



## KANSAS WOODLAND MITIGATION GUIDELINES FOR SMALL WATERSHED STRUCTURES

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Pratt, Kansas

### INTRODUCTION

Many small watershed projects will have impacts on riparian woodland resources. For purposes of this document, the term “riparian” will follow the definition in the Kansas River and Stream Corridor Management Guide published by the Kansas State Conservation Commission (2000) as “An area of stream-side vegetation along any ephemeral, intermittent, or perennial stream including the stream bank and adjoining floodplain typically distinguishable from upland areas in terms of vegetation, soils, or topography”. The following guidelines provide general direction regarding the mitigation of riparian woodland habitats impacted by watershed structures. They are focused on habitat rather than specific wildlife populations, and are intended to provide consistency in plan development. These procedures may be a necessary component of the competitive funding process administered by the State Conservation Commission (SCC), Natural Resources Conservation Commission (NRCS) PL 566 program, and permit requirements from various federal and/or state agencies.

The following guidelines are provided to inform watershed districts of the process by which they should develop mitigation plans. Plan development is the responsibility of the Districts, however, technical assistance may be available from KDWP, NRCS, the Kansas Forest Service (KFS), or other public and private entities. Generally, all mitigation plans will be reviewed by appropriate state and federal resource agencies if a state or federal permit is required for the project. For purposes of this document, when referring to state and/or federal resource agencies or their future equivalents, the following agencies will hereafter be referred to as **RESOURCE AGENCIES**: including, but not limited to, the Kansas Forest Service, Kansas Department of Wildlife & Parks, Kansas Department of Health and Environment, Kansas State Conservation Commission, US Department of Agriculture’s Natural Resources Conservation Service, US Fish & Wildlife Service, and US Army Corps of Engineers.

### EVALUATION PROCEDURE

A subjective evaluation procedure will be used to rapidly quantify a watershed structure’s probable impact on wildlife habitats. Unless otherwise required, the evaluation will be processed through KDWP’s Environmental Services Section using the agency’s current standard subjective procedures (see Subjective Assessment of

Terrestrial Habitats, KDWP, rev. 2004). All evaluations will be made on the basis of the value of the habitat at the time of the assessment. The assessment will include a quantitative measure of impact area (acres) and qualitative evaluation (R-value) of each habitat type. The assessment will provide a habitat value (R) from 0.0 to 10.0 that represents the quality of the habitat being evaluated compared to the optimal habitat (i.e. reference site) type for the geographical area in question, with a score of 10.0 representing reference site conditions. With most seasonally and permanently resident terrestrial wildlife, an R=10.0 value habitat generally represents the highest quality vegetative-structural community which can be achieved. High quality wildlife habitat may be influenced by plant characteristics such as species composition, age class, or growth form. Other site characteristics that influence habitat quality include geomorphic characteristics, ecological site or spatial relationships to adjacent or nearby habitats that provide resource requirements for wildlife (forage materials, nesting sites, shelter, etc - See subjective guidelines for the evaluation of terrestrial wildlife habitats for specific information).

The results of the habitat assessments may be used in permitting decisions and in determining the quantity of mitigation required. Sites may be re-evaluated after a period of 10 years, unless otherwise agreed upon by **RESOURCE AGENCIES**.

## **OPERATIONAL MITIGATION GUIDELINES**

The goal of a mitigation plan should be to compensate with the same kind of habitat that is lost (i.e. in-kind) and result in 100% replacement of the functional habitat value lost. Compensation will work toward establishing and/or improving permanent habitat. It will be designed to provide maximum benefit to all wildlife species associated with the habitat changed.

The functional habitat value is represented by the term "Habitat Unit" (HU). For terrestrial habitat types, a habitat unit is determined by multiplying the R-value by the acreage impacted.

Example: 10 acres of riparian woodland will be lost to construction and inundation of a watershed dam. The field assessment calculates a woodland habitat value R = 7.0.

$$\text{HU} = 10 \text{ acres} \times 7.0 = 70 \text{ habitat units.}$$

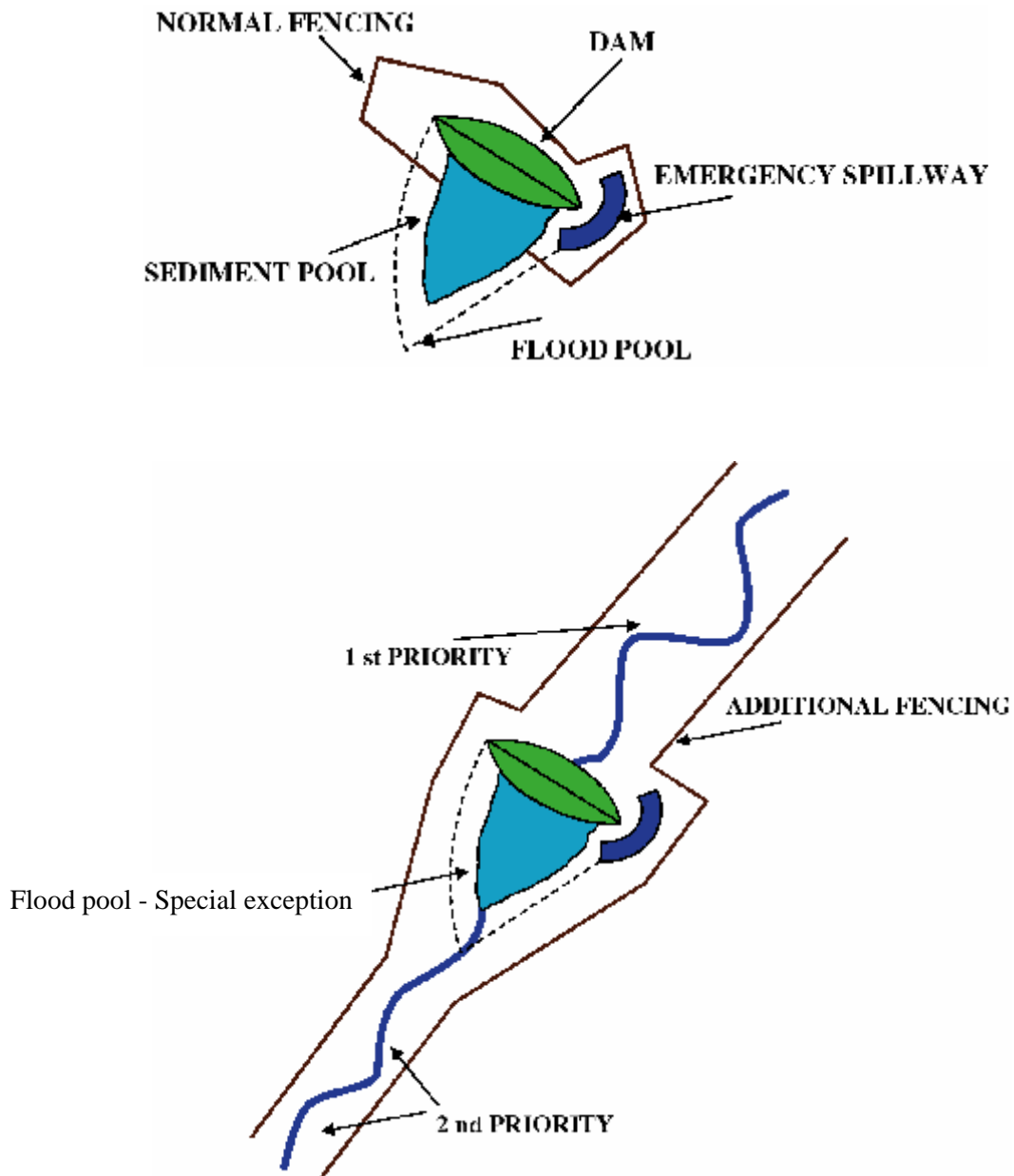
In general, all mitigation measures must work toward avoiding impacts to, establishing, and/or improving a permanent riparian woodland habitat. Riparian woodland can be created or enhanced by planting appropriate species, protecting existing vegetation, or by promoting the natural establishment of desirable trees.

- 1) **Duration** - Once established, mitigation measures for a particular project must be maintained to benefit wildlife throughout the life of the project. For purposes

of watershed structures, life of the project means that period throughout which the adverse impacts will occur or 100 years, whichever is less.

- 2) **Location** - Unless mutually agreed to by the appropriate state and federal agencies, compensation measures should be located contiguous to the structure. Use the following guidelines when selecting the location for mitigation areas (**Figure 1**):

**FIGURE 1.** Priority Area for Mitigation Measures



- 1<sup>st</sup> priority - adjacent downstream riparian areas.
- 2<sup>nd</sup> priority - adjacent upstream riparian areas.
- 3<sup>rd</sup> priority – non-contiguous site within the same HUC 12 (sub-watershed)

Off-site mitigation will be acceptable for instances where a mitigation site is impractical to implement contiguous with the structure, or if it is agreed upon between **RESOURCE AGENCIES** and the WJD that off-site mitigation is preferred. Practicality may be dependant on hydrology, topography, soil types or other physical characteristics of the area; however, financial cost expenditure is not considered suitable for defining an area as 'impractical'. Spatial proximity limitations of a mitigation area to the impact site should be evaluated on a case-by-case basis; however, for general purposes mitigation sites should be located within the same HUC 12 (previously known as HUC 14 or sub-watershed). In rare instances, a mitigation area may be considered acceptable when located adjacent the permanent pool. These areas will not be acceptable in the majority of projects since they do not border a stream habitat type (i.e. not in-kind).

- A) Calculating mitigative gain - When measures improve the existing habitat, the mitigative gain is equal to the difference between the habitat's current value and its optimum value of 10.0. For mitigation sites that allow for seasonal grazing the optimal value will be 8.5 (see Guidelines for Woodland Mitigation Plan, pgs. 13-14)

Example:

The mitigation plan includes fence to exclude livestock from 10 acres of downstream woodlands. The existing downstream woodland value is R = 6.0.

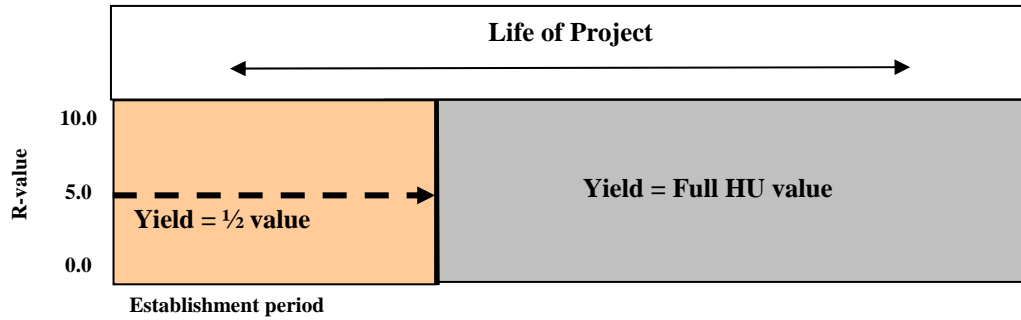
The mitigative gain =  $10.0 - 6.0 = 4.0$ ;  $4.0 \times 10 \text{ acres} = 40 \text{ HU}$ .

When a mitigation site is not contiguous with the habitat evaluated during the assessment, the R-value of the existing habitat must be determined in order to determine the mitigative gain for the site.

- B) Calculating establishment period compensation - In many cases, compensation for riparian woodland losses will include planting appropriate tree and shrub species. Whenever such plantings are made, there remains a loss of habitat value between the time the planting is made and the time it reaches maturity. For riparian woodlands, this establishment period may easily be 50 years or more depending on species composition and the specific site identified for mitigation. The establishment period must be taken into consideration when determining the amount of acres required to mitigate for the Habitat Units proposed. See the following example on how to compute compensation acreage needed for tree plantings.

## Computing Compensation Acreage for Tree Plantings

Anytime planting trees is part of the mitigation plan, it is assumed that between the time of planting and the time the planting reaches maturity (i.e. R-value 10 or the highest potential quality for wildlife), the trees will yield only half of its potential HU value. Shown graphically as follows:



With the above assumption, the equation below can then be used to compute the acreage required to compensate the loss of riparian woodland while taking into consideration the establishment period. The equation considers the HU value of the habitat lost, the years required for plantings to reach their greatest potential for wildlife, the life of the project (LOP), and the HU value the habitat would have yielded without the project. The latter further assumes the quality of existing habitat remains unchanged during the period equal to the life of the project.

$$\{Y \times 5.0 \times \text{Establishment Period}^*\} + \{Y \times 10.0 \times \text{Balance of LOP}\} = \text{HU lost} \times \text{LOP}$$

Solve for Y = Mitigation acres required for compensation

- \* Establishment Period: East of U.S. Highway 281 = 50 years  
 West of U.S. Highway 281 = 50 years if oaks are present  
 30 years if no oaks are present

### **EXAMPLE:**

Project located in the Pawnee WJD #81  
 Life of the project = 100 years  
 Riparian woodland lost = 20 acres  
 Habitat Value (R) = 7.0  
 Establishment Period = 30 years  
 Habitat Units = 20 x 7.0 = 140

$$\begin{aligned} \{Y \times 5.0 \times 30\} + \{Y \times 10.0 \times 70\} &= 140 \times 100 \\ Y150 + Y700 &= 14,000 \\ Y850 &= 14,000 \\ Y &= 16.5 \text{ acres required for compensation} \end{aligned}$$

- 3) **Soils** - Mitigation sites must have soils which are similar in characteristics to that provided by the type of habitat that is mitigated. In this manner, the community that is mitigated has the potential for supporting similar plants and other ecosystem characteristics. Most riparian woodlands are located in alluvial soils consisting of sands, silt, and clays deposited by a stream on the adjacent floodplain. In some instances, alternative soil types may be acceptable. Alternative soil types must be suitable for hardwood trees, provide good potential for wildlife habitats, and be mutually agreed upon as suitable for riparian woodland mitigation by **RESOURCE AGENCIES**. Information to identify appropriate soils can be found in USDA county soil survey maps or by contacting the local county NRCS office or district forester.
  
- 4) **Implementation** – Implementation of the mitigation plan is the responsibility of the watershed district. At times, financial cost-share for riparian woodland mitigation may be provided by other agencies. This is acceptable, but should be specifically identified as such in the mitigation plan. Sources of financial and technical assistance can be found by contacting the Kansas State Conservation Commission, USDA-Natural Resource Conservation Service, USDA-Farm Service Agency, US Fish and Wildlife Service, Kansas Forest Service, Kansas Rural Center, Kansas Alliance for Wetlands and Streams, or KDWP.
  
- 5) **Management** - All mitigation sites are considered to be the responsibility of the local watershed district and must be held in a conservation easement or purchased by the district. The following are some provisions that should be incorporated into conservation easements:
  - The easements should explicitly state the land is for wildlife habitat mitigation given by the Landowner (GRANTOR) to the Watershed Joint District (GRANTEE) for construction of the site. If multiple landowners are involved, multiple easements will be necessary.
  
  - Terms of easement shall be for a time period equal to the existence and function of the structure for which the mitigation plan has been developed.
  
  - Include a detailed narrative delineation of the easement boundaries (legal description, GPS coordinates, etc). Maps should be included in the mitigation plan describing the easement boundaries. Provide a narrative description and maps in the mitigation plan for each 'Area' that will be covered by the easement.
  
  - Provide a total acreage for the easement area(s).

Specific easement conditions should include:

A. A stipulation that allows for the right to enter (ingress) and exit (egress) the property in order to implement, maintain, and evaluate the mitigation plan.

B. All conditions included in the mitigation plan will be implemented and maintained during the period of the easement.

C. (**Optional**) Any revenues derived from the management of the easement will belong to the landowner, tenant, or person(s) appointed by the GRANTOR.

**Example:** taken from King Engineering, (E.A. King)

Wildlife Habitat Easement

Know All men by these present that the \_\_\_\_\_ (Landowner) hereafter referred to as GRANTOR, in consideration of the sum of One U.S. Dollar (\$1.00) and other good and valuable consideration, paid by the \_\_\_\_\_ (WJD) hereinafter referred to as GRANTEE, the receipt and sufficiency of which is hereby acknowledged, does hereby grant, bargain, sell, transfer, and convey to the GRANTEE, its successors, and assigns, a WILDLIFE HABITAT EASEMENT under the terms and condition as hereinafter set out for a period of time that will exist as long as Site No. \_\_\_\_\_, a constructed dam and associated structures, exists and functions for its intended purpose as defined by GRANTEE.

That the terms and conditions of this easement shall be as follows:

1. That this easement shall cover approximately XXX acres of real estate in the -- /1/4 of the --1/4 of Sec. --, T--, R—in ---- County, Kansas described to wit:

Approximately XXX feet south of the back toe of site XX to the point of beginning: Thence 900 feet S-SW meandering approximately 150 feet West of the stream; thence 300' East; thence 800' N-NE along the existing stream; thence 300' West to the point of beginning. (See map in mitigation plan)

*Include descriptions of additional mitigation areas for the GRANTOR (if applicable)*

2. That all conditions of the attached MITIGATION PLAN (hereafter referred to as **PLAN**) set for Site \_\_\_\_\_ shall be implemented and maintained during the period of the easement. **Attach mitigation plan**
3. That the right of ingress and egress across GRANTOR'S real estate is hereby granted to the GRANTEE for the purpose of going in and out of this easement area above described for the purpose of implementing, maintaining, and evaluating the **PLAN**.

4. That any revenues derived from the management of the easement will belong to the landowner, tenant, or person(s) appointed by the GRANTOR.

### **Mitigation Plan**

Each mitigation plan should include:

1. **Cover page** – Identifies the objectives of the mitigation plan, a general time period in which it will be implemented, and provides information on the location, size, and impact the impoundment will have on various habitat types, and the mitigative gain the **PLAN** provides to offset those losses. Even if the plan consists of multiple AREAS, there is still only ONE cover page.
2. **Woodland Mitigation Area Plan** – Provides detailed information on each specific AREA proposed for mitigation including a general narrative description of the site, the location, map(s), soil types, method of HU gain (i.e. protection of existing timber or timber establishment), characteristics of the current and future habitat value of the AREA, and operational conditions. Any management activities should be identified as part of the plan for the AREA and described in detail within the Land Use Management Activities section of the **PLAN**.
3. **Timber Establishment Plan** – INCLUDE ONLY IF TREE ESTABLISHMENT IS PART OF THE PLAN. Provides detailed information on the method of tree or shrub establishment (planting or natural succession), type of plantings (seed or saplings), species planted, percent composition of the total plantings, spacing, total individuals of each species, schematic maps of plantings, weed control measures, estimated survivorship, and a CONTINGENCY PLAN. If multiple AREAS are proposed for tree establishment a separate Timber Establishment Plan should be included for each AREA.
4. **Land Use Management Activities** – Specific land use management activities will be described where those are required for mitigation activities. Examples of these plans include: Timber Stand Improvement (TSI) plan, Timber Harvest plan, Grazing Management Plans, Prescribed Burning Plans, Water Level Management plans, noxious weed control or herbicide use. Many NRCS technical notes or conservation practice standards may be used as descriptions of land management strategies. Any cost-share or subsidy programs the AREA will be enrolled in should be listed.
5. **Technical Support** – A list of technical assistance provider information in developing or management of the mitigation/restoration area will be provided.

6. **Status Reports** - The project sponsor will schedule periodic status reviews of the mitigation AREA(s) to insure that protection and management activities are compatible and effective. Assistance in assessment and compilation of the report can be obtained by contacting agencies involved in plan development. The report should be submitted for review to the appropriate **RESOURCE AGENCIES** on a prescribed time period identified in the plan (typically annually).

1. Guidelines for **COVER PAGE**:

1. State the goal of the mitigation plan, period of time in which the mitigation plan will be implemented along with frequency of status report submittal.
2. List the watershed district, site number, size of the permanent pool, dam, and spillway
3. Legal description on the location of the structure (if multiple sections provide on 'additional description' line) AND/OR GPS coordinates.
4. List the impacts to the various habitat types. This information should be provided by the agency or agencies responsible for performing the habitat assessments.
5. List the Habitat Units that will be gained for each habitat type as part of the mitigation plan. Some habitat types may not need to be mitigated at all (i.e. crop ground, non-native grass pastures, etc.). Predictions must be made for habitat created by seeding the dam & spillway and from the impoundment created. The pasture component of KDWP's Subjective Assessment of Terrestrial Habitats can be used to estimate the predicted R-value of the dam & spillway. Estimates for the lake habitat created by the project can be estimated using the impoundment component of KDWP's Subjective Assessment of Aquatic Habitats.

## COVER PAGE

The following mitigation plan (PLAN) will be implemented prior to, or concurrent with, the initiation of construction of the watershed site described below. Amendments may be made to this plan contingent upon approval from the Corps of Engineers. Status reports will be submitted annually one year from the period of approval of the PLAN, unless otherwise required by the Corps of Engineers.

**Goal:** The PLAN is proposed to offset the loss of habitat that will occur with construction of:

Watershed Joint District: \_\_\_\_\_ Site: \_\_\_\_\_

Impact acres: Pool = \_\_\_\_\_ Dam & spillway = \_\_\_\_\_

Location: \_\_\_\_\_ /4 of the \_\_\_\_\_ /4, Section(s) \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ Co: \_\_\_\_\_

Provide additional legal description below (i.e. GPS coordinates):

\_\_\_\_\_

Construction of this impoundment will result in the loss of:

Habitat type	R-value	Acres	Habitat Units Lost
Riparian woodlands			
Upland Woodlands			
Rangeland			
Pastureland			
Cropland			
Wetland			
Odd areas			
Stream (use linear feet instead of acres) HU = (L.F. x R-value) ÷ 100		LF =	

Implementation of this mitigation plan will result in the gain of:

Habitat type*	Habitat Units Gained	+/- Difference in HUs
Riparian woodlands		
Upland Woodlands		
Rangeland		
Pastureland (dam & spillway) R =		
Cropland		
Wetland		
Odd areas		
Stream (L.F. x R-value) ÷ 100		
Lake (Acres X predicted R-value) R =		

\* Typically pasture habitat is created by seeding the dam & spillway. Lake habitat is created by inundation. Predictions on habitat value can be estimated used KDWP's subjective assessment forms.

## 2. Guidelines for **WOODLAND MITIGATION AREA PLAN**

Many times a mitigation plan will consist of separate parcels of ground that cumulatively provide the necessary Habitat Units to offset the habitat lost. These AREAS may differ in the amount of Habitat Units they provide and in the operational conditions of the mitigation plan.

For example, a mitigation plan is developed from three (3) separate parcels of existing riparian woodlands adjacent to a creek. Individual habitat assessments of each specific area indicates they differ in existing habitat values (R-value), and thus in the potential habitat gain for each site.

Another example would be a mitigation plan that incorporates three (3) different mitigation areas; two (2) that include protecting existing woodlands; and a third that includes tree establishment on some existing floodplain crop ground. Each area will have a different Habitat Unit gain and quite possibly, a different set of operational conditions that need to be implemented in order to achieve those mitigative gains.

The following steps are pertinent to development of the Mitigation Plan Page(s):

1. The first information that should be provided is to identify the site as a specific 'AREA'. AREAS should be numbered numerically beginning with 1, 2, 3,.... and so forth. The AREA number should also be provided at the upper right-hand corner of each page of the MITIGATION PLAN that refers to that AREA.
2. The size and legal description should identify the area. If GPS coordinates such as degrees, minutes, seconds, or UTM's are used please provide and label appropriately.
3. Maps should be provided that outline the AREA. Aerial photographs along with soil survey maps are preferred, but topographic maps will be acceptable. The most current aerial photographs available should be used, and can be obtained by contacting the USDA office for the county. The perimeter of the AREA should be clearly identifiable on the maps. If fencing will be included in the plan, the maps should display the borders of the AREA that will be fenced.
4. The existing habitat type should be identified along with the amount of Woodland Habitat Units that will be gained by the AREA.
5. Indicate if mitigation will occur by protecting existing timber or by establishing timber (check-mark the appropriate space). If the AREA will be mitigating by establishing timber a TIMBER ESTABLISHMENT PLAN must be included.

6. Characteristics of the AREA should be filled out in one of the two tables provided depending whether the AREA is protecting existing woodlands or establishing timber. Information required includes:
- A. The maximum R-value attainable: For AREAS where livestock exclusion is implemented, the maximum R-value will be 10; however, if grazing is allowed in the mitigation area, a maximum R-value allowed will be 8.5 unless professional judgement indicates otherwise<sup>1</sup>. Wooded wintering lots will not be acceptable for woodland mitigation unless a management plan is developed that minimizes the impacts of livestock and allows for the development of a healthy, mature woodland.
  - B. The existing R-value will be the habitat: If the AREA is existing woodland it will need to be evaluated with the KDWP Terrestrial Habitat Evaluation's woodland component, if the AREA is a tree establishment site, the existing woodland R-value will be zero (0). All AREAS used for tree establishment must be either existing crop fields or non-native grassland pastures. Existing habitats of native warm season grasslands, woodlands, or wetlands will not be acceptable areas for tree establishment.
  - C. The Woodland Habitat Unit gain/acre: Gain per acre will be the difference between the maximum R-value and the existing R-value. For Timber Establishment, always assume the existing R-value is zero (0). Insure the AREA meets the limits on suitable habitat types available for woodland establishment (i.e. existing cropland or non-native grasses). All Timber Establishment AREAS require livestock exclusion until the stand has surpassed the pertinent establishment period outlined in the OPERATIONAL GUIDELINES (pg. 5).
  - D. Acres of the AREA will need to be listed to the nearest 1/10<sup>th</sup> of the acre.
  - E. The Total Habitat Unit gain for the AREA = (Habitat Unit gain/acre) X Acres.

<sup>1</sup>In some instances a mitigation plan may allow for seasonal grazing of cattle. If grazing is allowed in the mitigation area, the maximum R-value allowed will be 8.5 unless professional judgement indicates otherwise. This value is based upon research conducted by Hoover et al. (2001) which documented the benefits of cattle exclusion in a two-year study in southeastern Kansas. Results indicated a 16.3% reduction in total understory composition in areas that were grazed. For purposes of accounting for the impacts of grazing on woodland mitigation areas, we estimated a 20% reduction to the plant form components of the woodland habitat assessment based upon long-term impacts to the understory and future woodland development. These components total 30 of the potential 40 points available in the woodland assessment key (see Subjective Evaluation of Terrestrial Habitats. A total of six (6) points (i.e. 30 X 0.20 = 6) were subtracted from the total points available (40) to provide a maximum point value of 34 for seasonally grazed woodlands. A score of 34 would reflect an maximum R-value of 8.5.

7. The soil types for the AREA must be listed. REFER TO THE REQUIREMENTS FOR SOILS LISTED UNDER THE OPERATIONAL MITIGATION GUIDELINES (pg. 6). For general purposes, UPLAND or NON-ALLUVIAL soil types will not be acceptable for mitigation of riparian woodlands occurring in alluvial soil types.
8. A brief description of the area should be provided. Include information on adjacent land use and/or management characteristics pertinent to the PLAN. For example, if an area of existing woodlands is adjacent to a crop field then fencing would not be required. It should be noted that no livestock have access to the area under the current land management.
9. Operational Conditions of the plan should include necessary management strategies to insure the AREA meets its mitigative objectives. For all practical purposes, the following conditions should be applied when mitigating for riparian woodlands:
  - A. Removal of native deciduous trees or understory vegetation through manual or chemical means is prohibited unless stated as an objective in an approved Timber Stand Improvement plan or Timber Harvest plan identified in the LAND MANAGEMENT ACTIVITIES section of the mitigation plan. Other technical guidance on timber improvement for wildlife habitat can be obtained from sources such as NRCS ((i.e. Conservation Practice Standard (CPS) 666 – Forest Stand Improvement)), KS Forest Service and their Forest Stewardship program, or by contacting a local KDWP wildlife biologist.
  - B. Invasive tree species such as Honey Locust, Osage Orange, Russian Olive, and Eastern Red Cedar must be controlled so that no more than 10% of the total species diversity is composed of these species, or other vegetative types determined as ‘nuisance’ or ‘invasive’ by appropriate **RESOURCE AGENCIES**.
  - C. Mineral and fossil fuel exploration is prohibited unless a plan is reviewed and approved by appropriate **RESOURCE AGENCIES**.
  - D. ***To receive full credit for mitigative gain livestock will be excluded from the mitigation area through permanent fencing unless an alternative is approved by the appropriate RESOURCE AGENCIES.*** Alternatives may include the installation of livestock watering facilities to protect streams and riparian areas, temporary fencing, or other innovative techniques agreed upon by plan developers and **RESOURCE AGENCIES**. Unless otherwise agreed upon by the GRANTOR, the installation and maintenance of fence is the responsibility of the watershed district.

- ***Partial credit can be provided to areas susceptible to livestock grazing. If livestock access is incorporated into the plan an approved Grazing Management Plan (GMP) will be required.*** The GMP should detail stock densities, dates of grazing activity, stream bank and water quality protection, and other pertinent information related to how the mitigation area will be managed for grazing while protecting woodland quality (see NRCS-CPS 528 – Prescribed Grazing, for assistance).
  - ***If prescribed burning will impact the mitigation area an approved Prescribed Burning Plan (PBP) will be required.*** The PBP should detail the frequency of prescribed burns, dates of burning activity, and a narrative description on how the burning activity will not impact the development of riparian woodlands (see NRCS-CPS 338 – Prescribed Burning, for assistance).
  - ***If no permanent fence is constructed to identify the mitigation perimeters, signage must be installed every 300 feet identifying the perimeter of the AREA.*** Signage placed on T-posts or some other permanent device should be used to identify the mitigation perimeters. Signs should be maintained throughout the duration of the easement.
- E.** Wildlife enhancement programs are encouraged (i.e. see Kansas Habitat Assessment Worksheets for Prairie Chicken, Bobwhite Quail, and Ring-necked Pheasant). Development of such plans can be coordinated with appropriate **RESOURCE AGENCIES**. Many examples of these types of activities are found as NRCS Conservation Practices including Upland Wildlife Habitat Management (645), Early Successional Habitat Development/Management (647), Wetland Restoration (657), Prescribed Grazing (528), Prescribed Burning (338), Riparian Forest Buffer (391), etc.
- F.** Status reports will be provided to the appropriate **RESOURCE AGENCIES** for review. Reports will be submitted beginning (*provide date – MM/DD/YYYY*) and will continue (*Annual/Bi-annual/other set time period*) thereafter for the duration of the easement. It is beneficial to provide a draft copy of a status report with the PLAN.
- G.** Allowable activities include:
- a. Any consumptive or non-consumptive use of wildlife pursuant to applicable state and federal laws.
  - b. Vehicle passage.

c. Other pertinent activities agreed upon by plan developers and **RESOURCE AGENCIES**.

H. No revisions of the mitigation plan can occur without approval by appropriate **RESOURCE AGENCIES**.

**WOODLAND MITIGATION PLAN**

**AREA NO.** \_\_\_\_\_

The following mitigation site identified as **Area #** \_\_\_\_\_

**LEGAL DESCRIPTION:**

Project located on approximately \_\_\_\_\_ acres in the \_\_\_\_\_ /4 of the \_\_\_\_\_ /4  
 \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_ County: \_\_\_\_\_

if other coordinates are used please provide:

***Identify the boundaries of the AREA on an aerial photograph, soil survey maps, and/or topographic map on additional page(s).***

**Habitat type:**

**Habitat Units gained:**

(If multiple mitigation AREAS are used, provide a mitigation plan page and map for each AREA. Separate AREAS should be identified in numeric order i.e. Area 1, Area 2, etc.)

Habitat Units will be gained through (check one):

Protection of existing timber \_\_\_\_\_

Timber establishment \_\_\_\_\_

↓

<b>A. Maximum R-value attainable</b>	
<b>B. Existing R-value</b>	
<b>C. Habitat Unit gain/acre</b>	
<b>D. Acres</b>	
<b>E. Total Habitat Unit gain for AREA</b>	

↓

<b>A. Maximum R-value attainable</b>	
<b>B. Existing R-value</b>	
<b>C. Habitat Unit gain/acre</b>	
<b>D. Acres</b>	
<b>E. Total Habitat Unit gain for AREA</b>	

List Soil Type(s): \_\_\_\_\_

Give brief description of area:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**WOODLAND MITIGATION PLAN**

**AREA NO.** \_\_\_\_\_

**Operational Conditions** - the following conditions will be incorporated into the mitigation plan (include additional pages if necessary). Land use strategies should be described in detail in the LAND USE MANAGEMENT ACTIVITIES section of the **PLAN**.

- A.
- B.
- C.
- D.
- E.
- F.
- ETC.....

Topographic or Soil Maps/aerial photograph



### 3. Guidelines for **TREE ESTABLISHMENT**

Tree and shrub establishment can be difficult to achieve without appropriate care and maintenance on plantings. The Kansas Forest Service and NRCS provide technical guidance documents on methods necessary for establishment and survivorship. Watershed district managers should consult these documents at <http://www.kansasforests.org/publications/conservation.htm> \ [http://efotg.nrcs.usda.gov/efotg\\_locator.aspx?map=KS](http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=KS)

Additional information can be obtained by contacting the KFS at 785-532-3305 or the local USDA-NRCS office.

For wildlife habitat purposes, only deciduous trees should be planted that are endemic to the particular region of Kansas in question. Species composition should consist of seed, nut, fruit, and mast (oaks) trees whenever possible. Final plans will be reviewed by resource agencies; however, for all practical purposes any non-native or invasive species will not be accepted as part of the plan. Assistance with species selection can be obtained by contacting the appropriate agency assisting in the development of the mitigation plan.

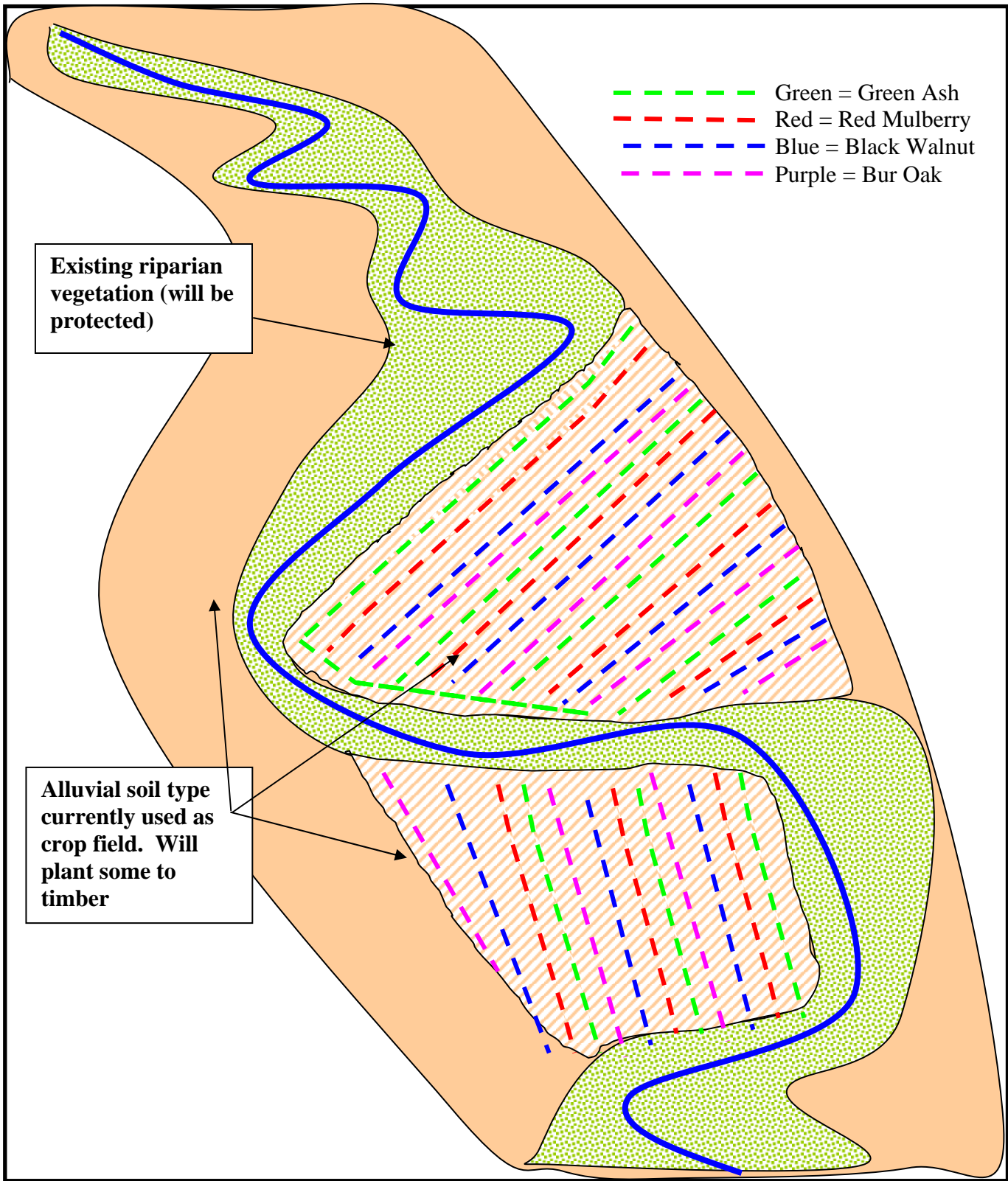
Examples of trees that are considered invasive or non-native include, but are not limited to: any coniferous pine or cedar; Honeylocust; Osage Orange; Russian Olive; other species agreed upon as such by appropriate **RESOURCE AGENCIES**.

Kansas State University, offers low-cost tree and shrub seedlings and nut/mast seeds for use in conservation plantings. Information can be obtained by contacting the KFS at:

Kansas Forest Service  
2610 Claflin Road  
Manhattan, KS 66502-2798  
785-532-3300  
Fax: 785-532-3305  
[KFS@lists.oznet.ksu.edu](mailto:KFS@lists.oznet.ksu.edu)  
<http://www.kansasforests.org/>

- A. The calculation for acreage determination should be provided for the AREA (i.e. Y-equation). Assistance on how to calculate this equation can be obtained in the Operational Mitigation Guidelines (pgs. 4-5).
- B. The acres of the mitigation AREA should be listed and identified as either being implemented through natural succession or plantings.
- **Natural Succession:** In order for natural succession to be a viable option for the establishment of riparian woodlands an adequate seed source of desirable species must be located nearby. Natural seed dispersal occurs through wind, flooding and animal life depending upon individual species adaptations for dispersal and colonization of new areas. Seed sources may include upstream or adjacent plant sources. When determining an AREA'S suitability for natural succession refer to **Exhibit A** in NRCS (June, 2002): **Kansas Forestry Technical Note KS-9** for guidance. A MINIMUM GERMINATION OF NATIVE OR NON-INVASIVE 300 TREE OR SHRUBS PER ACRE ARE REQUIRED FOLLOWING THE THIRD (3<sup>RD</sup>) GROWING SEASON FOR NATURAL SUCCESSION TO BE DEEMED SUCCESSFUL.
  - **Plantings:** Percent (%) survivorship should be provided for plantings. Unless otherwise agreed upon, tree plantings should maintain **70% survivorship** through the first three (3) summers (September) following their planting. Natural germination of non-planted species may be counted towards this goal; however, no more than 50% of total survivorship may come from species not included in the original habitat plantings. ***In no case may any of the invasive or non-native species count towards the survivorship goal.*** In addition, a **CONTINGENCY PLAN** must be attached to identifying how insufficient survivorship results will be addressed.
- C. A list of mandatory conditions are included that must be implemented whether allowing for natural succession or incorporating tree plantings. Exceptions may occur with watering and weed control in areas of natural succession when environmental conditions dictate otherwise. Technical guidance documents other than this publication can be substituted for mitigation plans involving tree establishment. Examples include construction specifications and supporting documents associated with NRCS CPS 612 (Tree/Shrub Establishment) and Kansas Forestry Technical Notes KS-9 (Tree/Shrub Establishment and Maintenance Guideleines)

- D. A table is provided that describes some basic methods of weed control. Often a plan will include all of these methods. It is at the discretion of the Watershed District whether they wish to include all of these methods or not, however, weed control is mandatory when dealing with tree establishment. Special provisions for herbicide usage and mowing date restrictions are provided. ***Mowing date restrictions apply to swaths greater than 12 feet in width and longer than 300 feet in length.***
- E. The source and type of the stock used for tree establishment should be listed.
- F. A table is provided to list the individual species being planted and each specie's percent composition of the total plantings, along with total numbers of each species planted.
- G. A second table is provided to detail the special structure of the plantings that identifies the row spacing, both within and between rows. Guidance can be obtained by contacting the KFS for spacing recommendations for specific species.
- H. A second Timber Establishment Page is included for shrubs, which are often planted on the perimeter of tree establishment areas. Shrub plantings are optional, but should not constitute more than **10%** of the total acreage for the Timber Establishment AREA. Similar information on species and spacing should be provided for any shrubs incorporated into the plantings.
- I. A schematic drawing of the area should be provided to depict the planting layout. Review the following example on page 21.
- J. CONTINGENCY PLAN – check the appropriate measures that will be taken as part of a contingency plan if timber establishment goals fail.



**TIMBER ESTABLISHMENT PLAN**

**AREA NO. \_\_\_\_\_**

Provide the calculations used for determining the acreage needed to produce the number of Habitat Units the AREA will provide as listed in the MITIGATION PLAN page for the AREA. Consult the Operational Mitigation Guidelines for assistance in calculating the equation.

**{Y x 5.0 x Establishment Period\*} + {Y x 10.0 x Balance of LOP} = HU lost x LOP**

Offsetting woodland losses by re-establishment of timber will require \_\_\_\_\_ acres of natural succession \_\_\_\_\_ or plantings \_\_\_\_\_. Reestablishment through plantings will require an \_\_\_\_\_% survival rate after a period of three (3) years. **A MINIMUM GERMINATION OF NATIVE OR NON-INVASIVE 300 TREE OR SHRUBS PER ACRE ARE REQUIRED FOLLOWING THE THIRD (3<sup>RD</sup>) GROWING SEASON FOR NATURAL SUCCESSION TO BE DEEMED SUCCESSFUL.**

Annual status reports will be performed for the Timber Establishment Plan. If survivorship goals are not achieved, the **CONTINGENCY PLAN** will be implemented within two (2) years following the original three (3) year period.

In order to be successful at tree establishment, care must be given to insure survivorship of saplings and germination of seeds. The following guidelines will be incorporated into the mitigation area:

1. Protect from fire
2. Protect from grazing
3. Water as necessary
4. Protect from weeds
5. Protect from injury by chemicals/herbicides including drift from adjacent property

Check appropriate weed/damage control measures expected to be employed:

<b>Method</b>	
Weed barrier fabric (synthetic mulch)	
Herbicides <sup>1</sup> or other pest control	
Cultivation <sup>2</sup> (mowing, trimming, tillage, etc.)	
Mulching (organic)	
Grass cover crop	
Tree shelters	
Other (detail)	

<sup>1</sup> Herbicides or other pesticides must be applied in a manner consistent with product label recommendations

<sup>2</sup> If mowing is used, the period of May 1 – July 15 will be excluded to avoid impacts to ground-nesting birds



**TIMBER ESTABLISHMENT PLAN**

**AREA NO.** \_\_\_\_\_

**SHRUBS:** source (check appropriate):

Seed: \_\_\_\_\_ non-local seed bank, \_\_\_\_\_ local seed bank, \_\_\_\_\_ salvaged from site

Saplings: \_\_\_\_\_ bare root, \_\_\_\_\_ potted, \_\_\_\_\_ other, describe:

Species	Percent Composition	Total Number
<b>TOTAL =</b>		

**Spatial structure:**

Provide row spacing (see Kansas Forest Service guidelines for spacing).

Species	between rows (ft)	within rows (ft)

**List additional species and spacing on supplemental page(s)**

**TIMBER ESTABLISHMENT PLAN**

**AREA NO. \_\_\_\_\_**

Provide a schematic map and/or narrative detailing the spatial structure of the plantings

**CONTINGENCY PLAN**

If, for any reason, habitat plantings do not achieve the objectives of the Timber Establishment Plan, the following contingency plan will be implemented. All survivorship conditions detailed in the original Timber Establishment Plan must be achieved within three (3) years following implementation of the contingency plan. Annual status reports will be performed for the contingency plan.

Check the applicable conditions of the contingency plan

Supplemental replanting	
Supplemental watering	
Weed barrier fabric (synthetic mulch)	
Herbicides <sup>1</sup> or other pest control	
Cultivation <sup>2</sup> (mowing, trimming, tillage, etc.)	
Mulching (organic)	
Native grass cover crop	
Tree shelters	
Development of alternative mitigation plan	
Other (detail)	

<sup>1</sup> Herbicides and other pesticides must be applied in a manner consistent with product label recommendations

<sup>2</sup> If mowing is used, the period of May 1 – July 15 will be excluded to avoid impacts to ground-nesting birds

**LAND USE MANAGEMENT ACTIVITIES**

**AREA NO. \_\_\_\_\_**

Describe any pertinent land use management plans that will be implemented as part of the mitigation plan. Examples include: Timber Stand Improvement (TSI) plans, Timber Harvest plans, Grazing Management Plans, Prescribed Burning Plans, Water Level Management plans, noxious weed control or herbicide use. In addition, any cost-share or subsidy programs the AREA will be enrolled in should be listed.

**TECHNICAL SUPPORT**

**AREA NO. \_\_\_\_\_**

Provide a list of agencies or public/private entities that assisted in the development of this mitigation plan. Provide additional pages if necessary.

Organization:
Name:
Job Title:
Telephone:
Email:
Address:

Organization:
Name:
Job Title:
Telephone:
Email:
Address:

## 6. Guidelines for **STATUS REPORTS**

Status reports of the mitigation sites are necessary to insure that protection and management activities are compatible and effectively meeting the goals and objectives of the mitigation plan. The mitigation plan should identify the frequency and timeline of when status reports will be performed (list in Woodland Mitigation Area Plan – Operational Conditions). A status report for each individual AREA should be performed. Information should include:

1. The date of the field visit
2. The watershed district and the site for which the mitigation plan was developed
3. Name of the evaluator(s) who assessed the area
4. The organization (company, agency, watershed district, etc.) who performed the evaluation
5. Pertinent contact information (phone #, email, address, etc.)
6. Identification of the AREA in the mitigation plan which is being evaluated OR provide a legal or narrative description of the area that was evaluated
7. Current landowner, land manager, or tenant of the site
8. Adequate identification of the perimeter of the mitigation AREA (describe condition of fencing, signage, etc.). Is the perimeter consistent with the plan? Note localities that need maintenance.
9. Status of livestock exclusion (if relevant)
10. Assess the implementation of any Land Management Activities and provide a narrative description of their status. Note any violations of management plan(s)
11. Provide status of Timber Establishment Plan (if relevant). Tree survivorship should be calculated following the growing season, but before leaf drop (September – November)
  - A.** Was the plan implemented properly? Check species composition, acres of plantings, spacing, weed control, etc.
  - B.** Note condition of the plantings.

- C. Calculate the percent survivorship of sapling plantings. Provide methodology and calculations for survivorship of planted saplings. A minimum of 10% of the planted trees or shrubs should be counted OR 100 of the planted trees or shrubs (viable and dead). Natural germination of non-planted species may be counted towards the survivorship goal; however, no more than 50% of total survivorship may come from species not included in the original habitat plantings. ***In no case may any of the invasive or non-native species count towards the survivorship goal.***
- D. Provide methodology and calculate success of germination in AREAS of natural succession (300 trees/shrubs per acre following 3<sup>rd</sup> growing season deemed successful). ***In no case may any of the invasive or non-native species count towards the survivorship goal.***
- E. If survivorship is not meeting projected goals identify potential problems: fire, grazing (domestic or wild herbivores), desiccation, competition from weeds (note failure of weed prevention if appropriate), insect or disease, natural disaster (hail, wind, tornado, etc.), failure of seed dispersal or germination, other.
- F. Identify strategies to improve survivorship.
- G. Identify invasive species affecting the area and provide management options.
- H. Indicate whether the contingency plan should be implemented.

**MITIGATION PLAN STATUS REPORT**

DATE: \_\_\_\_\_

Watershed District: \_\_\_\_\_ Site: \_\_\_\_\_

Evaluator's Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Contact Information: \_\_\_\_\_

\_\_\_\_\_

Identify the AREA listed in the mitigation plan or provide an applicable legal description or narrative location of the site: \_\_\_\_\_

\_\_\_\_\_

Current Landowner, Land manager, or tenant: \_\_\_\_\_

**Evaluate the applicable components of the mitigation plan. Describe whether the conditions are adequate and note any potential problems or deficiencies.**

1. Identification of the perimeter of the mitigation AREA (describe condition of fencing, signage, etc.). Is the perimeter consistent with the plan? Note localities that need maintenance.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Status of livestock exclusion.

\_\_\_\_\_

\_\_\_\_\_

3. Implementation of any Land Management Activities:

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Status of Timber Establishment Plan:

A. Was the implementation continuous with the Plan? Yes \_\_\_\_\_ No \_\_\_\_\_

B. Describe the health and condition of the plantings:

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C. Percent survivorship of plantings (note percent of supplemental plants through natural germination if applicable):

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D. Density of trees & shrubs in AREAS planned for natural succession:

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E. Success and vigor of trees & shrubs is limited by (note negative effects of fire, grazing (domestic or wild herbivores), desiccation, competition from weeds (note failure of weed prevention if appropriate), insect or disease, natural disaster (hail, wind, tornado, etc.), failure of seed dispersal or germination, other:

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F. Identify strategies to improve survivorship:

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G. Are invasive species affecting the area? If yes, describe and provide mngt. options:

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H. Should the contingency plan be implemented? Yes \_\_\_\_\_ No \_\_\_\_\_

Describe:

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5. Other Comments:

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