions, are taken during the season in which the project area receives the most use. All existing view facilities and those proposed for the next 10 years are identified through review of maps and approved plans. A view facility can be a road, trail, recreation site, water body, residence, or other. For each view facility, views are inventoried and mapped (fig. 2). The project area will be inventoried as part of the immediate foreground, part of the distant landscape or both. The sensitivity level[3/] of each view facility is identified from maps prepared for the entire Forest.

A work map (fig. 2), showing the project area, view facilities, proposed impacts and sensitivity levels should be prepared. This map will be an important working tool for the rest of the analysis and serve as backup material.

Step 2 - Sorting Questions

Next, utilizing the inventory data from Step 1, the researcher sorts and drops from the

[3/] Sensitivity level is a measure of peoples concern for scenic quality. Three levels have been identified, 1, being high sensitivity, 2, average and 3, low.

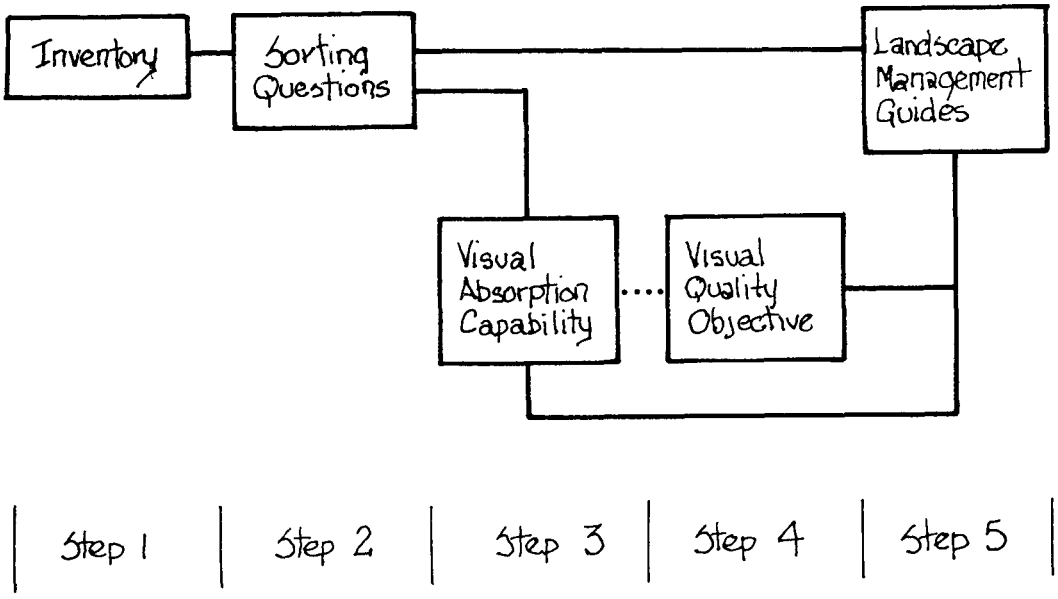

Figure 1--Project Visual Analysis Flow Diagram.

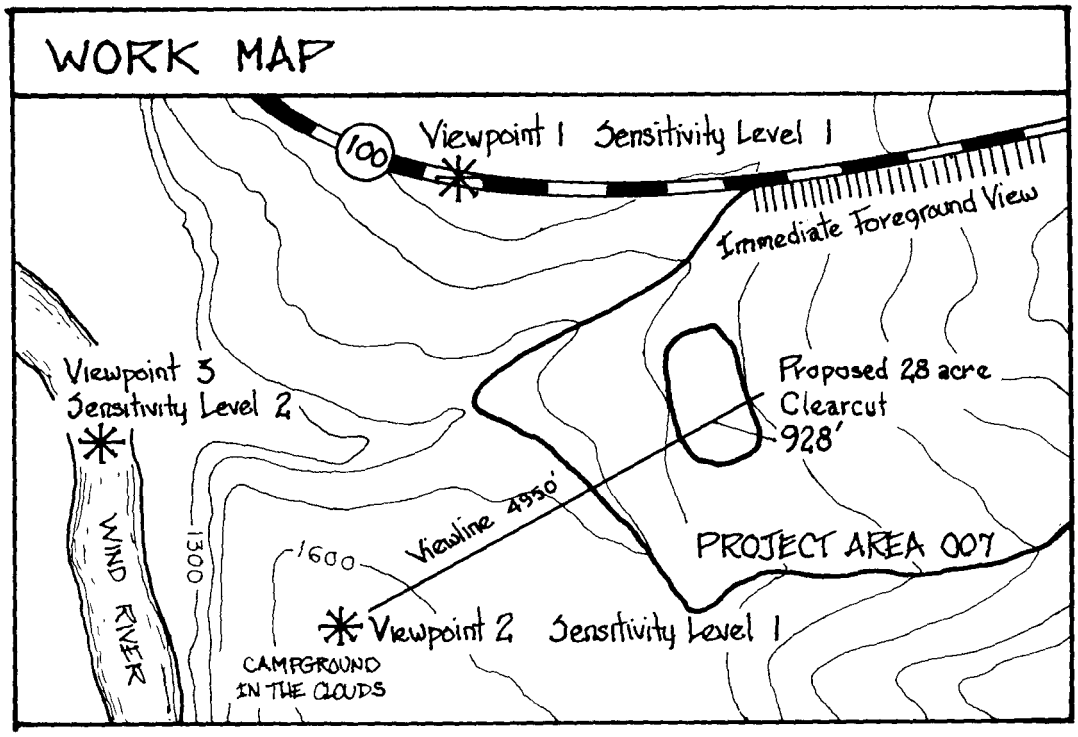

Figure 2--Example of work map and necessary data to complete the analysis for a forest clearcut.

remaining procedure any data that are not visually significant such as the least sensitive view facilities and project activities producing only minor contrasts. For these projects, analysis proceeds directly to Step 5 - and uses the least restrictive landscape management guides. Also projects that produce impacts as a part of the immediate foreground of the view facility will be referred to the landscape architect for site design recommendations. The analysis will continue on only those remaining projects that product major contrasts and will be seen from a sensitive view facility.

Step 3 - Visual Absorption Capability

The Visual Absorption Capability is an assessment of the ability of a specific land area to absorb vegetative cutting impacts. An inventory and numerical rating system based on the needs of the Allegheny National Forest has been developed to measure this ability (fig. 3). The result is an overall rating of high, intermediate or low, based on a mathematical division of all possible ratings.

First, up to 3 points that provide the best views of a specific proposed impact are identified. Then inventory data for factors relating to both the observer and the land are collected for each viewpoint. A visual absorption capability rating from a low of 1 to a high of 5 is assigned to each factor. The most critical or key viewpoint can then be determined by summarizing the numerical ratings and identifying the viewpoint with the lowest overall rating. It is this key viewpoint that will be used for further evaluation, since it has the lowest overall capability to absorb vegetative impacts. The assumption is made that if the impact is acceptable from the most critical viewpoint, then it will also be acceptable from the others.

The factors chosen for the inventory (fig. 3) are those most relevant to visual absorption capability on the Allegheny National Forest. Others such as vegetation height and recovery rate are of relevance, but because of their uniformity on the Allegheny, have no effect on the resulting visual absorption capability rating. The number of variables was limited to provide more consistent and useful results. Too many variables will produce final summaries that tend to converge upon an average value, making differentiation between high, intermediate and low difficult. They will also make the analysis unnecessarily tedious.

Step 4 - Visual Quality Objective

The visual quality objective identifies to what level or degree the land manager is willing to alter the natural landscape. Using the

VISUAL ABSORPTION CAPABILITY

Factors		Variables	Rating	Viewpoints V1	V2	V3
OBSERVER POSITION	Superior	+300' - +500'	1			
		+100' - +300'	2	2	2	
	Normal	±100'	3			
		-100' - -300'	4			4
	Inferior	-300' - -500'	5			
OBSERVER DISTANCE	Foreground	0 - ¼ mi.	1			
	Middle-ground	¼ - ½ mi.	2			
		½ - 1 mi.	3	3	3	
		1 - 2 mi.	4			4
	Background	2+	5			
VIEW DURATION	Long	30+ sec.	1		1	
	Short	10 - 30 sec.	2			
		5 - 10 sec.	3			3
		3 - 5 sec.	4	4		
	Glimpse	0 - 3 sec.	5			
LANDSCAPE DESCRIPTION		Feature	1			
		Focal	2			2
		Enclosed	3	3	3	
		Panoramic	4			
		Other	5			
SLOPE	Very Steep	45+%	1			
	Steep	30 - 45%	2			
	Moderate	20 - 30%	3			
	Gentle	10 - 20%	4			
	Very Gentle	0 - 10%	5	5	5	5

Lowest rating is the Key Viewpoint

17	14	18
	Summary	

VISUAL ABSORPTION CAPABILITY

5 - 13 Low
14 - 16 Intermediate
17 - 23 High

Figure 3--Rating system devised for development of visual absorption capability.

Visual Management System developed by the USDA (1974), an objective is derived using a) the sensitivity of the viewer, b) the intrinsic variety of the land. and c) the distance from the viewer. In order to achieve uniformity, sensitivity levels and variety classes were mapped on a forestwide basis. The information, identified from these maps, combined with the distance zone from the key viewpoint yields a recommended visual quality objective (fig. 4).

VISUAL QUALITY OBJECTIVE MATRIX								
		Distance Zone / Sensitivity Level						
		Fg1	Mg1	Fg2	Mg2	Bg1	Bg2	3
Variety Class	Class A	R	R	R	PR	PR	PR	RR
	Class B	R	PR	PR	M	M	M / MM	MM
	Class C	PR	PR	M	M	MM	MM	MM
		R - Retention PR - Partial Retention			M - Modification MM - Maximum Modification			

Figure 4--Matrix for establishment of visual quality objective.

Step 5 - Landscape Management Guides

Once the visual quality objective and visual absorption capability have been identified the appropriate set of landscape management guides can be chosen (fig. 5). A total of 5 sets of guides has been conceived to cover adequately all possible combinations of visual quality objectives and visual absorption capabilities. Figure 6 shows an example of one set of guides and contains recommendations for shadow zone: size, shape and line.

Shadow zone is the area screened prom view by foreground vegetation (fig.7). [4/] It is a calculation of the portion of the proposed impact that it is actually viewed. In addition to inventory data from Step 3, such significant

[4/]A program has been developed for a programable pocket calculators that solves for shadow zone.

LANDSCAPE MANAGEMENT GUIDE MATRIX					
I - Most Restrictive — V - Least Restrictive		Visual Quality Objective			
		Retention	Partial Retention	Modification	Maximum Modification
Visual Absorption Capability	Low	I	II	III	V
	Intermediate	I	III	IV	V
	High	II	III	IV	V

Figure 5--Matrix for identification of appropriate landscape management guides.

LANDSCAPE MANAGEMENT GUIDES

LANDSCAPE MANAGEMENT GUIDES III	Does the Proposal meet this Guide
SHADOW ZONE -- Design the depth of the cutting unit not to exceed 1.5 times the Shadow Zone length.	YES NO
SIZE -- Maximum size of the cutting unit should be 24 acres.	YES NO
SHAPE -- Edges should be varied. Use undulating free-form boundaries, not straight lines or geometric shapes.	YES NO
Cutting units should be patterned on the largely horizontal form and line of the ANF landscape, that is, generally two to three times as long as wide and parallel to the countours.	
LINE -- If cutting units approach a ridgeline, design to eliminate "notch effect." Provide a transition in height from forest cover to opening by selective cutting of adjacent stands or by location and shape of cutting unit boundaries. This transition should occur in a distance equal to one-half the width of the proposed opening at a minimum.	YES NO

Figure 6--Example set of Landscape Management guides.

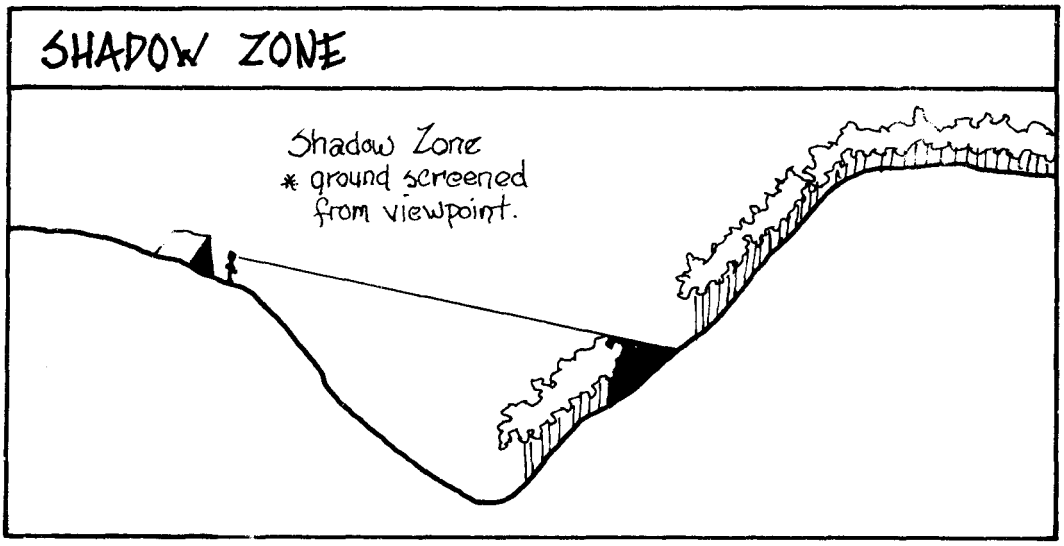

Figure 7--Shadow Zone is the amount of ground screened from view by foreground vegetation.

factors as vegetative height, view direction and aspect are incorporated into the calculation for shadow zone. The size criterion operates in conjunction with the shadow zone and sets an upper limit on the size of an impact. The shape criterion requires the form of visible openings to correspond to the horizontal line and form of the Allegheny National Forest landscape. The line criterion insures recognition of potential contrasts when a project is located against the skyline.

Depending on the number of criteria met, the proposals may proceed without change, may proceed with minor changes, or may require redesign and alternative development. In all cases, at least an office review of the inventory and analysis by the landscape architect is recommended. If fewer than four criteria are met, the user should recognize the need for some active involvement by the landscape architect beyond the analysis review. In many situations, the user may develop several alternatives by responding to the criteria within the appropriate guidelines. The criteria listed above are not meant to be a comprehensive list but a recognition of the most significant factors that affect whether the impact will meet the visual quality objective or not.

CONCLUSION

The Project Visual Analysis is a dynamic, ongoing process. The procedure is intended to be flexible enough to respond to the quickly changing needs of land managers. Revisions are constantly being made as a result of feedback from those using the process on the Allegheny. Revisions have affected the procedure and choice of inventory factors, but the basic premises and methodology remain valid. Even at this writing, areas in need of strengthening have been recognized.

It must be emphasized that this procedure is not a land use decision, but only a working tool for providing input. The procedure attempts to show how a project can be designed to meet the visual objective. The user is encouraged to retrace the analysis steps and identify the specific factors that significantly influence the results. This knowledge enables him/her to key in on appropriate design solutions. The user will have the visual data available and, once familiar with the procedure, will be able to gain understanding of how to apply them to achieve a quality visual resource.

Project Visual Analysis is a methodical, consistent approach that can be performed by adequately trained field personnel. A Visual Analysis Handbook (Kell 1978) has been developed and is being used as a training tool.

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