

Arizona Water Protection Fund

Guidelines for Photographic Monitoring Plan Development

Photographs are an excellent way to qualitatively document changes that occur on a project site due to project activities. To ensure that the results of your photo documentation are successful, we recommend that you establish a standard procedure. The procedure should be well documented and used each time the photo images are replicated. The same methods must be used each time you photograph a location to ensure consistency of visual images for comparison purposes. The following document describes the main elements to be included in a photographic monitoring procedure.

1. Identify the types of changes you wish to document.

This should relate to your project objectives. Each camera point or group of points should record a specific resource activity or occurrence. For instance, if you are fencing a riparian area to exclude grazing, your objective is to restore the riparian vegetation within the enclosure. Your focus would be on monitoring changes in the amount and type of vegetation within the enclosure versus outside the enclosure.

2. Select permanent photographic locations that will best represent those changes.

Walk the project site and select locations that:

- (a) are accessible, can be permanently marked and easily located on return visits;
- (b) show some type of permanent feature in the background, like a rock outcrop or a distant hill;
- (c) have low probability of being destroyed by a natural or man-made occurrence, such as a flood;
- (d) represent each habitat type or action.

3. Permanently mark photo point locations.

Mark the site with something that is fairly permanent, such as rebar driven into the ground, or PVC pipe filled with cement. The marker should be located directly under the camera position. Permanently mark the photo point number on the location monument. Survey the point using Global Positioning Satellite (GPS) technology, if available. A GPS unit should get you within sight of the marker on return visits.

4. Establish reference points.

Establish one, and preferably three, reference points within 200 feet of the photo point monument. If possible, select something that can be expected to last for the life of the photo point. Iron stakes, large stumps, boulders or live trees are examples. Carefully measure the distance and determine the true compass bearing between each reference point and the photo point marker.

5. Write a description of each photo point location using references to land marks and GPS coordinates.

Complete the *Initial Take - Permanent Photo Point Record Form* (Form 1), using care to describe the travel route and location accurately. Check the form for completeness before leaving the site.

6. Pinpoint locations on maps and photos.

After the photo point marker and reference points are in place, accurately mark and label the point location on an aerial photograph or vicinity map (USGS quad map). Photo copies of aerial photos or maps may be used in place of originals.

7. Photograph the point with background.

Before leaving the site, take one or more photographs of the photo point marker and the vicinity with, if possible, one of the references in the background.

8. Instructions for setting up the photograph.

- Preferably, use a tripod at a set height, such as 1 meter. If no tripod is available, set a standard lens height above ground and use some type of measuring device.
- Frame the picture so that some horizon or sky is visible, preferably including a fixed object in the photo, such as a distant hill or rock outcropping.
- Try to level the camera as near to horizontal as possible. If photo must be taken with camera tilted, measure or estimate and record degree of tilt.
- Using a good compass, identify the directional (in degrees) at which the picture is being taken (e.g. east at 92 degrees). Depending on the situation, you may choose to take more than one photograph from a point, but at different directionals. You may also choose to take multiple overlapping exposures to get a panoramic view of the area. (Panoramic camera settings can also be used). Be sure to document the directional at which each photo was taken.
- Place something in the photo as an indicator of scale placed at a set interval from the lens, such as a painted board with alternate black and white squares.
- Weather conditions: a sunny day is preferred, although a high and bright overcast day is also good. Record an estimate of the time of day when light is likely to be best at the site as a guide for scheduling return visits.
- Clearly document on Form 1 all instructions for setting up the photograph at each photo point. This information will assist in relocating the site for re-shoots and will ensure that photographs will be comparable.
- Document the photo number and store them. This will help you identify the pictures after they are developed.

9. Establish a baseline by taking the first set of photographs before the project is initiated. Complete the *Initial Photo Info* segment of Form 1.

10. Fill out data sheet for each photograph and each retake. This will assist with identifying photographs once they are developed. Use the attached forms to document your work. When you send in copies of your project photos/slides, send in the appropriate form describing the sites and photographs.

11. Label Photographs/Slides

- Every photograph and slide should be numbered and dated.
- Establish a standardized format for labeling your photographs for your records. Include the following information:
 - Brief description of picture/location, including photo point number, compass direction, etc.

- Date picture was taken
- Grant number

Example:

PP1 - looking west at 320° across revegetated field along Santa Cruz R.

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12. **Retaking Photographs - Match Original Procedure**

- Prior to leaving for the field, the photographer should assemble equipment and materials, including copies of the photo point record sheets. You may choose to take copies of earlier photographs to assist in set up and retake of pictures.
- Use the camera and lens that produced the original photograph, if possible. Otherwise, duplicate the equipment as closely as possible.
- Locate the point by following the directions recorded on Form 1. A GPS unit is very helpful when relocating markers. Examine the photo point marker and references and note their condition on the form. It may be necessary to replace them.
- Set the camera directly over the location stake, and at the original height above ground. Align the camera on the original compass bearing as close to horizontal as possible. Check to see that the resulting view coincides with that in the original photograph. If it doesn't, take a photo at the original alignment and one at the alignment which seems to best duplicate the original view.
- Record the bearing for the retake photo. (After images are taken, select and retain the ones that best replicate the original view.) Note the proper bearing and angle on the form and explain if different from the original. Check to see that the record form is complete before leaving the point.

**EXAMPLE INITIAL TAKE
PERMANENT PHOTO POINT RECORD**

Photo Point No. _____
Project Name _____ AWPf Grant No. _____
Subject and Purpose of Photo _____

Retake Frequency _____ Retake Due Dates _____

Initial Photo Info:

Photographer _____ Date _____ Time _____ am pm
Camera _____

Weather Conditions:

Photo Point Description (Describe access to point, point vicinity, and specific location; include sketch map below):

GPS Coordinates (UTMs, Lat/Long) _____
Datum (NAD83, NAD27, etc.) _____

VIEW 1	OPTIONAL VIEW 2	OPTIONAL VIEW 3
Camera Height _____	Camera Height _____	Camera Height _____
Compass Bearing _____	Compass Bearing _____	Compass Bearing _____

SKETCH MAP: Include background reference points to help with relocation.

Reference Point 1
Description _____

Bearing and distance _____

Reference Point 2
Description _____

Bearing and distance _____

Reference Point 3
Description _____

Bearing and distance _____

**EXAMPLE RETAKE
PERMANENT PHOTO POINT RECORD**

Photo Point No. _____ Date _____ Time _____ am pm
Project Name _____ AWPF Grant No. _____
Photographer _____
Camera _____

VIEW 1	OPTIONAL VIEW 2	OPTIONAL VIEW 3
Camera Height _____	Camera Height _____	Camera Height _____
Compass Bearing _____	Compass Bearing _____	Compass Bearing _____

Condition of Point Monument and References: _____

Weather conditions or recent events that may have influenced conditions at the site: