

**BEST PRACTICES MANUAL**  
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Detailed technical reports are available in the Best Practices Technical Manual, organized by topic in alphabetical order, similar to the format for the Best Practices Manual.

# BEST PRACTICES MANUAL

## ***I. INTRODUCTION***

### **Introduction And Purpose**

The City of Chico General Plan requires the preparation of a Best Practices Manual (BPM) containing guidelines for the preparation and submittal of Resource Management, Monitoring and Reporting Information (OS-I-26), general development standards and resources management guidelines for sensitive habitats (OS-I-30) and structural protection standards for wildland fire areas (S-I-13). Although not specifically addressed by the General Plan, the BMP and Best Practices Technical Manual (technical manual) are also the appropriate document to contain other City codes, policies and programs which set forth measures for project design and/or development to avoid or minimize impacts to natural resources.

The BMP and technical manual are a compilation of existing City codes, policies, programs and standardized mitigation measures extending protection to natural resources through appropriate project design and development. The technical manual also includes documents and guidelines developed by other agencies and used by the City in project evaluation. As other General Plan programs are devised and/or implemented, additional materials may be added.

As such, this manual and related technical manual contain “tools” for project design and evaluation. These “tools” are used as appropriate for a specific project’s environmental and urban setting. A project will be designed and evaluated through the use of standards and mitigation applicable to the site and project.

### **Source of Standards**

As noted in the preceding section, the City’s existing standards for protecting resources are set forth in a variety of documents, programs and policies, including those from other agencies but applicable to projects under City jurisdiction. These sources are generally described as follows:

- A. General Plan. In considering any discretionary project, the City, by state law and local codes, must make a finding of consistency with the adopted General Plan. To support the finding of plan consistency, a General Plan policy providing resource protection must be incorporated into the project design.
  
- B. Chico Municipal Code. The City’s code contains numerous development requirements intended to provide resource protection. These code requirements are

primarily contained in the Land Use and Subdivision Regulations, but may also be found in other sections, such as “Buildings and Construction” (Grading Standards: Chapters 19.22 through 19.32) and “Health and Sanitation” (Chapter 8.20 Weed and Rubbish Abatement).

- C. Environmental Mitigation. In completing the evaluation of environmental impacts potentially resulting from a project, standardized mitigation measures are imposed in those instances where a potential impact is identified and mitigation measures have been previously adopted which address that potential impact. Standardized mitigation measures generally result from prior City adoption of EIRs or mitigated negative declarations, or from guidelines promulgated by regulatory agencies.

In all cases, use of a standardized mitigation occurs only when it is clear after review and evaluation that the mitigation is applicable and sufficient to address the potential impact. Where unique circumstances or setting are present, additional or project specific mitigation may be required to fully address the potential impact.

- D. Other Sources. State and federal regulations also serve to protect environmental resources and to offset potential environmental impacts. While it would be impractical to exhaustively delineate all such state and federal regulations, the Best Practices Manual contains those regulations which the City regularly implements or enforces as part of environmental review, project design, and plan check processes. Examples include the California Energy Code, the Federal and California Endangered Species Acts, and the Clean Water Act.
- E. Combination. Not infrequently, resource protection standards are contained in a combination of sources. As an example, dust control is addressed in the General Plan (OS-I-8), City codes (Section 12R.22.030) and standardized mitigation. This manual and accompanying technical manual serve to compile these standards in a single reference document to provide ease of access to project designers and the community.

### **Format of Manual**

The BMP is organized by topic in alphabetical order: (e.g. Air Quality, Biological Resources, Cultural Resources, Etc.). Each topical section includes a summary, and where available, acceptable alternatives to address design issues to minimize resource impacts. Where an asterisk (\*) follows a topical heading in the summary, support documents are included in the technical manual. The technical manual contains applicable General Plan polices and portions of the City’s Standardized Mitigation and Monitoring Program, and additional backup information as appropriate to the specific topic.

In addition to the overall Table of Contents at the beginning of the document, the cover page to each topical section reiterates the contents of that section.

## ***II. Air Quality***

The General Plan contains substantial policy relating to protection and improvement of air quality in the Chico area. Those policies fall into two general categories. The first category of policies included in this section address site development requirements to control dust and pollution from construction activities, and subsequent emissions from fuel burning devices in new construction.

The second category of policies addresses reduction in reliance on motor vehicles for transportation. Many of these policies deal with regional programs and improvements to be implemented, but are generally not applicable to individual projects. However, some of the policies, such as provision of internal bicycle/pedestrian circulation, development of transit stops and mixed uses, do apply to specific proposals and are being implemented on a project basis through review for General Plan consistency. These standards will be codified in the currently underway development code update and illustrated in the design manual.

### **General Plan Policies\***

The General Plan contains specific policies for the control of dust and construction equipment emissions on development sites, and requirements for use of low emissions water heaters and wood burning devices.

### **Standardized Mitigation\***

The City of Chico incorporates standardized mitigation measures, reflecting General Plan policy and AQMD recommendations, into all construction projects, and in many cases may supplement the standardized mitigations with additional measures to address project specific considerations.

### **Butte County Air Quality Maintenance District (AQMD)\***

The Butte County AQMD reviews projects proposed in the City of Chico and recommends mitigation measures and/or conditions of approval to address potential air quality impacts. The BCAQMD has adopted Indirect Source Review Guidelines, contained in the BMP Technical Manual, which provides guidelines regarding the assessment and mitigation of air emissions from vehicles.

### **Chico Area Transit District**

The City of Chico supports the use of transit through direct funding and by requiring bus turnouts and other transit facilities in conjunction with development proposals.

### **Bicycle System\***

The City's circulation system includes extensive bicycle paths and lanes as noted on Figure 4.1, Bicycle System, of the Chico General Plan. As part of the development review process, project proponents are required to dedicate and construct bicycle facilities consistent with the Bicycle System exhibit to the maximum extent permitted by the State Subdivision Map Act. Additional bicycle facilities - those not shown on the Bicycle System exhibit - may also be required if necessary to promote bicycle circulation on-site consistent with other bicycle related General Plan policies. Most notably, the General Plan requires connections to the citywide bicycle system every 500 feet, where feasible, as part of the subdivision review process.

### **Other Standards**

City requirements for landscaping and payment of street facility impact fees also address air quality impacts indirectly. Landscape requirements will be included in the design manual and street facility impact fee ordinance is not included in this manual.

## ***III. Biological Resources***

### ***III-A. Biological Resources - General***

#### **Sensitive Species**

Existing state and federal laws provide significant regulation of special status species - those species listed as endangered or threatened, and those proposed for such listing, pursuant to the California Endangered Species Act (CESA) or the Federal Endangered Species Act (FESA). Current lists of special status species are contained in the technical manual. CESA and FESA are administered by the California Department of Fish and Game (CDFG) and the US Fish and Wildlife Service (USFWS) respectively, and are implemented in conjunction with the local development entitlement process through the California Environmental Quality Act (CEQA). This summary provides only a very general overview for informational purposes. Specific questions regarding the listed species or federal or state procedures should be directed to USFWS or CDFG staff.

State and federal endangered species law is central to the City's environmental review procedures. When a local development project is proposed, City staff determines whether the project could have an impact on a special status species as part of CEQA review. This determination is based on site inspections, the historical range of the species, the habitat present on-site, and consultation with staff at the USFWS, CDFG, and biological consultants.

If it is determined that special status species have the potential for occurring on-site, surveys must be undertaken by a qualified professional in a manner meeting the specifications of the CDFG or the USFWS. Specific survey requirements apply for each species to ensure that a species will not be inadvertently missed due to out-of-season surveys or improper survey methodology. If special status species are not identified by the surveys, this is indicated in the biological resources section of the CEQA document (negative declaration or environmental impact report). If special status species are

identified by the surveys, then an impact analysis is performed, again by a qualified professional, to assess whether and to what extent the development proposal will adversely affect the special status species and its habitat.

If the proposal will have an adverse effect on the species, mitigation is developed to offset impacts. Mitigation is defined, in order of preference, as: one, avoiding the impact altogether by not taking a certain action or parts of an action; two, minimizing impacts by limiting the degree or magnitude of the action and its implementation, three; rectifying the impact by repairing, rehabilitating, or restoring the impacted environment, four; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and five; compensating for the impact by replacing or providing substitute resources or environments.

The survey results, impact analysis, and proposed mitigation are all subject to review and approval of the USFWS and/or the CDFG, as applicable, in the form of a biological opinion. Established criteria are evaluated for each species to determine whether the project meets its obligation under the FESA or the CESA. The development proponent must either demonstrate no adverse harm to the species or procure a "take" permit for adverse effects to the species.

The survey results, impact analysis, and proposed mitigation, along with a determination of the projects ultimate impact to the species after mitigation (e.g. mitigated to less than significant effect or remaining significant effect) are disclosed in the CEQA document prepared by the Planning Division and forwarded to the Planning Commission or City Council for action on the development proposal. The environmental document serves as an informational document to aid the Planning Commission or City Council in their decision to approve, modify, or conditionally approve the proposed project. The City may impose additional mitigation or deny the development if it finds it necessary to advance the City's established goals and objectives or the health, safety, and welfare of the community.

### **Biological Resources Inventory**

The purpose of the Biological Resource Inventory (BRI) was to develop a comprehensive habitat map in support of the General Plan update and General Plan environmental impact report. It is currently being used by project applicants and City staff as a source of baseline habitat information. The BRI documented existing habitats through field surveys and the use of aerial photography and previous studies. Field work to visit habitat units and to characterize dominant plant communities was completed during August and September 1993; however, the surveys are not intended to provide project-specific field review. Rather, the BRI is a City-wide habitat map which documents the locations of important natural habitats and notes plant and wildlife occurrences. The BRI information is provided on 24" x 36" aerial photographs which are available for review and reproduction at the City Planning Division office.

### **Resource Management Areas and Resource Conservation Areas\***

The 1994 General Plan established Resource Management Areas (RMAs) and Resource Conservation Areas (RCAs) to facilitate appropriate management and conservation of environmental resources. Figure 7-1 of the General Plan identifies RMA and RCA areas.

A Resource Management Overlay has been added to the zoning designation of developable parcels containing significant biological resources which serves to acknowledge that development density and design must accommodate appropriate conservation of environmental resources on-site. RMAs generally contain some resources that merit long-term preservation, but further study is necessary before a precise delineation of acreage to be preserved can take place. As indicated in the General Plan, the intent of the RMA designation is to ensure that biological resources are considered and responded to in preliminary/conceptual development design, prior to substantial design, layout, or engineering of a development application. For sites located partly or wholly within an RMA a development applicant is required to participate in a pre-application review with City staff to identify and discuss the biological resources potentially affected by the project and the applicable policies and review procedures for RMAs. The applicant would then submit specific information along with the development application for the site. The submittal information for RMAs is contained herein.

Resource Conservation Areas are undevelopable areas that will be conserved in perpetuity. They provide opportunities of various non-development oriented uses such as passive recreation, educational uses, scientific study, and mitigation banks. RCAs currently include Bidwell Park, creekside areas, Drake's wetlands preserves near Sycamore Creek, and the Warfield-Doe Mill preserve for Butte County Meadowfoam. Other RCAs will be added as RMA areas are divided into developable and undevelopable components, with undevelopable portions being redesignated as RCAs.

### **Habitat and Resource Information**

The General Plan indicates that the RMA and RCA areas are intended to be of sufficient size to ensure the long-term viability of the habitat and species included. To facilitate this goal, the City undertook a Habitat and Resource Conservation Plan (HRCP), a holistic planning effort to determine where development would be permissible and where preservation would be necessary. The HRCP was not adopted but contains valuable resource information such as the location and extent of wetlands, Butte County Meadowfoam, etc. The City Council directed that the document should have no policy bearing on which lands are developed and which preserved; however, it directed that the resource information contained in the plan should be used as appropriate to describe "existing conditions" for subsequent projects and planning efforts. The unadopted HRCP is available for review at the Planning Division office; it can be purchased for the cost of reproducing the document.

### **Preserve Management Plans**

The General Plan recognizes that when species and habitat preserves are established within the urban area, resource management will be necessary over time to ensure their long-term viability. A Standard Preserve Management Plan format has been prepared as

a template for specific project preserve management plans to ensure that special considerations, unique to individual species or habitats, will be included in management plans, comprehensively address all issues associated with preserve management, ensure consistency between different plans, and provide for revisions in management practices, where necessary.

The City currently owns one 14 acre preserve, the Doe Mill Preserve. It is likely that a number of other preserve areas will be obtained by the City, either through fee title or easement, as the result of mitigation requirements for currently pending project applications, or through other means.

### ***III-B Biological Resources - Creekside Greenways***

The City of Chico General Plan recognizes the importance of maintaining creeks as an integral part of the community and numerous programs have been implemented to ensure that the creeks continue to serve their valuable biological function.

#### **General Plan Policies\***

The City's General Plan includes significant policy relating to the preservation of creeks and riparian habitats for biological values, the provision of open space in the urban fabric and use for low-impact recreational purposes. For those projects proposed adjacent to creeks, approval must include a finding of General Plan consistency, requiring demonstration that the proposal incorporates measures to preserve and protect creekside greenways.

#### **Other Regulations**

Development in the proximity of creeks and other waterways is subject to the requirements of regulatory agencies besides the City of Chico. These other agencies include the Army Corps of Engineers, Environmental Protection Agency and State Department of Fish and Game.

#### **Standardized Mitigation\***

For projects in the proximity of creeks, standard mitigation requirements are imposed to prevent impacts to creeks from construction activities and development. Many of these mitigation measures resulted from preparation and certification of the Final Environmental Impact Report for the Northwest Chico Annexation and Master Plans (Sanitary Sewer and Storm Drainage).

#### **Acquisition Policy\***

The City's adopted budget provides authority for the opportunity purchase of lands along the creeks.



### **Riparian Habitat Dedication\***

The Chico Municipal Code includes specific requirements for the dedication of riparian habitat along creeks. In addition to the dedications of riparian habitat, additional lands are acquired through purchase or credit against impact fees for greenways and/or buffers.

### **Streambank Protection Policies\***

The Bidwell Park and Playground Commission has adopted standards for protecting creekbanks from erosion. These standards emphasize natural means of stabilization over artificial techniques such as riprap placement.

### **Design Criteria for Creekside Greenways**

These criteria were accepted by the City Council and establish appropriate uses and improvements in creekside greenways. Generally, the criteria provide that uses must be low impact, habitat restoration is to utilize native vegetation and improvements are to be located as far as possible from the channels.

### **Creekside Setbacks - Chico Municipal Code\***

The placement of structures and other improvements on existing parcels abutting creeks is subject to setbacks intended to provide creek and riparian habitat protection.

### **Valley Elderberry Longhorn Beetle Protection\***

The Valley Elderberry Longhorn Beetle occurs along the banks of creeks in the Chico area. Development in the proximity of the creeks must incorporate mitigation requirements promulgated by the U. S. Fish and Wildlife Service. The City is in the process of preparing a Habitat Conservation Plan for USFWS approval which will provide specific design and mitigation standards for the Chico Urban Area.



# CITY OF CHICO MEMORANDUM

**TO:** City Manager

**DATE:** March 17, 1993

**FROM:** Park Director

**FILE:** Memos

**RE:** Streambank Protection Standards

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The Streambank Protection Standards listed below were developed by the Park Commission Stream Sub-Committee and approved by the full Park Commission at its December 29, 1992 regular meeting. The City Council directed the Park Commission to develop standards as a means to address streambank problems associated with greenway property acquired by the City.

## Streambank Protection Standards

1. In situations where streambank protection is necessary, utilize the least intrusive approach. Intrusive methods often cause detrimental effects downstream or on the opposite streambank. Use bioengineering techniques except where it is not feasible.
2. If riprap or similar hard engineering is necessary, utilize the following techniques:
  - a. Maintain flow capacity in a natural state.
  - b. Plant riprap with native plant materials to achieve stability while retaining environmental values.
  - c. Where riprap or gabions are used, avoid the use of oversized units for improved aesthetic and environmental issues.
  - d. Utilize placed riprap which is much more stable and cost effective than dumped riprap.
3. Maintain flow capacity in a natural state, allowing streams to meander.
4. If increased capacity is needed, design and construct a "multi-stage" channel with a low flow channel. Since a stream channel and its flood plain are a functioning hydraulic unit, include the flood plain as an integral element of the design.
5. Construction of new bridges should be wide enough to contain bankfull flow and flood flows. This method avoids expensive sandbagging and riprapping, while retaining natural stream characteristics.
6. Minimize or eliminate channel straightening and the resulting increase in gradient. This avoids undesirable channel adjustments which eventually lead to a less efficient channel for discharging flood waters.

7. Emulate nature in designing channel form. Use asymmetrical cross sections at bends, symmetrical in straight reaches, avoid uniform trapezoidal sections and steep slopes. Utilize stream classification and fluvial geomorphologic principals for input and design.
8. Even stable channels tend to change positions as a result of selective erosion and deposition within the channel. Therefore, as it becomes available, the City should acquire streamside property to provide a buffer zone. The property can be reconfigured as necessary to achieve appropriate setbacks, and the remainder resold.
9. Where structures are threatened and streambank protection is required, streambank stability should be promoted by:
  - a. Retaining as many trees as possible. Remove trees only when they are causing problems by obstructing the channel flow. Where trees are cut, leave the stump as their root system stabilize the streambank.
  - b. If extensive streambank work is necessary, large plants can often be transplanted.
10. Where riparian vegetation has been destroyed, appropriate native riparian plants shall be used to revegetate disturbed sites.
11. The Park Division should establish a channel maintenance inspection and monitoring program. The program would include: trash and debris removal, exotic plant eradication (giant reed), revegetation and streambank repair and maintenance. Much of the actual work could be performed by volunteers.
12. Establish a budget within the Park Division for implementation of #11.

KLC:ln

pc: GSD  
DPW  
City Council



# CITY OF CHICO MEMORANDUM

**TO:** City Council (Mtg 2/11/92)

**DATE:** January 27, 1992

**FROM:** Community Services Director

**FILE:** Memos

**SUBJECT:** Design Criteria for Creekside Greenways

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As requested by the City Council, the criteria for creekside greenways was discussed and recommendations solicited from the Bidwell Park and Playground Commission, Planning Commission and the Chico Area Recreation and Park District.

There was general agreement among the three bodies regarding the creekside greenways, with some minor questions and disagreements which are highlighted below.

1. Creekside greenway with a width of 25 foot or less:  
If the creekside greenway was dedicated solely to mitigate impacts on riparian habitat, no improvement is permitted. In other cases where the dedication was to provide creekside access and, if no native riparian vegetation removal is required, a four- to eight-foot-wide walkway/bike path on the outside edge of the greenway may be provided. Existing native vegetation is to be retained and enhancement/revegetation is to use native plant species from the Chico/Butte County Gene Pool.
2. Creekside greenway with a width of 25 to 50 feet:  
Same as for the 25-foot width, except the walkway/bike path can meander so long as it is no closer than 25 feet to the top of bank and maintains an average distance of 40 feet from top of bank to path centerline.
3. Creekside greenway with a width of 50 feet to 100 feet:  
The walkway/bike path shall be constructed as set forth above and meander so long as it is no closer than 35 feet to the top of bank and maintains an average distance of 50 feet from the top of bank to path centerline. Vegetation between the path and top of bank shall be limited as set forth above. Vegetation between the path and outside of the greenway shall emphasize California native species, but may include turf areas.
4. Irrigation for native plant species shall consist of a drip system for new plants. Irrigation for turf areas will utilize conventional systems designed to avoid overspray or runoff into native plant areas.
5. Walkway/bike path separations from top of bank discussed above do not apply to alignments leading to creek crossing. However, such crossing should be minimized and located to avoid vegetation removal, particularly trees.
6. Greenway use should be limited to passive recreational uses, specifically excluding any type of court facility or playing field.

7. Paths/trails should be constructed of crushed, compacted rock or similar material, but not concrete or asphalt, except where the path is part of the City's Bicycle Plan. Except as shown in the General Plan or CARD Master Plan or where there is insufficient width, paved bicycle paths should be constructed in the greenways only where the greenway width exceeds 50 feet and alternate routes, including on-street, are not available.
8. In addition, it is recommended that the General Plan be amended to require a 50-foot average dedication from top of bank where the primary purpose of the greenway is strictly for the preservation or enhancement of riparian habitat and an average dedication of 100 feet where active uses are envisioned.

The only apparent disagreement is the Park Commission's request that, where possible, an eight-foot walkway be constructed of crushed rock or similar material, not concrete. Both the Planning Commission and CARD recognized that the General Plan and CARD Master Plan call for the integration of bicycle paths within designated creekside areas and that these paths should be improved with either asphalt or concrete.

Further, CARD asked for a clarification regarding the meaning of riparian habitat, riparian vegetation, native riparian vegetation and listings of Chico/Butte County Gene Pool. In that light, the following explanations are offered:

1. Riparian habitat: Animal environment which is located on the banks of waterways. Usually associated with Northern California native plants found in riparian zones.
2. Riparian vegetation: This should be defined as Northern California native riparian vegetation. Examples of these are: Valley Oak, California Sycamores, Alders, Elderberry, Willow and Sedges.
3. Chico/Butte County Gene Pool: This indicates that propagation methods (seed or vegetative) used for revegetation occur using "mother stock" from the Chico/Butte County area.

In addition, staff has received comments from the Little Chico Creek Educational Consortium which are attached for the City Council's information and review. As set forth in the attached memorandum, these recommendations are generally consistent with the recommended criteria.

/s/  
Thomas J. Lando  
Community Services Director

TJL:kmw

### **III-C BIOLOGY - OAKS AND OTHER TREES**

#### **Tree Preservation Measures**

Provided by the Urban Forester, these measures are attached as mitigation to all discretionary projects involving construction within proximity to oak trees or other trees identified for preservation. The tree preservation measures provide standards for treatment of trees during construction such as pruning prior to construction, installing construction fencing, trenching within the tree driplines, and sealing cut roots over 3/4 of an inch. The tree preservation measures also include prohibition against excess fill above the natural grade around trees and from staging equipment within tree driplines. They specify that existing trees must have 20 feet of landscaping /open space from the base of the tree, free of any site improvements such as sidewalks, bike racks, pavement, etc.

#### **Specifications for Tree Work**

The Specifications for Tree Work, attached, are typical notes placed on final subdivision maps to ensure that construction activities near trees are performed to the satisfaction of the Urban Forester.

### **III-D BIOLOGY - WETLANDS**

#### **Sensitive Species**

Please see Biology-General for a discussion of special status species. Wetlands with special status species must comply with USFWS and CDFG requirements as described under that section. The Army Corps of Engineers (Corps) will consult with the U.S. Fish and Wildlife Service (USFWS) for conformance with FESA prior to issuing a Section 404 permit for the fill of wetlands.

#### **Agencies that Regulate the Fill of Wetlands\***

Table 1-1 in the Best Practices Technical Manual highlights the many agencies that play a role in the permitting of land use changes within wetland areas. The US Army Corps of Engineers (Corps) has been charged with the primary federal responsibility for regulating the placement of fill materials within wetlands. The US Environmental Protection Agency has veto power over the Corps permitting process. The Corps consults with the USFWS, National Marine Fisheries Service, and the California Department of Fish and Game (CDFG) relative to special status species and other wildlife/habitat concerns within the jurisdiction of each agency. Water quality certification, or waiver of certification, by the Regional Water Quality Control Board (RWQCB) is required as a condition of approval on any Army Corps 404 permit. Please see the stormwater management section for more information regarding the role of the RWQCB.

The CDFG typically provides regulatory protection of lakes and creeks through the issuance of lake and streambed alteration agreements under section 1600 et seq. of the California Fish and Game Code.

In addition to long-range planning mechanisms such as General Plan policies, the City also has a role in regulating the fill of wetlands via CEQA review. Most wetlands are within

RMA areas, and the City requires developers to identify wetlands early in the project design with the goal of identifying resources to be protected. Proposed mitigation to offset impacts will be evaluated through the environmental review process. Corps mandated mitigation/preserves can serve to mitigate wetland impacts pursuant to CEQA if the City, using its independent judgment, determines that the project with corps mitigation will not have an adverse impact on the environment or the City's environmental goals. Additional mitigation may be required to comply with the City's environmental goals or to offset significant impacts.

### **Nationwide Permit 26\***

The Army Corps of Engineers has issued a general permit for the fill of wetlands of less than three acres -- the Nationwide Section 26 permit which expires December 13, 1998. Prior to that date, applicants of projects of less than 0.3 acres must notify the Corps within 30 days of completion of fill activity. Projects greater than 0.3 acres (but less than three acres in size) are required to submit a wetland delineation and mitigation plan for review and approval by the Corps. Fills of greater than 3 acres are subject to individual permits and review by state and federal agencies having jurisdiction over resources affected by the project. The permit specifically excludes fills within Big Chico Creek as it is a component of the National Wild and Scenic Rivers System. It was not known at the time of publication what procedures will be in place after December 13, 1998.

Numerous general conditions are attached to the Nationwide Section 26 permit and can be found beginning on page 2 of the referenced document. Consultation with the USFWS is required for any potential impacts to listed species, and the Corps reserves authority to determine whether projects comply with the conditions of the permit.

### **Programmatic Biological Opinion on 404 Permits**

The USFWS has established a programmatic formal consultation - a streamlined procedure - for issuance of Clean Water Act section 404 permits for projects with limited environmental impacts on vernal pools within the jurisdiction of the Sacramento field office (i.e. the Chico Urban Area). A memo from Joel Medlin, dated April 4, 1995, describes the programmatic consultation process in detail.\*

The purpose of the programmatic biological consultation is to expedite consultations on proposed projects with relatively small impacts on listed species. Relatively small impacts are defined as less than one acre; however, the USFWS has the authority to extend the programmatic biological opinion to projects of greater than one acre. Projects that meet the conditions and mitigation standards set forth in the memo may be appended to the biological opinion, thus eliminating the need for formal, written consultation for individual projects. The USFWS continues to provide oversight regarding which projects are eligible to utilize the programmatic consultation as well as re-evaluation of the programmatic biological opinion process to ensure that continued implementation will not result in unacceptable impacts to the vernal pool ecosystem.

Mitigation requirements entail a combination of on-site avoidance, acquisition of off-site preserves, and vernal pool recreation. Specific mitigation requirements are contained on pages 2 through 4 of the referenced document.

### **Standardized Mitigation and Monitoring**

Since some wetlands fills of less than an acre are not regulated by the Corps or the USFWS, the City has included mitigation for these fills in its standardized mitigation and monitoring program. Fills of less than an acre are required to provide mitigation to the Butte County Fish and Game Commission mitigation bank or to a fund held by the City.

Additionally, standard mitigation is placed on discretionary approvals such that the City will not issue a grading permit, or other permits, until the applicant provides verification of compliance with Army Corps of Engineer and Water Quality Control Board requirements. While no mitigation is required to give City staff this authority, the mitigation is included as a reminder to those issuing grading, building, or other permits, that Corps compliance is required.

## ***V. Cultural Resources - General***

Cultural resources fall into three areas: general, archeological, and historic.

### **General**

New projects are screened for proximity and potential impacts to sensitive cultural resources. Given the several creeks within the Chico Planning Area, all projects with significant first time ground disturbance are referred to the Northeast Information Center at California State University, Chico for a cultural records search. In a written response to the records search request, the Northeast Information Center will indicate whether additional research or site surveys are recommended. Additional research or site surveys must be performed by a qualified expert. If cultural resources are identified through site surveys, the resources will be protected as identified below for archeological and historical resources.

Additionally, the City places standard mitigation on all ground disturbing activities such that if potential cultural resources sites are unexpectedly encountered, the standard mitigation requires construction contractors to stop work and report to the Planning Director when evidence of a cultural or historic site is found. A qualified professional will then be hired by the project proponent to investigate and make recommendations. This may temporarily interrupt or delay work in all or a portion of the site, but seldom causes any long term or permanent work stoppage.

### **Archaeological**

Projects are referred to the Northeast Information Center as described above. Extra consideration is given if the site is shown within the High Sensitivity Area on General Plan Exhibit 7-3.\* When sites include actual artifacts they will usually be dealt with by avoidance in the development plans or excavating and recording the find. Typically, specific locations



of archeological sites are not identified in development plans, staff reports, and other public documents to protect against vandalism, theft, and other site disturbance.

### **Historical**

Projects are compared to Federal, State, and/or local lists to see if there are significant historical resources on or near the project site. If the site contains historical buildings, mitigation is required. This may include preservation, adaptive reuse and restoration, or reconstruction in-kind. Notice of environmental review documents for projects involving historical resources will be forwarded to the Chico Heritage Association.

### **Additional References**

Not included in the Best Practices Manual or Best Practices Technical Manual, but available at the City of Chico Planning Division Office are the following documents:

Guidelines for the Curation of Archeological Collections (State of California, Office of Historic Preservation, May, 1993)

Referral List for Historical Resources Consultants (Northeast Center for the California Historical Resources Information System, California State University, Chico, Department of Anthropology, July, 1998).

## ***V. Energy Conservation***

### **California Energy Code**

All new buildings in California must meet the Energy Efficiency Standards contained in Title 24, Part 6 of the California Code of Regulations. This set of state regulations contains mandatory requirements for efficient energy use. It addresses such issues as insulation, appliances, woodburning devices, and plumbing and lighting efficiencies. A memo from Senior Plan Check Engineer Long is included in Appendix V and provides an excellent overview.

## ***VI. Farmland Protection***

### **Right-To-Farm Ordinance**

Section 19.25 of the Chico Municipal Code contains agricultural preservation provisions (previously referred to as the right-to-farm ordinance) that require subdividers to disclose a property's proximity to farmland to prospective buyers and that limit the definition of a "nuisance" to exclude established farms operated according to commonly accepted farming practices. This code section is supported by General Plan policy OS-I-43.

### **Resources/References**

#### **Soil Survey of Butte County**

A soil survey from the 1950's is available from the USDA Soil Conservation Survey. The survey is currently being updated and is anticipated to be complete in approximately 5 years.

#### **Green Line**

The "Green Line" is a non-physical boundary separating the Chico Urban Area from prime agricultural soils to the west. Butte County and the City of Chico first established the green line in August, 1982 and the line continues to help define the form of the Chico Urban Area.

## ***VII. GROUNDWATER QUALITY***

The City of Chico General Plan contains numerous policies to ensure continued water quality (OS-I-36 through OS-I-42). The primary measures to preserve groundwater quality are implementation of the nitrate action plan, elimination of known sources of soils and/or groundwater contamination and treatment of storm drainage.

#### **Nitrate Action Plan\***

The Nitrate Action Plan, as adopted by the City of Chico, County of Butte and State Water Quality Control Board, sets forth standards under which new on-site sewage disposal systems, generally septic systems, may be utilized. In all other cases, new development must connect to the sanitary sewer system. Standards for use of private on-site sewage disposal systems are included in this section.

The Nitrate Action Plan also includes requirements for the elimination of use of existing septic systems throughout the Chico Urban Area. As most of the existing septic systems are located on properties in the unincorporated area, Butte County is the lead agency for preparation of the program to eliminate these systems. The City's role in the program includes providing adequate trunk lines and treatment capacity at the Water Pollution Control Plant (PCP).

#### **Contamination Elimination**

See Hazardous Substance Section.

#### **Storm Drainage Treatment**

See Stormwater Management Section.

#### **Other Measures**

See Water Conservation Section.

### ***VIII. Hazardous Substances***

The Environmental Protection Agency (EPA) and State of California have inventoried sites containing or suspected to contain hazardous waste and substances. Proposed projects in the vicinity of these sites must address hazardous waste and substances by including appropriate remediation in the project if the hazard is on-site or by incorporating protection measures if the hazard is in close proximity. In those cases where a site is not included on the inventory, but there is reason to suspect hazardous waste and substances because of physical evidence or past use, the City will require preparation and submittal of an environmental assessment as part of the complete project application.

### ***IX. Open Space***

#### **Clustered Housing\***

The clustering of housing units to increase open space on remaining portions of a project site is encouraged by General Plan policy CD-I-28. This type of clustering is currently permitted by City regulations, although a planned unit development is often required to vary from setback requirements and other design standards. The development code update, currently being prepared, will incorporate incentives to cluster development.

### **Architectural Review**

Municipal Code Section 19.22 establishes architectural review procedures for all new development requiring a building permit, except single-family residential development. Generally, a site plan (plan view), landscape plan, elevations, color palette, and material board are required to be submitted for review and approval. Simple projects are typically approved administratively, and more complex projects or those in sensitive architectural areas such as the downtown, are reviewed and approved by the City's Architectural Review Board. The provision of required landscaped open space is a central aspect of the review of each development project.

### **Scenic Roadways\***

As described in a memorandum from the Community Development Director to Council in April of 1995, City staff has identified the following streets for consideration as scenic roadways as further implementation of General Plan Guiding Policy CD-G-9:

Chico Canyon Road	Bidwell Avenue	Vallombrosa Avenue
Woodland Avenue	Centennial Avenue	East Lindo Avenue
Stiltson Canyon Road	West Lindo Avenue	Manzanita Avenue
Cramer Lane	Humboldt (adjacent to Little Chico Creek)	
E. 8th Street (adjacent to Bidwell Park)		

In reviewing the various scenic streets, staff was unable to establish one standard that would fit all streets. For this reason, staff proposed that each street be considered separately in determining an appropriate street standard. In developing these individual standards, staff will seek input from adjacent property owners and from the County in those cases where the road is in or adjacent to County jurisdiction. Draft proposals will then be brought before the City Council for approval.

As an interim measure until individual standards can be established, staff is flagging development proposals which would affect the draft list of scenic roadways. As part of the development review process, the existing street standards would be evaluated for their applicability to scenic roadways and modifications to the standards would be recommended in order to enhance their scenic character. Development projects necessitating improvements to the draft list of scenic roadways have not been proposed, excepting the Fogarty subdivision south of Highway 32 and east of Bruce Road. In that case, staff will evaluate the applicability of current roadway standards and hearings on the project will include discussion of appropriate street standards for Humboldt Road. In another case, Fleur de Parc on Vallombrosa, the Planning Commission required in lieu fee payment until the street standard is resolved.

### **Visual Simulations - General\***

In addition to the architectural review procedures, General Plan policies CD-I-24 and CD-I-29 require visual simulations for large commercial buildings and foothill development respectively. As opposed to elevations which represent the project in two dimensions, visual simulations represent the project in three dimensions, either through a perspective drawing or model, and demonstrate the projects relationship to the surrounding community or landscape. Computer or video imagery may also be an appropriate technique.

### **Visual Simulations - Large Commercial and Industrial Buildings\***

The purpose of visual simulations for large commercial and industrial buildings pursuant to the General Plan (CD-I-24) is to encourage human scale, quality building materials and finishes, appealing treatment of parking areas, simple design in consideration of future adaptation to new uses, and design features which foster a sense of security.

For all commercial and industrial buildings 50,000 square feet or greater, development applicants shall submit visual simulations that accurately depict the appearance of the building including mass, scale, bulk, facade treatment, color, site topography, and landscaping. The appearance of the building may be approved, modified, or denied based on its architectural merits by the architectural review board or other decision-making body taking action on entitlement requests for the proposed project .

### **Visual Simulations - Foothill Residential Development\***

The purpose of visual simulations for foothill residential areas pursuant to the General Plan (CD-I-29) is to blend foothill development with the surrounding landscape and topography, to diminish its visual prominence from the valley floor, to encourage the careful location of new roads, buildings, and other development to provide maximum view corridors (to the extent other objectives such as solar orientation and circulation patterns are not diminished), to discourage the development of highly visible or intrusive structures, to limit the extent and amount of grading in foothill areas, and where grading occurs to emulate the contours of the natural slopes. Visual simulations will be required for development above the 300-foot elevation generally, or above the 250-foot elevation in the Northeast.

Visual simulations are required for subdivisions within foothill areas, because it is at the subdivision stage that changes in the roadway location, building footprint, grading plan, or to a lesser extent landscape plan can be made to enhance the visual quality of the development. Specific building design is not required, but the height, mass, scale, and color range for future development should be depicted in the visual simulation as well as the location of roads, proposed topography and proposed landscaping (conceptual).

While the City encourages applicants to consider the views of existing residences when developing new residential areas, this is not the intent of the visual simulations. Visual simulations for residential foothill development is intended to protect public views of the foothills. It is often not practical to protect existing private views, especially where lots or viewsheds are relatively small. To the extent that existing residential views can be protected without significant loss of density or adverse modifications in the site design,

private views should be considered. Policy for visual simulation is directed toward the protection of views from public spaces.

For development in foothill areas, visual simulations shall be prepared in conjunction with subdivision proposals to illustrate the visual quality of proposed foothill development from public spaces. The number and location of visual simulations shall be determined by staff on a project specific basis. The visual simulations shall include the height, mass, scale and color range for proposed construction as well as the location of roads, proposed topography and proposed conceptual landscaping.

### **Viewshed Corridors and Protection Standards\***

Currently adopted standards for landscaping state highways are included in the "Master Plan - Landscape Planting - State Highway Right of Way." Additional viewshed corridor and protection standards are anticipated with completion of foothill development standards.

### **Recommended Plant Lists and Tree Preservation Flow Chart\***

Also included in the BMP Technical Manual for reference, are recommended tree and plant lists used by City staff and provided to the public to assist in selecting appropriate landscape plant materials.

### **References**

Also available at the Planning Division Office, but not included in the Best Practices Manual or the Best Practices Technical Manual are:

The Master Plan for Landscape Planning of State Highway Right-of-Way -- Portion of SHR 32 & SHR 99 (Carl Rottschalk, Landscape Architect, May 1988)

City of Chico Design Manual (City of Chico, undated)

## ***X. Stormwater Management***

This section addresses the City's efforts to manage the runoff of stormwater and control erosion and pollution into the Urban Area's waterways. The summary below briefly describes those existing practices and standards now used to ensure that development projects address best management practices to control stormwater runoff and erosion during and following construction.

### **Standard Mitigation and Monitoring Program\***

Since Stormwater BMP requirements are not codified, Standardized Mitigation Measures and other various methods are utilized to ensure best management practices (BMPs) are provided. Standardized mitigation requires the preparation of a storm drainage master plan which includes BMPs, prevents an increase to peak flows into waterways, and provides for appropriate maintenance over time. Mitigation is also required to ensure compliance with the requirements of the Regional Water Quality Control Board. Refer to the Standardized

Mitigation and Monitoring Program in the BMP Technical Manual for specific wording of mitigation measures.

### **Best Management Practices**

A matrix containing a menu of BMPs is attached. This matrix provides a variety of acceptable options for mitigating development impacts related to stormwater runoff and erosion consistent with the BMP requirements contained in the standard mitigation and monitoring program. Applicants seeking approval of subdivisions and other new development are provided with the matrix to select BMPs most appropriate to their project, subject to City concurrence. In most cases, projects must be designed to retain all sediments on-site and detain storm run-off to the extent that no net increase in volume and rate of peak flows is achieved in affected waterways.

Design concepts in the BMP matrix are also intended to accomplish a “first flush” objective to remove contaminants from the first ½” of stormwater before it enters area waterways.

### **Grading Standards\***

Section 16R.22 of the Chico Municipal Code (attached) contains standard practices which are required for all grading activities authorized through the grading permit approval process. These regulations address retention of sediments on-site, control of runoff with approved devices and proper grading operations to mitigate the damaging effects of sediment production and dust on and off the project site.

### **Standardized Subdivision Report Language\***

This standardized report language is included in all subdivision reports provided for tentative subdivision map approval. The report sets out requirements of the subdivider that must be completed prior to recordation of a final subdivision map. That portion of the report addressing storm water runoff management requires that the subdivider submit a Storm Drainage Master Plan in conjunction with the required subdivision improvement plans. The Plan must include a description of “first flush” treatment and how proposed measures will accomplish all City stormwater standards, including no net increase in peak flows and erosion control.

### **Erosion Control Standardized Notes\***

These notes are incorporated on all subdivision and relevant final building plans. The notes require compliance with certain practices during and following completion of construction to reduce run-off of sediments from the project site.

### **Projects Requiring Contract Services**

Executed contracts between the City and private contractors contain provisions requiring that air and water pollution control and dust control measures be used. This standard

language, which is included in the Stormwater Management Section of the technical manual, references the Caltrans Contract Specifications described below.

### **Caltrans Contract Specifications Utilized for Capital Improvement Projects\***

Under State procedures projects conducted in the State's right-of-way under contract, require conformance with construction practices specified in Section 7 and 10 - Legal Relations and Responsibilities of the California Government Code. A copy of that portion of the referenced sections relative to stormwater runoff and dust control is attached. The City has applied these Standards to its own capital improvement projects.

### **California Regional Water Quality Control Board's Construction Activity Stormwater Permit\***

As noted in the Standard Mitigation and Monitoring Program, projects over 5 acres in size are required to obtain a Construction Activity Stormwater Permit from the Regional Water Quality Control Board. In order to obtain the permit, project proponents must submit a Stormwater Pollution Prevention Plan that discloses how erosion control will be achieved. Conditions on the Construction Activity Stormwater Permit require the project proponent to monitor the construction site after rainfall events, maintain or repair erosion control measures, and make modifications to the Stormwater Pollution Prevention Plan, if necessary. Additional materials from the Regional Water Quality Control Board are included in the Technical Manual to further explain the Construction Activity Stormwater Permit process.

## ***XI. Vector Control***

General Plan Open Space Policy OS-I-34 directs staff to "work with the Butte County Mosquito Abatement District to ensure that acceptable disease vector control measures are coordinated with preservation of resources such as wetlands, recognizing the community's interest in meeting federal and state wetlands protection policies.

"Guidelines, Checklists, and Standards for Vector Prevention in Proposed Developments" distributed by the Butte County Mosquito Abatement District, provides information to comply with General Plan Policy OS-I-34 as well as valuable information regarding other vectors. The document provides a summary of vectors of concern, a checklist of questions to ask in order to identify potential vector problems, and vector prevention and design criteria to minimize potential vector problems.

## ***XII. Water Conservation***

### **General Plan Policies\***

General Plan policies direct the City to establish guidelines and standards for water conservation and actively promote the use of water-conserving devices and practices in both new construction and major alterations and additions to existing buildings. The



following regulations and programs have been implemented by the City to address water conservation.

### **Plumbing Standards\***

Chico Municipal Code Section 16R.08.010 entitled, "Plumbing Standards". This section requires that all toilet and showerheads authorized by the issuance of a plumbing permit associated with new construction or remodels meet California State energy conservation requirements. Toilets must not exceed 1.6 gallons per flush and showerheads must not exceed a maximum output of 3 gallons per minute.

### **Street Trees and Landscaping\***

Chico Municipal Code Section 18R.08.090 entitled, "Street Trees and Landscaping". This section requires all street trees and landscaping required within a public right-of-way, public service easement, or other City property be, to the greatest extent practicable, of a drought resistant and drought tolerant type or variety.

## ***XIII. Wildland Fire Protection***

The City has long recognized the need to protect existing and future development from fire hazards associated with undeveloped properties or lands to remain as permanent open space. The focus of this effort is prevention through weed and rubbish abatement. Additional requirements are imposed on a case by case review of development proposed in the proximity of open lands through either mitigation or conditions of approval. Such additional measure include installation of sprinkler systems (including residential), use of non-combustible roof and fence materials, provisions of access to open lands and increased setbacks.

### **General Plan Policies**



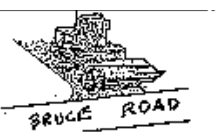

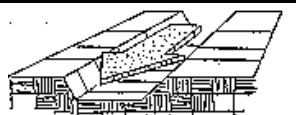


The General Plan Implementing Policies S-I-10 and 13 recommend that the City investigate requiring installation of fire sprinkler systems for residences located greater than 1.5 miles from an existing or planned fire station and in an area of wildland fire concern. In addition, Policy S-I-13 directs the City to assemble a list of BMP's to incorporate in appropriate developments to reduce the potential of wildland fire.

### **Weed and Rubbish Abatement\***

The Chico Municipal Code provides authority for the Weed and Rubbish Abatement. Each year the City engages in an active program to eliminate fire hazards. The hazard elimination program provides an opportunity for the property owners to remove the hazards, but in the absence of compliance, the City eliminates the hazard and assesses the costs against the property owner. The primary emphasis of the program is to prevent the occurrence of fires in open lands, but the specified requirements also assist in controlling a fire should one occur and protecting adjacent development.

The Chico Municipal Code provides authority for weed abatement and is provided herein. Also contained in the Wildland Fire Protection Section are the “Calendar for Lot Cleaning Program” and “Information and Tips for Weed Abatement” provided to landowners by the Chico Fire Department.




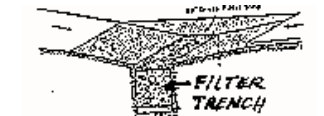
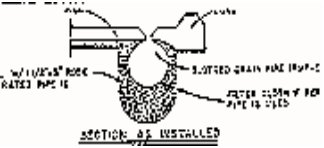
**CITY OF CHICO  
PERMANENT BMP'S (New Development and Capital Projects)**

	BMP NO.	DESCRIPTION	STORM PROTECTION BENEFIT	TARGETED POLLUTANTS	CAPITAL COST *	O & M COST *	NOTES
	BMP-1	BOUNDARY FENCING	PROTECT TREES & VEGETATION, MINIMIZE DISTURBED AREAS	SEDIMENT	MOD \$4/LF	LOW \$1/LF/ YR	BOUNDARY FENCING DOES NOT MEAN FENCING AROUND PROPERTY BOUNDARY, BUT FENCING ALONG LIMITS OF CLEARING & GRUBBING, ETC.
	BMP-2	SEEDING & PLANTING	STABILIZE DISTURBED AREAS, PROTECT SLOPES AND CHANNELS	SEDIMENT NUTRIENTS	MOD \$1500/AC	LOW \$150/AC/ YR	CAPITAL COSTS INCLUDE GRADING & TEMP. IRRIGATION SYSTEM
	BMP-3	STABILIZED CONSTRUCTION ENTRANCE	SIGNIFICANTLY REDUCES SEDIMENT TRACKED OFF-SITE	SEDIMENT	MOD \$2000	LOW \$500/YR	USE 2" MINUS STONE OR CRUSHED ROCK, 6" DEPTH. UNDERLAY WITH FILTER FABRIC. SIZE: 50'L x 30'W
	BMP-4	DUST CONTROL	STABILIZE SOIL FROM WIND EROSION, REDUCE DUST FROM CONSTRUCTION ACTIVITIES	SEDIMENT	MOD \$100/DAY	MOD \$50/ DAY	SEE "AIR & WATER POLLUTION CONTROL" IN SPECIAL PROVISIONS OR CALTRANS STD SPECS
	BMP-5	TEMPORARY DRAINS & SWALES	DIVERTS OFF-SITE RUNOFF AROUND CONST. SITE, DIVERTS RUNOFF FROM STABILIZED AREA AROUND DISTURBED AREAS.	SEDIMENT	MOD \$6/LF	LOW \$2/LF/ YR	SEDIMENT-LADEN RUNOFF FROM SWALE MUST BE DIVERTED TO SEDIMENT BASIN OR TRAP. USE TO DIVERT UPSLOPE RUNOFF
	BMP-6	SILT FENCE	PREVENTS SEDIMENT DAMAGE TO ADJOINING PROPERTY, REDUCED VELOCITY OF RUNOFF	SEDIMENT	MOD \$6/LF	MOD \$3/LF/ YR	CAUTION MUST BE EXERCISED TO INSTALL PROPERLY. GOOD FOR LARGE DISTURBED AREAS, MODERATE SLOPES. SILT FENCES ARE MORE EFFECTIVE THAN STRAW BALES.
	BMP-7	STRAW BALES	BENEFITS SIMILAR TO SILT FENCES ABOVE, ONLY NOT AS EFFECTIVE	SEDIMENT	MOD \$8/LF	HIGH \$16/LF/YR	MAY BE USED AS A BARRIER IN UNPAVED AREAS. SITE SLOPE SHOULD BE LESS THAN 2%. INSPECT REGULARLY. GOOD FOR MEDIUM SIZED AREAS.

\* Costs are variable due to differing site conditions and are provided as a guide only.

For additional information, see "California Best Management Practice Handbooks" for Construction Activity and Municipal  
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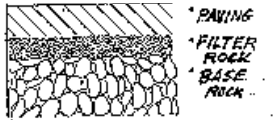




**CITY OF CHICO  
PERMANENT BMP'S (New Development and Capital Projects)**

	BMP NO.	DESCRIPTION	STORM PROTECTION BENEFIT	TARGETED POLLUTANTS	CAPITAL COST *	O & M COST *	NOTES
	BMP-8	SAND BAGS	SIMILAR BENEFITS AS SILT FENCES - DIVERTS RUNOFF, PROMOTES SEDIMENTATION	SEDIMENT	HIGH \$12/LF	MOD \$6/LF	SUITABLE FOR SLOPES GREATER THAN 5%. SANDBAG SHOULD BE PLASTIC WOVEN MATERIAL RATHER THAN BURLAP TO PREVENT ROTTING. ACCEPTABLE AROUND DROP INLETS. GOOD FOR SMALL AREAS.
	BMP-9	SEDIMENT TRAP	CONTROLS INTERNAL SITE EROSION	SEDIMENT TOXIC MATERIALS	LOW \$600/AC	MOD \$700/AC/YR	USE IN DISTURBED AREAS LESS THAN 5 ACRES PER BASIN. OUTLET MUST BE STABILIZED WITH ROCK OR VEGETATION.
	OTHER	DIVERSION DIKES ON SLOPES PERIMETER DIKES & SWALES CHUTES, FLUMES, & SPILL-WAYS. OUTLET PROTECTION	EROSION CONTROL IN MODERATE TO STEEP SLOPES.	SEDIMENT	MOD	MOD	PRIMARILY FOR DEVELOPMENT IN HILLSIDE AREAS
		METHODS AS APPROVED BY DIRECTOR OF PUBLIC WORKS					
	BMP-10	ROOF DOWNSPOUT SYSTEM	STORM WATER PLACED IN GROUND, REDUCING EXCESS RUNOFF. SUPPLEMENTS GROUND WATER RECHARGE.	SEDIMENT, NUTRIENTS, HEAVY METALS, TOXIC MATERIALS OIL & GREASE, BACTERIA & VIRUS	MOD \$1000/EA.	MOD \$250/EA./YR	RISK OF GROUND WATER CONTAMINATION IN VERY COARSE SOILS. POTENTIAL FOR HIGH MAINTENANCE. COSTS DUE TO CLOGGING
	BMP-11	VEGETATED FILTER STRIPS	SAME AS ABOVE	SAME AS ABOVE	MOD \$3000/AC	MOD \$500/AC/YR	PLACE IN MEDIAN STRIPS & PLANTER STRIPS ADJACENT TO SIDEWALK. SAME RISKS AS NOTED ABOVE.
	BMP-12	SLOTTED DRAIN	INTERCEPTS SHEET FLOW FROM PAVED D/W, PARKING LOTS. PREVENTS DISCHARGE OF DEGRADED WATER	SEDIMENTS, TOXIC MATERIALS, HEAVY METALS, OIL & GREASE	MOD \$10/LF	MOD \$2/LF	BEST USED AT BASE OF SLOPING DRIVEWAYS. SLOTTED DRAINS MUST BE CLEANED REGULARLY TO BE EFFECTIVE. PRIVATE FACILITIES ONLY.

\* Costs are variable due to differing site conditions and are provided as a guide only.

For additional information, see "California Best Management Practice Handbooks" for [Construction Activity](#) and [Municipal](#)  
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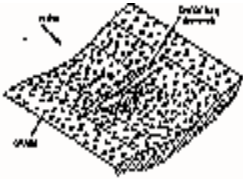
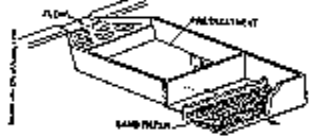
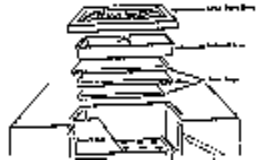
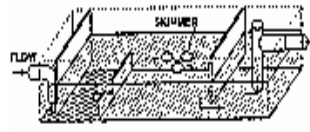
**CITY OF CHICO  
PERMANENT BMP'S (New Development and Capital Projects)**

	BMP NO.	DESCRIPTION	STORM PROTECTION BENEFIT	TARGETED POLLUTANTS	CAPITAL COST *	O & M COST *	NOTES
	BMP-13	POROUS PAVING, INCLUDING PAVERS	REDUCES RUNOFF VOLUME AND POLLUTANT LOADINGS FROM <u>LOW</u> VOLUME TRAFFIC AREAS, SUCH AS PARKING AREAS.	OIL & GREASE	HIGH \$100,000/AC	LOW \$200/AC/YR	REQUIRES MORE PAVING MATERIAL TO ACHIEVE SAME STRENGTH AS CONVENTIONAL PAVING.
	BMP-14	GABIONS	TO STABILIZE A SLOPE AGAINST MOVEMENT AND TO PREVENT SCOUR IN STREAM BANKS	SEDIMENTS	HIGH \$125/CY/ INSTALLED	LOW \$100/SITE/YR (INSP ONLY)	
	BMP-15	ENERGY DISSIPATERS	PROVIDE OUTLET PROTECTION AGAINST EROSION. REDUCE EROSION VELOCITIES	SEDIMENTS	MOD \$40/CY/INST ALLED	LOW \$100/SITE/YR (INSP ONLY)	
	BMP-16	WET PONDS AND RETENTION BASINS	ACHIEVES HIGH LEVEL OF PARTICULATE AND SOME DISSOLVED CONTAMINANT REMOVAL. REDUCES PEAK FLOWS	SEDIMENT, NUTRIENTS, HEAVY METALS, TOXIC MATERIALS, FLOATABLE MATERIALS, OIL & GREASE, BACTERIA & VIRUS	HIGH \$100,000/MIL GAL	MOD \$1000/MIL/GA L/YR	FOR AREAS GREATER THAN 5 ACRES. NOT FEASIBLE IN HIGH DENSITY URBAN AREAS.
	BMP-17	CONSTRUCTED WETLANDS	ACHIEVES HIGH LEVEL OF REMOVAL FOR ALL TARGETED POLLUTANTS. REDUCES PEAK FLOWS	SAME AS ABOVE	HIGH \$40,000/ MIL/GAL/ DAY	MOD \$1000/MIL/GA L/YR	FOR REGIONAL STORM WATER & POLLUTION CONTROL. PASSIVE RECREATIONAL USE BENEFIT.

\* Costs are variable due to differing site conditions and are provided as a guide only.

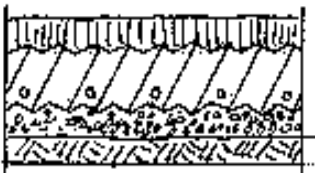
For additional information, see "California Best Management Practice Handbooks" for [Construction Activity](#) and [Municipal](#)  
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**CITY OF CHICO  
PERMANENT BMP'S (New Development and Capital Projects)**

	BMP NO.	DESCRIPTION	STORM PROTECTION BENEFIT	TARGETED POLLUTANTS	CAPITAL COST *	O & M COST *	NOTES
	BMP-18	BIOFILTER OR VEGETATED SWALE	REMOVES PARTICULATE & SOME DISSOLVED POLLUTANTS	SEDIMENTS, NUTRIENTS, HEAVY METALS, TOXIC MATERIALS, HEAVY MATERIALS, FLOAT-ABLE MATERIALS, OIL & GREASE	MOD \$500/AC	MOD \$100/AC/YR	SUITABLE FOR RESIDENTIAL DEVELOPMENT. MUST BE IRRIGATED DURING DRY SEASON. CATCHMENT AREA 5 ACRES OR LESS. SWALE BOTTOM. MUST BE FLAT
	BMP-19	SAND FILTERS	REMOVES SEDIMENT PRIOR TO ENTERING WATER BODY	SEDIMENTS, SOME NUTRIENTS, HEAVY METALS, OIL & GREASE	HIGH \$4000/AC	HIGH \$2000/ AC/YR	USE WHEN UNAVAILABILITY OF WATER PREVENTS USE OF WET PONDS OR WETLANDS. CATCHMENT AREA UP TO 50 ACRES. PRIVATE FACILITIES ONLY.
	BMP-20	CATCH BASIN FILTER	REMOVES SEDIMENTS. ALSO OIL, GREASE & DISSOLVED METALS WITH ADDITIONAL TRAY INSERTS	SEDIMENTS, HEAVY METALS, OIL & GREASE	HIGH \$1000/EA.	MOD \$250/EA./YR	SUITABLE FOR COMM/INDUS AREAS. INSERT REQUIRES FREQUENT ATTENTION. INSERT HAS BYPASS TO ALLOW WATER FLOW IN CASE OF CLOGGING. PRIVATE FACILITIES ONLY.
	BMP-21	OIL/WATER SEPARATOR SEDIMENT TRAP	REMOVAL OF OIL & GREASE. ALSO SOME SEDIMENTS, TOXIC MATERIALS & HEAVY METALS	OIL & GREASE	HIGH \$3000/AC	HIGH \$2000/ AC/YR	PRINCIPALLY USED AT INDUSTRIAL SITES SUCH AS OIL REFINERIES, AUTO MAINTENANCE. FACILITIES, BULK OIL STORAGE, CAR WASHES, LARGE PARKING LOTS, ETC. PRIVATE FACILITIES ONLY.
		PROPRIETARY SYSTEMS	REMOVAL OF SEDIMENTS, OIL & GREASE, TOXICS, HEAVY METALS & OTHER	VARIOUS - SEE APPLICATIONS IN LITERATURE	MOD TO HIGH	MOD TO HIGH	CSY - COMPOST SEDIMENTATION VAULT, ENVIRODRAIN DROP INLET FILTERS AND OTHER MANUFACTURERS NATIONWIDE. PRIVATE FACILITIES ONLY.
		METHODS AS APPROVED BY DIRECTOR OF PUBLIC WORKS					

\* Costs are variable due to differing site conditions and are provided as a guide only.  
For additional information, see "California Best Management Practice Handbooks" for Construction Activity and Municipal  
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**CITY OF CHICO  
PERMANENT BMP'S (New Development and Capital Projects)**

	<b>BMP NO.</b>	<b>DESCRIPTION</b>	<b>STORM PROTECTION BENEFIT</b>	<b>TARGETED POLLUTANTS</b>	<b>CAPITAL COST *</b>	<b>O &amp; M COST *</b>	<b>NOTES</b>
	BMP-22	PERFORATED STORM DRAIN PIPE	REMOVES SEDIMENT. ALSO SOME TOXICS AND HEAVY METALS.	SEDIMENTS, HEAVY METALS	MOD	MOD TO HIGH	PRIVATE FACILITIES ONLY.

\* Costs are variable due to differing site conditions and are provided as a guide only.  
For additional information, see "California Best Management Practice Handbooks" for Construction Activity and Municipal  
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