

**MAINTENANCE GUIDANCE PLAN FOR
MONUMENT CREEK
DESIGNATED MAINTENANCE REACH**

COE Action No. 2004 00502

Prepared By

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MAINTENANCE GUIDANCE PLAN FOR MONUMENT CREEK DESIGNATED MAINTENANCE REACH

INTRODUCTION

This maintenance plan is a renewal of the Maintenance Guidance Plan (MGP) approved in 1994 (CO-88-10035). The original MGP was developed by the City of Colorado Springs in conjunction with the Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (CoE). As with the previous MGP, this plan applies to the portion of Monument Creek with flagstone channel sides from the Old Midland Railroad Bridge south of Colorado Avenue upstream to south of Fontanero Street (west floodway side) and south of the abandoned Van Buren Street access to the city yard (east floodway side) (Figure 1). This segment of Monument Creek is referred to as the "Designated Maintenance Reach" (DMR).

PURPOSE

The goal of the MGP for the Monument Creek DMR is to maintain the presence and viability of wetland and riparian vegetation within the overbank area (Figure 2), but manage the vegetation so that it does not substantially reduce floodway¹ conveyance below the design capacity, prohibit the access and mobility of maintenance equipment or weaken the floodway sides.

The MGP has been developed to provide guidance to the operations staff regarding the type, timing and implementation of maintenance activities that are appropriate for the DMR. The following maintenance activities have been approved for use in the DMR.

1. Maintenance and repair of *floodway sides*;
2. Mowing and removal of woody vegetation from *overbank areas*;
3. Removal of flood-deposited debris and sediment, which threaten public safety;
4. Placement of minimal amounts of fill when necessary to protect *the toe of floodway sides*;
5. Permanent *wetland crossings* of minor wetland areas; and
6. Temporary low-flow *channel crossings*.

¹ Terms defined in the glossary to the maintenance plan appear in italics the first time they are used.

Figure 1. Monument Creek DMR

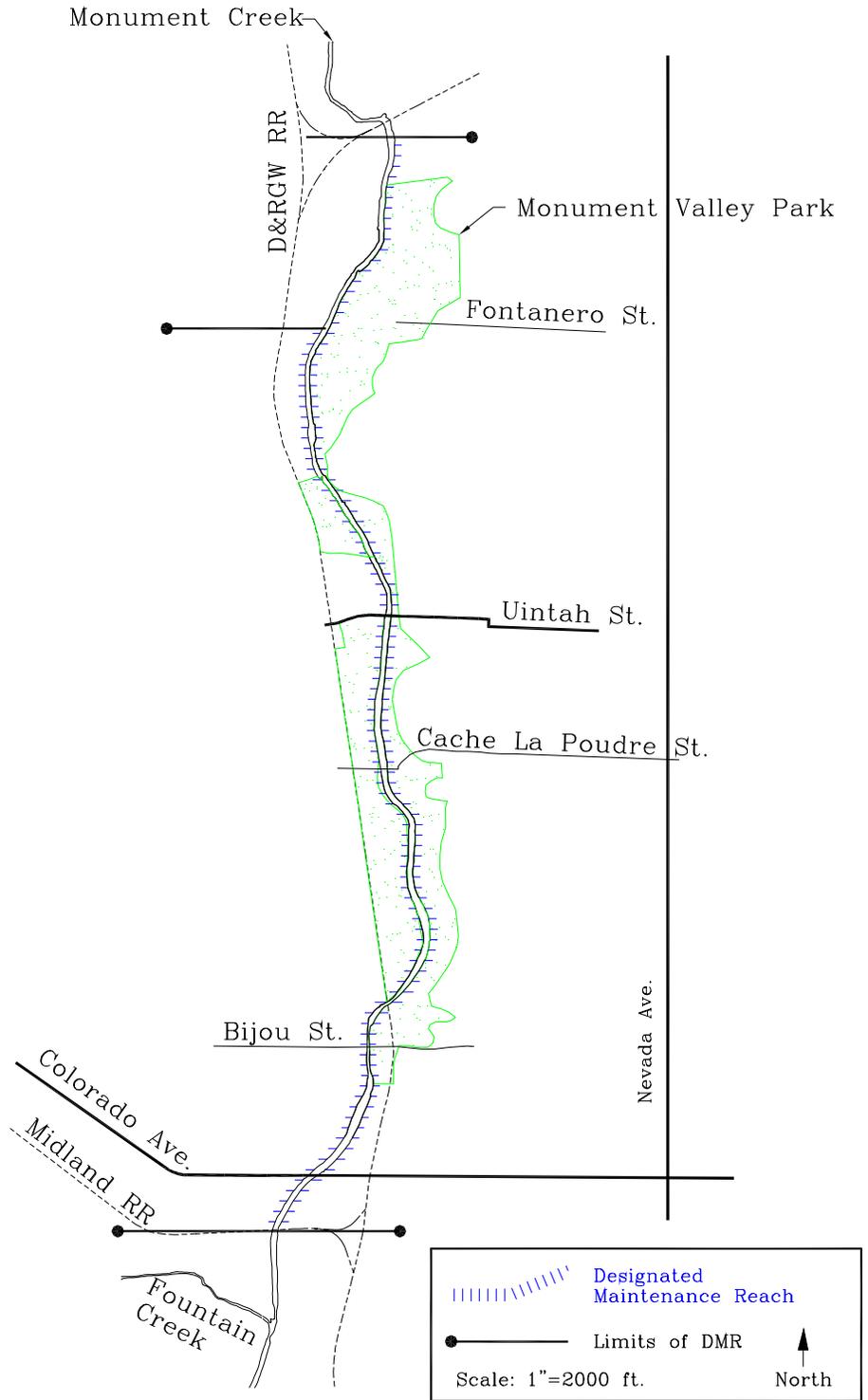


Figure 2. Typical cross section of Monument Creek DMR.

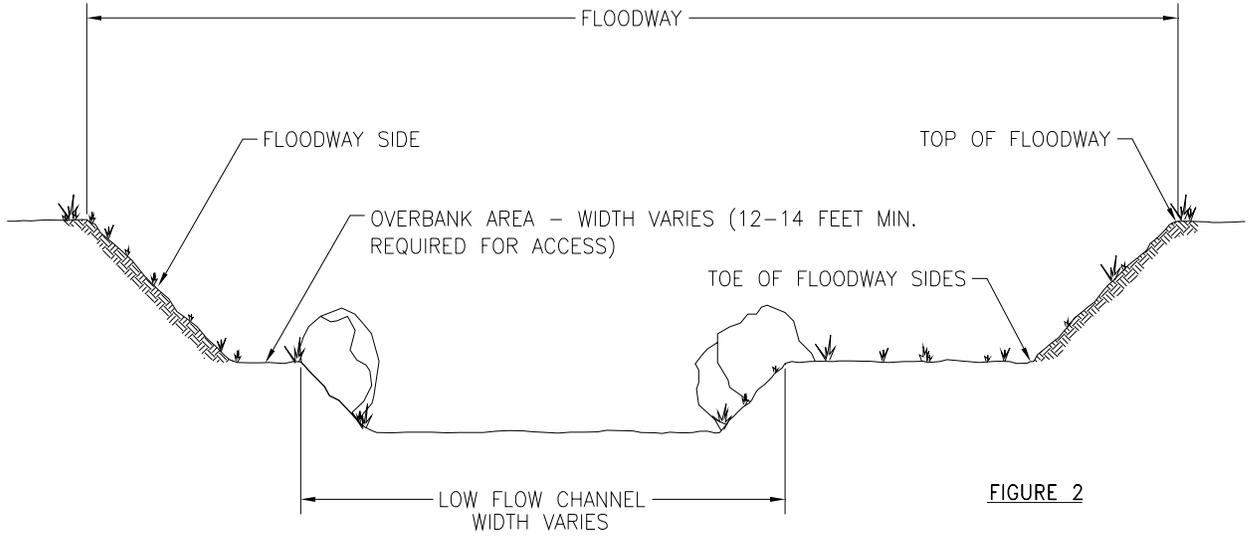


FIGURE 2

TYPICAL CROSS SECTION OF MONUMENT CREEK DMR
SCALE: N.T.S.

All of these maintenance activities have specific guidelines that must be followed. Failure to follow the guidelines for these activities could result in project delays and possible enforcement actions. Guidelines for each of the approved maintenance activities can be found under "GUIDELINES FOR APPROVED MAINTENANCE ACTIVITIES".

If you are uncertain if a planned maintenance activity meets the guidelines for the approved maintenance activities, discuss the planned action with your supervisor.

Any maintenance and/or repair activities involving the placement of *fill material* within the floodway not listed in the six approved maintenance activities will require separate review and approval by the CoE prior to the implementation of any such activities.

Examples of activities not authorized by this MGP include but are not limited to:

- Removal of sediment from the channel and/or overbank area by scraping or other methods that would significantly affect or remove vegetation;
- Placement of load-bearing structural materials within the channel or overbank area beyond the approved guidelines for the protection of the toe of floodway sides;
- Channel straightening and/or realignment beyond the specific activities included in the approved guidelines for the protection of the toe of floodway sides;
- Removal of sandbars (other than flood-deposited debris which threaten public safety);
- Placement of any fill material within Monument Creek not otherwise authorized by the six approved maintenance activities.

HOW TO USE THIS MAINTENANCE GUIDANCE PLAN

The MGP is intended for the use of the operations staff. It should be reviewed by all staff contemplating maintenance activities within the Monument Creek DMR. The *approved maintenance activities* are discussed on pages 6-11. All other activities that require or involve the deposition of fill material within the overbank or low flow channel will require separate authorization from the CoE. If you are uncertain if a maintenance activity has been pre-approved, consult your supervisor before proceeding.

Each of the six pre-approved activities have specific timing and guidance criteria. **These must be followed; failure to do so may result in project delays and possible enforcement actions.** When planning or beginning a maintenance activity within the DMR of Monument Creek, consult the MGP to verify that the activity and the planned approach are in accordance with the MGP.

SCOPE OF MAINTENANCE PLAN

In addition to geographic scope and approved maintenance activities, it is important for the user to understand the application of the MGP, distinguish between maintenance and construction activities, understand the various components of the floodway and understand those activities regulated by the CoE within specific portions of the floodway.

MAINTENANCE VERSUS CONSTRUCTION ACTIVITIES

For the purposes of this plan, maintenance activities are defined as those non-construction activities that prevent the degradation of the floodway and its structures and maintain woody vegetation in a condition that it can be easily mowed with the City's equipment. Specific maintenance activities are listed in the "**PURPOSE**" and "**GUIDELINES FOR APPROVED MAINTENANCE ACTIVITIES**" sections. Construction refers to the building of new structures, the expansion of existing structures and/or substantial repair of existing structures within the DMR (e.g., drop structures, bank stabilization, bridges, channel straightening or realignment, or the placement of fill not clearly authorized by this MGP). This MGP only addresses and authorizes specific maintenance activities.

The cross section of the DMR can be divided into several components (Figure 2). These components include the low flow channel, overbank area, floodway sides, and top of floodway. Activities involving the placement of fill material into the low flow channel or overbank area must be authorized by the CoE. Activities affecting the floodway sides or areas above the floodway sides do not require CoE authorization unless fill material associated with this activity is disposed of or falls into the overbank area or low flow channel. This MGP addresses specific, commonly occurring maintenance activities for the DMR of the Monument Creek Floodway.

GUIDELINES FOR APPROVED MAINTENANCE ACTIVITIES

The following guidance for approved maintenance activities should be carefully reviewed. Deviation from the guidelines could result in project delays and possible enforcement actions.

MAINTENANCE AND REPAIR OF FLOODWAY SIDES

Objective: Repair of walls, regrouting of walls in contiguous areas of up to 100 l.f. and removal of woody vegetation from the floodway sides to prevent damage to walls, maintain floodway design capacity and reduce damage and flooding downstream due to debris dams. Work will be accomplished in a way that does not adversely affect wetland and riparian vegetation, especially in the overbank area.

Timing: Maintenance work that involves *heavy equipment* in the low flow channel will be done when soils are frozen.

Guidelines:

1. All materials removed from the floodway sides will be disposed of in a location outside the floodway. Vegetation and/or other materials removed from the floodway sides may drop into the overbank area, but must promptly be removed to a location outside of the floodway.
2. Equipment can access the floodway sides from the overbank area as long as equipment avoids all *wetland areas*. A minimum access width in the overbank area of 12 to 14 feet will be reserved for the movement and operation of maintenance equipment (see guidelines for protection of the toe of the floodway sides).
3. Equipment will not cross wetland areas; maintenance work that involves equipment access of the overbank area will cross the low flow channel to avoid wetland areas. Heavy equipment access of the overbank area and low flow channel is to be limited to periods when the soil is frozen and can better support heavy equipment. Crossing of the low flow channel will only occur during low flows and during winter.
4. In areas where there are trees and/or shrubs in the floodway sides and wetlands would be disturbed within the adjacent overbank area below by activities involving removal of these trees and/or shrubs, the City will conduct an annual, on-site review to discuss how tree and/or shrub removal should best be accomplished as well as to evaluate previous work and to determine the limits and type of work to be performed for the next maintenance season. The on-site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDoW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.

MOWING AND REMOVAL OF WOODY VEGETATION FROM OVBANK AREAS

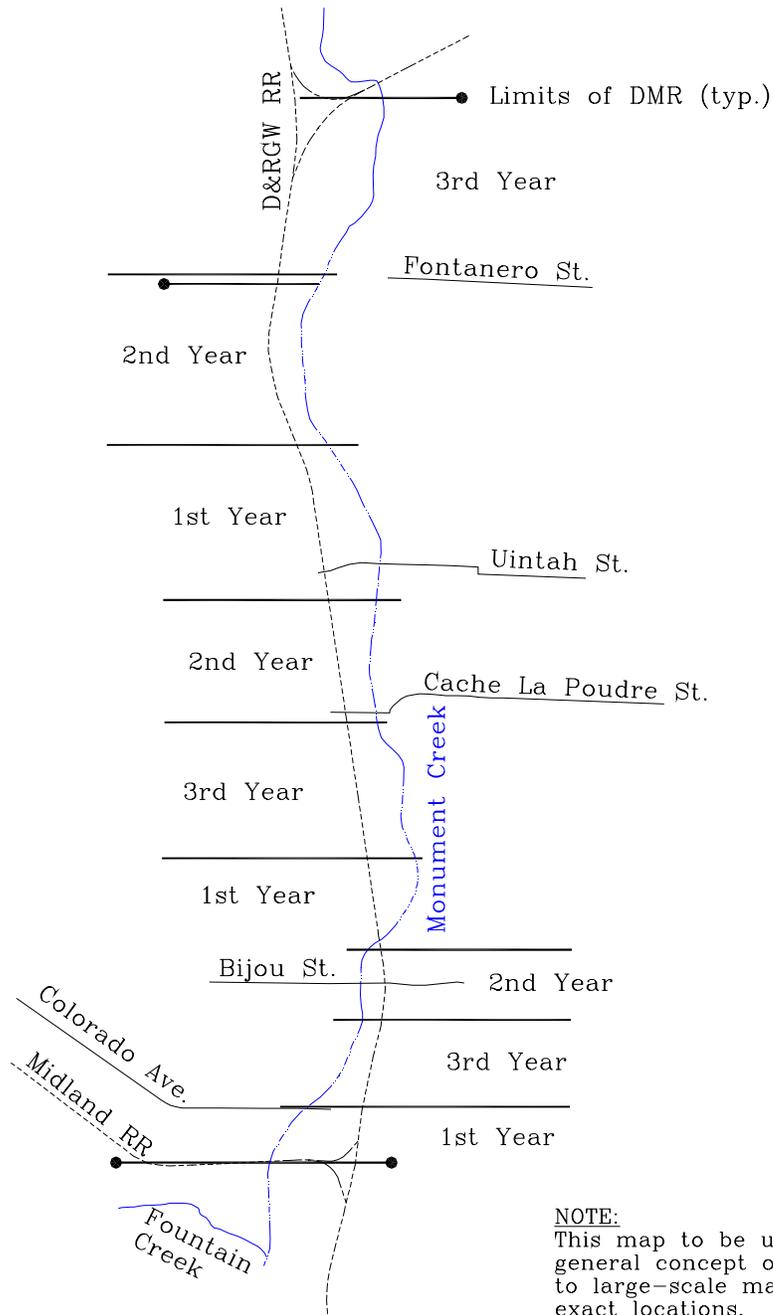
Objective: Maintain a rotational cutting of woody vegetation to prevent woody vegetation from maturing to diameters that cannot be mowed and that significantly reduce floodway design capacity and contribute to debris dams during floods. The rotational mowing and cutting will allow areas of habitat for wildlife to be continuously available and will reduce the cyclic presence/absence of a riparian shrub overstory.

Timing: Mowing will occur from October through April when disturbances to wildlife are reduced.

Guidelines:

1. Approximately one-third of the DMR can be mowed each year; however, any specific length of overbank area cannot be mowed more frequently than once every three years.
2. The calculation of the one-third portion of the DMR is based on one-third of the total overbank length. The total designated maintenance reach length is approximately 14,040 feet (east bank) and 11,330 feet (west bank); therefore, approximately 4,680 feet (east bank) and 3,780 feet (west bank) of the overbank area can be mowed in any one year.
3. The area mowed each year cannot be one continuous length; mowing will be spaced as shown in Figure 3. Distribution of mowed areas over the entire DMR will lessen the adverse affects on habitat.
4. Cut woody vegetation will be removed from the floodway to the maximum extent practicable. An exception to this is chipped/shredded material, which can be spread thinly (up to ½ inch) within the floodway.
5. Woody vegetation with a diameter of ¾ of an inch is typically too large for the City's mowing equipment to cut, therefore, large woody vegetation will be cut with chain saws or brush saws. Removal of woody vegetation will not be accomplished by scraping with mechanized equipment.
6. All woody vegetation will be cut to within 6 inches of ground level to accommodate clearance of City mowing equipment.
7. Heavy equipment access to the overbank area will avoid crossing wetland areas and will be limited to overbank access at times when the soils are frozen.
8. The City will conduct an annual, on-site review to evaluate previous work and to determine the limits of the next maintenance season's mowing and removal of woody vegetation. The on-site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDOW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.

Figure 3. Segments within the designated reach of the Monument Creek DMR assigned for three-year rotational mowing.



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REMOVAL OF FLOOD-DEPOSITED DEBRIS AND SEDIMENT

Objective: Removal of debris and sediment deposited by flood events that endanger structures or significantly reduce channel design capacity.

Timing: When the deposition of flood-deposited debris and sediment is determined to endanger structures or affect the safety and welfare of people and property along the floodway, such deposits will be removed. When possible, the use of heavy equipment in the overbank area will be limited to times when the soils are frozen.

Guidance:

1. All flood-deposited debris and sediment that the City determines needs to be removed from the floodway will be deposited in a non-wetland location outside the floodway.
2. The removal of flood-deposited debris and sediment will not involve extensive scraping of the overbank area, reshaping or realignment of the channel, or extensive uprooting of established woody vegetation.
3. Removal of sand bars is not authorized by the MGP.
4. The City will conduct an annual, on-site review of the DMR to evaluate previous work and to determine the limits and type of debris removal to be performed for the next maintenance season. The on-site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDOW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.

PROTECTION OF THE TOE OF FLOODWAY SIDES

Objective: Preserve a 12 to 14 foot width to protect the toe of the floodway sides from being undercut and provide an access for maintenance vehicles (Figure 4).

Timing: Protection of the toe of the floodway sides can occur when the City determines the floodway walls are in danger of being undercut or a significant loss of the overbank area has occurred that will restrict maintenance vehicle access within the floodway. When possible, heavy equipment access to the overbank area will be limited to times when these soils are frozen.

Guidance:

1. Annually, the City will conduct an on-site review to determine areas where channel erosion and meandering have reduced the overbank width to less than 12 to 14 feet (Figure 2), to evaluate previous work and to determine the limits and type of toe protection to be performed for the next maintenance season. The on- site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDOW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.
2. All fill material must be clean and free of toxic pollutants in toxic amounts.
3. Material to be used for protection of the toe will be durable angular rock or broken concrete free of protruding rebar or degradable substances. Bituminous asphaltic material will not be used for protection of the floodway toe.
4. Material to be used for protection of the toe must be protected from erosion and able to withstand expected high flow velocities and turbulence.
5. The top surface of the riprap will be covered with 3 inches to 4 inches of soil to allow development of vegetation.
6. The use of fill material for erosion protection of the toe is the minimum necessary for streambank stabilization and erosion protection.
7. Sediment deposited by floods within the floodway and determined to endanger structures or the design capacity of a reach can be used to fill voids in coarser material used for toe protection.

PERMANENT CROSSINGS OF MINOR WETLAND AREAS

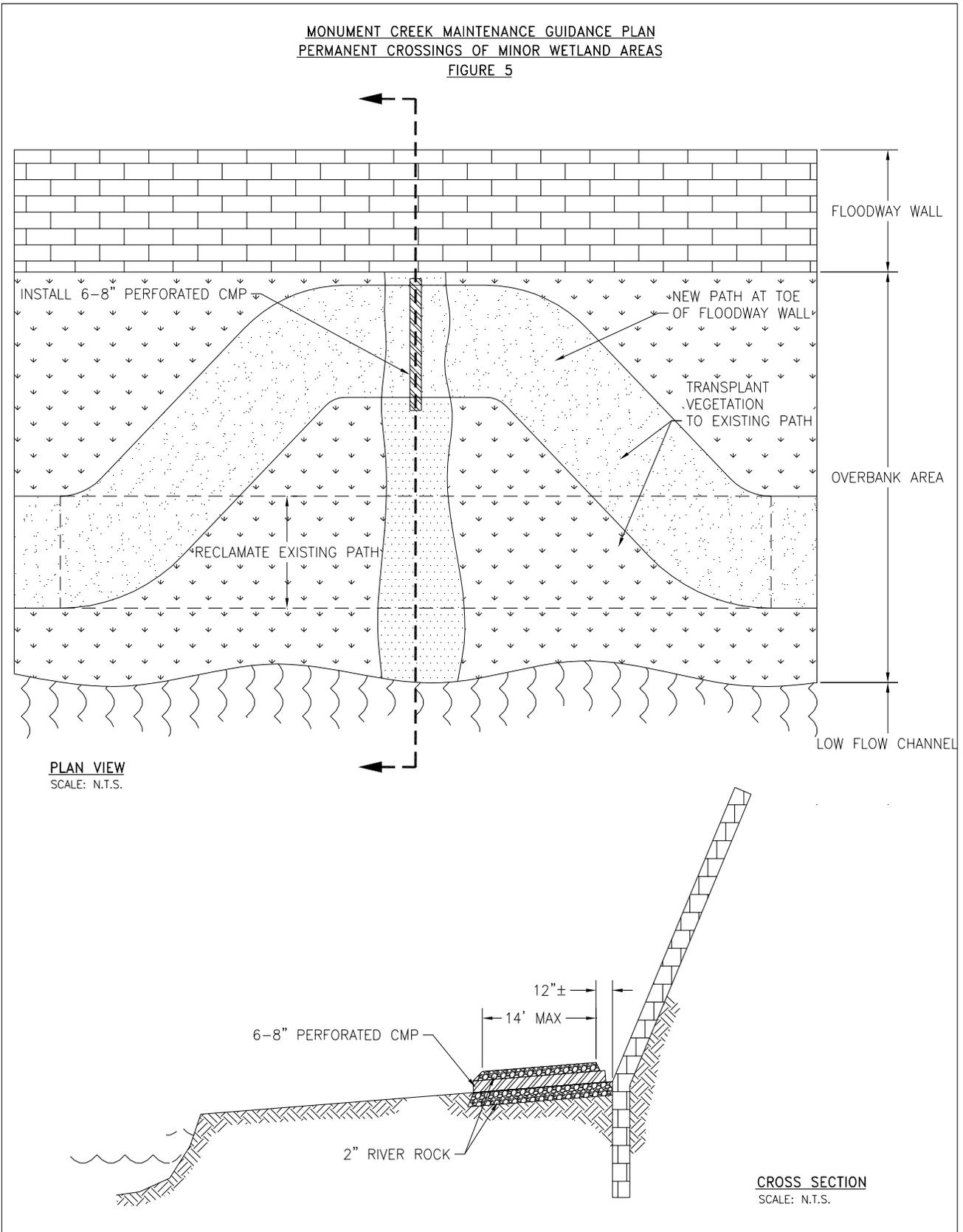
Objective: Provide permanent crossings for heavy equipment to cross minor wetland areas, which include small drainages and seepages from the floodway walls to the low flow channel.

Timing: Construction of the permanent crossings will occur between October 1 and March 31

Guidelines:

1. The crossings would involve removal and stockpiling of existing wetland vegetation and soil, installation of a perforated CMP with 2-inch river rock both around the pipe and as cover over the pipe, removal of existing informal paths, and placement of the stockpiled wetland materials in an area of the existing path near the existing wetland area. Work will be constructed in accordance to Figure 5.
2. Annually, the City will conduct an on-site review to evaluate the crossings. The on-site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDOW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.

Figure 5. Permanent Crossings of Minor Wetland Areas (Example Site).



TEMPORARY LOW FLOW CHANNEL CROSSINGS

Objective: Provide temporary equipment crossings in the low flow channel. This is done to provide access for removal of woody vegetation from the overbank areas and floodway sides.

Timing: Construction of temporary low flow channel crossings will occur between October 1 and March 31. Use of temporary low flow channel crossings is done following cutting of vegetation.

Guidelines:

1. Crossings shall be constructed of 6- to 24- inch diameter clean rock. Work should be completed using details shown in Figure 6.
2. Grading will not be performed within areas of willows or other wetland vegetation.
3. Access roads will match the edge of the low bank to either side where possible; minor grading of the existing overbank will be done when the low flow channel exceeds 5 feet in depth.
4. The number of temporary crossings will be held to the minimum necessary.
5. Temporary crossings will be removed upon completion of that season's maintenance activities. Original ground contours will be restored with clean fill dirt.
6. Annually, the City will conduct an on-site review to evaluate areas where the crossings existed the previous season. The on- site meeting will be coordinated with the CoE, the EPA, the USFWS and the CDOW and will take place during the growing season (i.e., late summer or early fall). Adequate notice of the time and place for the meeting will be provided to all agencies so that those who wish to participate may do so.

Figure 6. Temporary Low Flow Channel Crossings.

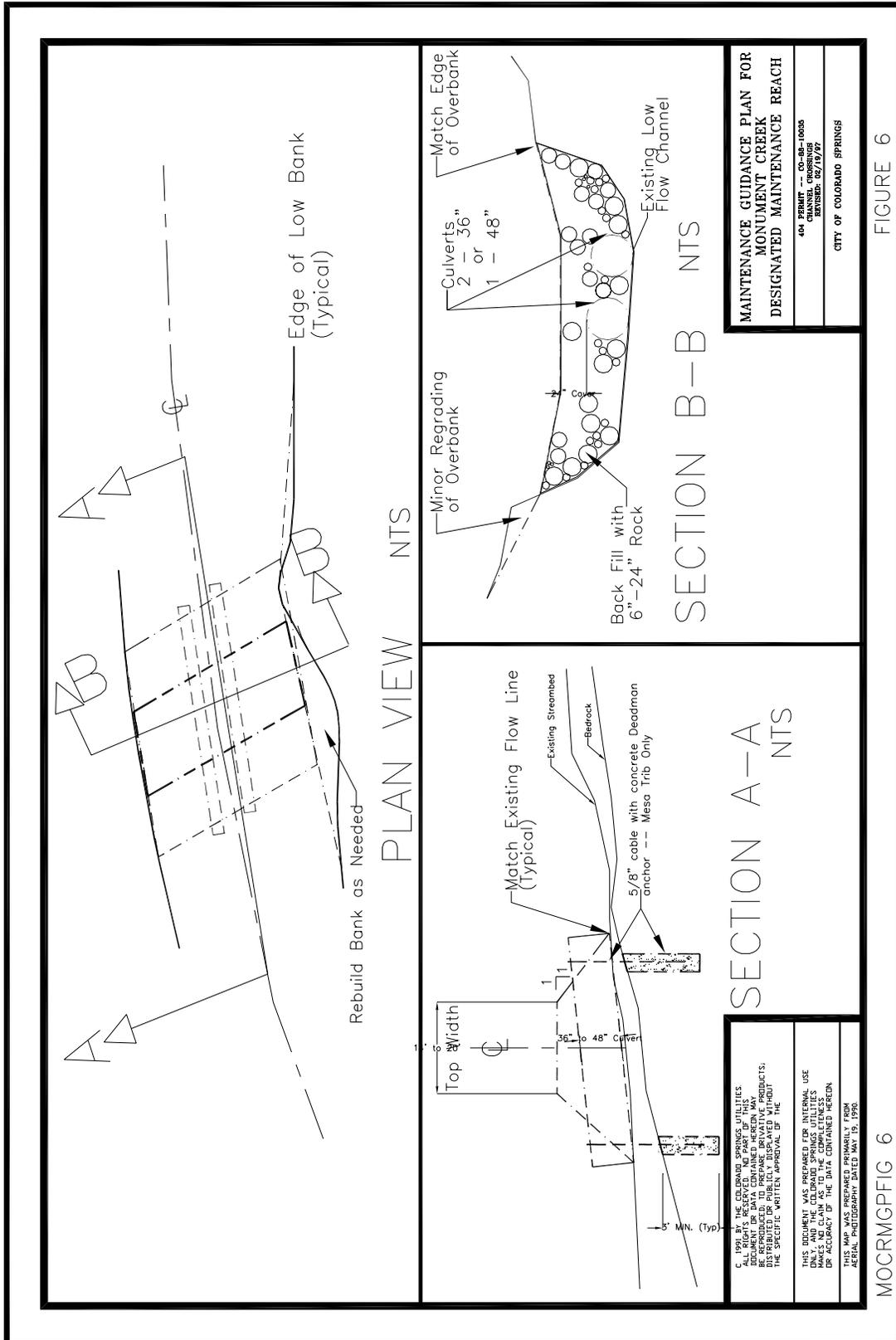


FIGURE 6

GLOSSARY OF TERMS

Approved maintenance activities - Those activities that have been approved to occur within the DMR providing the specific guidelines for each activity are met. These approved activities are:

1. Maintenance and repair of floodway sides;
2. Mowing and removal of woody vegetation from overbank areas;
3. Removal of flood-deposited debris and sediment, which threaten public safety;
4. Placement of minimal amounts of fill needed to protect the toe of floodway sides.

Fill material - Fill material is any material originating from outside of the low flow or overbank area that is placed within the low flow or overbank area.

Floodway - The full channel area from top-of-floodway-wall to top-of-floodway-wall.

Floodway sides - The grouted flagstone walls that form the sides of the floodway; the lower limits are at the overbank areas and the upper limits occur at the top of the floodway. The floodway sides are not considered waters of the United States and construction, repair, or maintenance involving the walls does not require CoE authorization so long as the work does not impact the low flow channel or overbank areas.

Heavy equipment - Front-end loaders, track loaders, long-reach excavators, tandem axle trucks, rubber tire loaders, graders, and 6 cubic-yard dump trucks. Light equipment includes: pick-up trucks, mowers, ¼ cubic-yard front-end loaders, and 2 cubic-yard dump trucks.

Low Flow Channel - The bottom of the floodway and the side slopes between the channel bottom and the inner edge of the overbank area.

Overbank areas - Those areas between the low flow channel and the toe of the floodway sides.

Toe of floodway sides - The area where the floodway walls contact the overbank area.

Wetland areas - Those areas in the overbank area that occur in wet and moist areas that support vegetation common to wetland areas (e.g., cattails, rushes and willows) and that have been delineated using current CoE methods. Wetlands in the overbank area typically occur where water seeps from the floodway sides or culverts drain into the overbank areas.