Stream Mitigation Considerations

CESAS-RD / 25Sep2014

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Action ID: SAS-_____

Project Name: _____

County: _____

Location: _____

_____

Lat/Long (decimal degrees): _____ / _____

Ecoregion (Per Griffith, et. al. 2002): _____

Required attachments:

- ☐ General location map
- ☐ NHDPlus map depicting location of project in watershed (include the following "Program Features" - 303(d) Listed Impaired Waters, Combined Sewer Overflows, Facilities that Discharge to Water, TMDLs on Impaired Waters, Monitoring Locations, and Nonpoint Source Projects)
- ☐ LiDAR map of the site
- ☐ Web Soil Survey soils map of the site

Prepared By: _____

Date

_____

Stream Mitigation Considerations

CESAS-RD / 25Sep2014

I. Watershed Analysis

A. Has a **watershed evaluation/analysis** been undertaken? **YES / NO**

How were the following factors considered in the analysis?

- Within what watershed is the proposed project located (8-Digit Hydrologic Unit Code)?
- What is the percentage of impervious cover within the watershed (provide current and/or future projection)?
- Is there a watershed plan and/or 305(b)/303(d) report available that can be included in the analysis (cite reference)?
- What are the dominant stressors of the watershed, which have the highest potential to impact water bodies?
- Are the symptoms systemic or localized?
- Where is the proposed project located within the specific watershed?

B. Has a **Local Drainage Area Assessment** been undertaken? **YES / NO**

How were the following factors considered in the analysis?

- What is the approximate size of the drainage area?
- What is the stream order(s) on the mitigation site?
- Has the stream(s) within the mitigation site been hydrologically altered?
- Is the stream(s) on the mitigation site located within urban or rural setting?
- List any foreseeable changes to the site.

Describe: _____

_____

_____

_____

II. Site Selection Criteria and other Site Considerations

A. Describe how the above factors (in the Watershed Analysis Section) have been applied to the project site selection criteria: _____

_____

_____

_____

B. Other important factors to consider for all stream mitigation projects:

- The location of the impact area(s) within the Ecoregion and specific watershed
- The location of the compensatory mitigation project within the Ecoregion and specific watershed
- Is the proposal a stream project, a wetland project – or both?

C. Stream designation:

- ☐ Primary Trout Stream
- ☐ Secondary Trout Stream
- ☐ Warm Water
- ☐ Coastal Plain (See V.C.4. below)

D. Will **Essential Fish Habitat (EFH)** resources be affected? (Positive and/or Negative effect) **YES / NO**

Explain: _____

_____

_____

E. Will **Federally Threatened or Endangered Species** or designated **Critical Habitats** be affected? (Positive and/or Negative) **YES / NO**

Explain: _____

_____

_____

F. Will **State Listed Protected and Rare Species** be affected? **YES / NO**

Explain: _____

_____

_____

Stream Mitigation Considerations

CESAS-RD / 25Sep2014

G. Will **Anadromous Fish** or similar aquatic species be affected? **YES / NO**

Explain: _____

_____

_____

H. Do **Cultural Resources** exist on the site? **YES / NO**

Explain: _____

_____

_____

I. Do any **Haz/Tox** issues exist on the site, or within 1-mile upstream? **YES / NO**

Explain: _____

_____

_____

III. Reference Ecosystem

A. Has a **Reference Reach (RR) / Reference Ecosystem (RE)** been evaluated, surveyed and has a **report been** prepared that evaluates Hydrology, Geomorphology, and Biology functions? **YES / NO**

Describe the comparison between the RR/RE and the Mitigation Site: _____

_____

_____

_____

B. Was **Soil Fertility sampling** undertaken in the RE? (Attach Report) **YES / NO**

C. Reference Reach Lat/Long (given in decimal degrees): _____

D. Does the reference reach appear on the **303(d) list** for streams "Not Supporting" or "Partially Supporting" listed uses? **YES / NO**

Explain: _____

_____

IV. Site Level Impairment Assessment/Baseline Assessment

A. How were the following factors surveyed in the site assessment?

1. Hydrology

- Flow Duration (Base Flow and Bankfull Flow)
- Floodplain Connectivity (Bank Height Ratio; Entrenchment Ratio)

2. Geomorphology

- Bed Form Diversity (Longitudinal Survey)
- Lateral Stability ("Monumented" Cross Section Survey)
- Average Riparian Buffer Width and Predominant Vegetative Cover Type (Include data from both banks)
- Substrate Diversity (Wohlman Pebble Count)

3. Biology

- Benthic Macro-invertebrate Survey

Describe how the above factors have been applied to the project baseline assessment:

_____

_____

_____

_____

B. Were any other factors incorporated into the baseline assessment of the mitigation site?

_____

_____

_____

_____

C. Summarize the site's compromised **function(s)/impairment(s)** (Attach with Functional Assessment Report): _____

_____

_____

_____

D. Describe the analysis and consideration of potential impacts to the mitigation site that may occur from changes in upstream and adjacent land use: _____

_____

_____

_____

E. Has a **jurisdictional determination** been undertaken and verified by the U.S. Army Corps of Engineers for the site? **YES / NO**

V. The Foundation

A. Describe project **GOALS**[SMART]: _____

_____

_____

_____

B. Describe Target **FUNCTIONS**[SMART]: _____

_____

_____

_____

Are these Specific/Measurable/Attainable/Reasonable/Trackable? YES / NO

Explain: _____

_____

_____

_____

C. Stream Design Considerations[SMART]

1. **Type of proposed project** (check all that apply / See 33CFR Part 332.2 for definitions):

   ___Re-establishment ___Establishment ___Rehabilitation
   ___Enhancement ___Preservation

2. Is "**Natural Channel Design**" proposed **and ecologically appropriate**? (When compared with minimal or no in-channel work) **YES / NO**

   Describe: _____

   _____

   _____

   _____

3. Describe how the **4 Dimensions of Stream Dynamics** were considered in the plan:

   a. **Longitudinal** (Upstream/downstream)_____

   _____

   _____

   _____

b. **Lateral** (Side to side)_____

c. **Vertical** (Hyporheic zone)_____

d. **Temporal** (Life of project/Adaptive Management)_____

4. **Coastal Plain Stream Projects**: Have the following coastal plain design factors been considered and applied in the mitigation plan: **YES / NO**

   - Alluvial (not Colluvial or Bedrock)
   - Sand Bed
   - Unconfined valley
   - Low energy
   - Low slope
   - Reach types: Braided and Regime Reach
   - Pool types: Scour (Eddy and Lateral), Dammed backwater and Abandoned Channel

5. Describe proposed **Buffer Area** (location, width(s), continuity, maintenance/management plan): _____

6. Is a **Department of the Army permit associated with the** construction of this project? **YES / NO**

   Type: _____

D. Proposed STRUCTURAL^{SMART} Elements

1. Vegetation/Biotic

a. Have diversity and density of species within the Reference Ecosystem been considered in the plan? **YES / NO**

b. Has consideration been given to planting the wetland/upland interface with suitable transition zone species? **YES / NO**

c. Are plantings listed to species? **YES / NO**

d. Are local propagules (200 miles north/south) to be planted and **verified by nursery certificate**? **YES / NO**

Describe the **Planting Quality Assurance/Quality Control Plan**: _____

_____

_____

_____

2. Soils

a. Has an **onsite soils assessment** been undertaken? **YES / NO**

b. Confirmed Soil Series and Textures (must include soil profile field descriptions):

_____

_____

_____

_____

c. Are the properties of the existing soils appropriate for the target community? **YES / NO**

Describe: _____

_____

_____

_____

d. Fertility sampling undertaken in the mitigation site? **YES / NO**
(Attach report)

e. Are the fertility results within the standards for the plantings? **YES / NO**

Describe results/amendments required: _____

_____

_____

_____

f. If **PC Cropland or Exposed to Past Live Stock Usage**, has site been evaluated for plow pans, compaction from livestock usage, field crowns, tile drainage system? **YES / NO**

Describe findings and strategies to address: _____

_____

_____

_____

g. Is **disking/topsoil management** proposed in the buffer? **YES / NO**

Describe: _____

_____

_____

_____

3. Hydrology

a. If plans include restoring a lower order headwater system, has **Hydrologic Modeling** been prepared for low, average and high conditions? (Attach Report) **YES / NO**

Describe and justify type of hydrologic model used: _____

_____

_____

_____

b. If plans include restoring a higher order riverine system, has **Hydrologic Modeling** been prepared for low, average and high conditions? (Attach Report) **YES / NO**

Describe and justify type of hydrologic model used: _____

_____

_____

_____

c. Is the **hydrologic regime** predicted by the hydrologic model appropriate for the target stream(s)? **YES / NO**

d. Is **grading proposed**? (Attach grading plan) **YES / NO**

Describe: _____

_____

_____

_____

VI. Consideration of Factors of Failure

A. Describe how the following have been considered for this project (includes foreseeable changes off-site):

1. **Elevations/biological benchmarks**: _____
2. **Erosion**: _____
3. **Human Impacts**: _____
4. **Nuisance vegetation**: _____
5. **Herbivory**: _____
6. **Beaver Impacts:** _____
7. **Soil/Substrate/Geologic Properties:** _____
8. **Construction-phase site degradation:** _____

B. Are **persistent earthen features** within the stream buffer proposed for the project? [berms, dikes, excavated areas with spoil placed within the project site, etc.] **YES / NO**

Describe/Justify: _____

_____

_____

_____

Are these Specific/Measurable/Attainable/Reasonable/Trackable? YES / NO

Explain: _____

_____

_____

_____

VII. Performance Standards[SMART]

(Include any interim/provisional performance standards necessary to track project trajectory)

A. Hydrology: _____

B. Geomorphology: _____

C. Riparian Vegetation/Plant Community: _____

D. Benthic Macro-invertebrates/Biology: _____

Are these Specific/Measurable/Attainable/Reasonable/Trackable? YES / NO

Explain: _____

VIII. Monitoring

A. Describe **Hydrology** Monitoring Plan: _____

_____

_____

_____

B. Describe the type of monitoring equipment proposed, number of gauge/well stations proposed and methodology for locating stations, and installing, maintaining and analysis with ERDC Technical Note 05-02 and other scientifically acceptable methodology:

_____

_____

_____

_____

1. For **groundwater driven systems**, monitoring wells are required to be installed and maintained pursuant to the most recent ERDC Technical Note. Describe type of wells and maintenance plan: _____

   _____

   _____

   _____

2. For **surface water driven systems**, flood gauges are required to be installed. Describe type of gages and maintenance plan: _____

   _____

   _____

   _____

3. Is the hydrologic regime predicted by the water budget appropriate for the target stream and any adjacent wetlands? **YES / NO**

C. Describe **Geomorphology** Monitoring Plan?

_____

_____

_____

_____

D. Number of Cross Sections/Sampling Sites and methodology for locating/sizing survey sites:

_____

_____

_____

_____

E. Describe **Vegetation** Monitoring Plan (including the number of plots and methodology for locating stations): _____

_____

_____

_____

F. Describe Benthic Macro-invertebrate Monitoring Plan (including the number of plots and methodology for locating stations):_____

_____

_____

_____

G. Will the **As-Built Report** to be submitted within 30 days of project construction? **YES / NO**

If "No" is selected above, please provide an explanation: _____

_____

_____

_____

H. Deadline date for first **Annual Monitoring Report** (to be provided no earlier than **10 months** and no later than **14 months** after completion of construction):_____

_____

Are these Specific/Measurable/Attainable/Reasonable/Trackable? YES / NO

Explain: _____

_____

_____

_____

IX. Site Management

A. Describe proposed **Financial Assurances**: _____

_____

_____

_____

B. Describe **Adaptive Management** strategies: _____

_____

_____

_____

C. Name and telephone number of person responsible for the success of this project:

_____

D. Describe the **Final Disposition** of the property and legal protection mechanism(s): _

_____

_____

_____

E. Describe the **Long Term Management / Stewardship Plan** for the property and how funded: _____

_____

_____

_____

F. Name and phone number of person who will manage the site after the mitigation effort is deemed successful: _____

_____

_____

Other Notes:

****Address the sections of the document in which all problems and/or deficiencies have been identified.****