

**APPENDIX 6 - NORTHWEST COLORADO COUNCIL OF GOVERNMENTS  
WATER QUALITY PROTECTION STANDARDS**

**I. CONTROL OF EROSION AND SEDIMENTATION**

**A. PURPOSE AND APPLICABILITY**

1. Purpose. The goal of these requirements is to minimize the water quality impacts resulting from construction and other land disturbing activities. Siltation is often a cause of water quality impairment in waterbodies in Colorado.
2. Applicability. **NWCCOG Recommendation:** The following requirements should apply to land disturbances within 100 feet of a waterbody and to all land development disturbing more than one-half (1/2) acre, with the exception of agricultural grading activities.
3. Exemption. Occasions may arise where these minimum standards are either inappropriate or cannot be practically implemented. In these cases a variance to these criteria shall be considered. Written requests for each variance should be directed to the Town (County) Engineer.

**B. EROSION AND SEDIMENT CONTROL REQUIREMENTS**

**1. Minimize Erosion on the Site.**

- a. Phase construction - Stage and schedule the timing of earth disturbing construction activities, such as clearing, grading, road construction, and utilities installation to minimize soil exposure.
- b. Install erosion and sediment control measures before site grading or other construction, to the greatest extent practicable.
- c. Soil stabilization - Disturbed areas and soil stockpiles shall be stabilized or protected to effectively control erosion. These areas should be surface roughened, mulched, or seeded and mulched, or otherwise protected from erosive forces if they will remain exposed and inactive for periods longer than 14 days. This requirement also applies if soil is expected to be exposed during winter to minimize erosion from occurring during spring snow melt. Disturbed areas should be mulched, or seeded and mulched within 7 days after final grade is reached, weather permitting.

On slopes steeper than fifteen percent (15%), or within one hundred feet (100') of any waterbody, exposed soils shall be

stabilized using appropriate techniques such as hydromulching, erosion control blankets, bonded fiber matrices or other equally protective measures. Grass or straw mulch should be crimped, tracked or tacked in place to promote surface anchoring.

- d. Temporary and permanent revegetation - Disturbed areas that will not be built upon for one (1) year shall incorporate a temporary cover crop to promote soil stability. Areas exposed for two (2) or more years must be revegetated with a perennial, native grass mix (or other grass mixtures as recommended by the local Natural Resources Conservation Service office). Within two (2) full growing season of project completion, vegetative site coverage shall have a perennial herbaceous component equal to or greater than seventy percent (70%) of the adjacent undisturbed areas. **[Note: There may be related landscaping requirements such as protection of trees. Irrigation requirements for revegetation may be limited by in-house use only well permits. Performance guarantees, if used, should include cost of revegetation]**
- e. Cut and fill slopes Where cut and fill cannot be avoided, slopes shall be designed for long term stability. Permanent vegetation should be used as the priority approach to stabilization of cut and fill areas where slopes are less than or equal to 3:1. On steeper cut and fill slopes, stabilization may be attained by utilizing a combination of retaining walls, rock walls, up slope runoff diversions, terracing, slope drains, soil nailing, mulch binders, erosion control blankets, vegetation or other measures appropriate for the specific situation. Retaining walls over four feet (4') in height or step retaining walls shall be designed by a qualified individual. Revegetation or other methods soil stabilization of the steps is required. The soil surface of cut and fill slope shall not remain exposed without an approved method of soil stabilization.
- f. Construction in or directly adjacent to any waterbody, such as culvert or bridge installation, shall require measures to protect water quality and channel stability. This requirement may include stream isolation through the use of coffer dams, complete containment of the stream in the area of the disturbance, stream crossing structures, or limitations on the dates when in-stream work can be performed. In all cases construction shall conform to applicable USACE Section 404 permitting requirements.
- g. Protect new or re-routed irrigation ditches, swales, receiving channels and streams from accelerated erosion until conveyance section has established vegetation and is stable

under flows for which the feature was designed. The minimum recurrence frequency storm during active construction for channel stability design is the 2-year event for the entire drainage area served by that flow conveyance feature. Diverting off-site flows around construction sites can effectively reduce the design flow.

- h. Protect culvert outlets from erosive flows by installing velocity reducers such as gravel dikes, level spreaders or similar measures.

## 2. Minimize sediment leaving the site.

- a. Manage stormwater runoff flows to minimize erosion and sediment transport off-site. Divert concentrated flows away from disturbed slopes and minimize length and steepness of disturbed slopes or use slope drains.
- b. Minimize sediment and mud from leaving the construction site by protecting access routes by either immediate placement of street base or construction of mud pads. Mud pads shall be at least fifty feet (50') in length and comprised of angular rock and/or a wheel washing facility.
- c. Protect adjacent properties from sediment laden runoff by using sediment fences, and sediment or silt traps or other appropriate control options.
- d. Storm sewer inlets shall be protected from entry of sediment-laden water. This may be accomplished by straw bales, supported silt fence structures, dumped rock or other barriers.
- e. Divert off-site runoff around construction site when practical.

## 3. Detention and Treatment.

- a. When the contributing drainage area, including off-site area (unless bypassed), is greater than five (5) acres, one or more sedimentation basin(s) shall be constructed to provide a total of 1800 cubic feet of basin volume for every acre contributing runoff into the basin. The outlet of the sediment basin should be designed to empty the storage volume in no less than 12 hours. The basin's length should be no less than twice the basin's width, otherwise a baffle may be installed to minimize short circuiting. If the discharge from the basin is passed through a filtration device (i.e. a vegetated field, forested area, or a constructed wetland) the basin volume requirements may be reduced.
- b. Where the contributing drainage area is less than five (5) acres, a specific engineered design for sediment trapping

facilities is not necessary. Silt traps may be used to detain and treat runoff if the contributing drainage area is less than five (5) acres.

- c. Sedimentation basins will be removed after successful revegetation of the site. Embankments to be left as permanent facilities shall have a capacity to safely pass the 100 year flood and meet any relevant dam and diversion requirements of the Colorado State Engineer's Office (also see Stormwater and Runoff Requirements)

#### 4. Construction De-Watering

- a. Construction de-watering activities will conform with the State's CDPS construction de-watering permit requirements including total suspended solids with a thirty (30) day average concentration of no more than 30 mg/l, a seven (7) day average of no more than 45 mg/l, and a daily maximum concentration of 60 mg/l.
- b. Discharges from construction de-watering operations shall be done in a manner which minimizes erosion and utilizes best management practices such as velocity reducers, sediment basins, straw bales or other measures.

#### 5. Inspection and Maintenance of Erosion and Sediment Control

##### Devices.

- a. Inspection. The applicant or the applicants designated representative shall inspect all erosion and sediment control devices after any precipitation that creates runoff and make repairs. At a minimum, erosion and sediment control devices shall be inspected every 14 days. An inspection log shall be kept on-site for review by (city/county) inspectors until the project is complete and submitted to the governing entity upon request. **[Note: The City of Golden and the Colorado Department of Transportation (CDOT) inspection log sheets are attached]**
- b. Maintenance. Erosion and sediment control devices shall be maintained in a manner to support their effectiveness. Accumulated sediment should be periodically removed from sediment basins and traps; straw bale and silt fence barriers should be checked for undermining and bypass and repaired or expanded as needed; and mulched soils shall remulched where mulch has been lost or damaged.

### C. SUBMITTAL REQUIREMENT

[NOTE: add description of situations that trigger need for an erosion and sediment control plan. Smaller projects may not require all of the following submittal requirements. Triggers for erosion control plans used by other jurisdictions include: grading permit; any disturbance ½ acre or larger; any development larger than single family house; residential development of 3 units or more unless situated on slopes in excess of 15% or within 50-100' of a wetland or other water body. Gypsum suggests 1 to 5 acres. Summit County says prior to subdivision or site plan approval or issuance of building permit for development proposal. ]

1. **Erosion and Sediment Control Plan.** The erosion and sediment control plan shall be prepared by a qualified individual in accordance with sound environmental and engineering practices. **[Note: Individual towns and counties will need to establish their own criteria as to what a "qualified individual" is].** This information may be included as part of a Stormwater Quality Control Plan, if required. A concise erosion and sediment control plan shall be submitted that addresses site specific issues and contains the following information:
  - a. A site map showing locations of any existing structures, waterbodies or hydrologic features on the site, including intermittent water features, wetlands and the 100 year flood plain boundaries.
  - b. Locations of existing and proposed drainage structures or natural drainage features on the land adjacent to the site and within a minimum of 100 feet of the site boundary line, including as examples: street gutters, storm sewers, drainage channels, other water conveyance structures, wetlands or other waterbodies receiving storm runoff from the site.
  - c. Existing topography at reasonable contour intervals, to provide necessary detail of the site. The map should extend a minimum of 100-feet beyond the property line and show the location of the property line.
  - d. Proposed development plan and grading plan. The proposed topography at reasonable contour intervals that provide necessary detail of the site shall be submitted. The map should show elevations, dimensions, location, extent and slope of all proposed clearing and grading including building site and driveway grades.
  - e. Probable locations of soil stockpiles and snow storage areas.
  - f. Proposed drainage plan.

- g. Location of storage areas designated for equipment, fuel, lubricants, chemical and waste storage with an explanation of spill containment structures.
- h. Location of temporary roads designed for use during construction period.
- i. Areas of steep slope - locations must be shown for the following conditions:

Existing Site: areas greater than or equal to 15% areas greater than or equal to 30%

Developed Area: areas greater than or equal to 15% areas greater than or equal to 30%

- j. Construction schedule - indicating the anticipated starting and completion time periods of the site grading and/or construction sequence including the installation and removal of erosion and sediment control measures, and the estimated duration of exposure of each area prior to the completion of temporary erosion and sediment control measures.
- k. Permanent stabilization - a brief description of how the site will be stabilized after construction is completed.
- l. Plan view drawings of all erosion and sediment control measures showing approximate locations and site drainage patterns. Text may be necessary to accompany and explain the drawings. Typical erosion control measures should be depicted using standard map symbols (Figure \_\_\_\_). **[Note: see 1-1a and 1-1b in Urban drainage manual, included]**
- m. Detail drawings - For those measures that are not typical erosion control BMP's or require specific engineering design, such as sediment basin outlet works.
- n. Estimated total cost (installation and maintenance) of the required temporary soil erosion and sediment control measures to assist the (city or county) determine performance guarantees, if any, for the proposed plan.
- o. Calculations - Any calculations made for determining rainfall, runoff, sizing any sediment basins, diversions, conveyance or detention/retention facilities.
- p. Other information or data as may be reasonably required by the local jurisdiction.
- q. Signature block for owner or legal agent acknowledging the review and acceptance of responsibility, and a signature and

stamped statement by the qualified individual acknowledging responsibility for the preparation of the Erosion and Sediment Control Plan.

- r. A copy of the required CDPS construction permit, if required. State and federal law mandates a stormwater permit for construction sites disturbing five acres or more even where the disturbance is phased. In most cases the information required herein will meet state submittal requirements

## **II. POST CONSTRUCTION STORMWATER & URBAN RUNOFF**

### **A. PURPOSE AND APPLICABILITY**

1. Purpose. The intent of these regulations is to minimize water quality and flooding impacts resulting from increased imperviousness and land use changes which have been shown to degrade water quality and alter natural hydrology.
2. Applicability. **NWCCOG Recommendation:** These regulations should apply to any commercial or industrial development, new subdivisions, new development within 100 feet of a waterbody, and to any other development creating 10,000 square feet or more of impervious surface area.
3. Exemptions. Occasions may arise where these minimum standards are either inappropriate or cannot be practically implemented. In these cases a variance to these criteria shall be considered. Written requests for each variance should be directed to the Town (County) Engineer.

### **B. REQUIREMENTS FOR STORMWATER & URBAN RUNOFF**

1. **Avoid direct discharge to streams or other waterbodies -** Stormwater runoff from project areas likely to contain pollutants shall be managed in a manner that provides for at least one of the following:
  - a. Direct runoff to stable, vegetated areas capable of maintaining sheetflow for infiltration. Vegetated receiving areas should be resistant to erosion from a design storm of 0.5 inches in 24 hours.
  - b. On-site treatment of stormwater by use of best management practices designed to detain (see #3. Detain and Treat Run-off below) or infiltrate the runoff and approved as part of the Stormwater Quality Control Plan prior to discharge to any natural waterbody, or
  - c. Discharge to a stormwater conveyance structure, designed to accommodate the projected additional flows from the

proposed project, with treatment by a regional or other stormwater treatment facility prior to discharge into any natural waterbody.

2. **Minimize Directly-Connected Impervious Areas** - The site design should minimize the extent of directly-connected impervious area (DCIA) by including the following requirements.
  - a. Runoff from fifty percent (50%) of all developed impervious surfaces (rooftops, parking lots, sidewalks, etc.) shall drain over stable, vegetated pervious areas before reaching stormwater conveyance systems.
  - b. When impervious surfaces drain onto grass buffer strips (or the equivalent) the maximum slope the grass buffer strips is five percent (5%) and the gradient should be uniform to insure evenly distributed sheet flows. Check dams may be necessary to maintain 5% slopes.
  - c. The recommended design width (w) for pervious vegetated buffer strips, the distance along the sheet flow direction, shall be the greater of the following:
    - w 8.0 feet
    - w 0.2 LWhere L equals the length of the flow path of the sheet flow over the upstream impervious surface.

Practices other than grass buffer strips can be used to minimize DCIA. For example, play areas, parks, ball fields, and landscape features.
  - e. The requirement that fifty percent (50%) of the impervious area drain to vegetated pervious buffer strips may be reduced if the outflow from the vegetated pervious buffer strip is directed to other stormwater treatment methods. Examples of other potential techniques to be used in conjunction with vegetated pervious buffer strip are: infiltration devices, grass depressions, constructed wetlands, sand filters, dry ponds, etc.

3. **Detain and Treat Runoff** - Permanent stormwater detention facilities are required to be multipurpose facilities; that is facilities that not only detain flows to historic peak discharge rates, but which also provide water quality benefits. Such detention can be either "on-site" or "regional" in nature; however, detention must be provided concurrent with land development. Specific design criteria for detention facilities include:

- a. Detention facilities must ensure the post-development peak discharge rate does not exceed the pre-development peak



discharge rate for the 2-year and 25-year return frequency, 24-hour duration storm. In determining runoff rates, the entire area contributing runoff must be considered, including any off-site contribution. Off-site contributions shall be determined using the fully developed potential, based upon existing zoning subject to these requirements, of the area draining into the detention facility.

- b. To minimize the threat of major property damage or loss of life all permanent stormwater detention facilities must demonstrate that there is a safe passage of the 100-year storm event without causing property damage.
  - c. Channels downstream from the stormwater detention pond discharge shall be protected from increased channel scour, bank instability, and erosion and sedimentation from the 25-year return frequency, 24 hour design storm.
  - d. Removal of pollutants shall be accomplished by sizing dry detention basins to incorporate a 40-hour emptying time for a design precipitation event of 0.5 inches in 24 hours, with no more than 50% of the stored water being released in 12 hours. If retention ponds ("wet ponds") are used then a 24 hour emptying time is required. For drainage from parking lots, vehicle maintenance facilities, or other areas with extensive vehicular use this practice may require the additional use of a sand and oil grease trap or similar practice (e.g., constructed wetland, extended detention with no initial release, etc.). To promote pollutant removal, detention basins length-to-width ratio should be not less than 2, with a ratio of 4 recommended where site constraints allow. A sedimentation "forebay" is recommended to promote long-term functioning of the structure. Access to both the forebay and pond by maintenance equipment is essential.
  - e. On-site stormwater detention facilities require a written arrangement which ensures that the facility is regularly inspected to ensure it is functioning properly and to provide any necessary maintenance.
  - f. All permanent stormwater detention basins shall be designed by a qualified individual.
4. **Permanent Revegetation** - The requirements for permanent vegetation identified in Section I.B.(d) shall be applied following permanent revegetation standards are required:
- a. Revegetate landscape within 7 days after final grade is reached. Grass or straw mulch should be crimped, tracked or tacked in place to promote surface anchoring.

- b. On slopes steeper than fifteen percent (15%), or within one hundred feet (100') of any waterbody, exposed soils shall be stabilized using appropriate mulching techniques such as hydromulching, erosion control blankets, bonded fiber matrices or other equally protective measures..
- c. Temporary measures for soil stability like mulch or silt fences shall be left in place until the vegetative cover has reached 70% of the disturbed area .

**B. SUBMITTAL REQUIREMENTS**

**[NOTE: add criteria describing when a stormwater quality control plan is required]**

1. **A site specific Stormwater Quality Control Plan (SQCP)** must be submitted for review and approval. The SQCP should consist of a narrative report supported by exhibits, where necessary, and should be developed and submitted as an integral part of the site's drainage plan. The following information must be included within the SQCP, or identified in the *Erosion and Sediment Control Plan* or the drainage report:

- a. Name, address and telephone number of the applicant and the qualified individual preparing the report, if applicable;
- b. Project description briefly describing the nature and purpose of the development or redevelopment, the total area of the site, the area of disturbance involved, and project location including legal description;
- c. Existing site conditions should be described including existing topography, vegetation, and drainage. If wetlands are present on the site they must be described according to the applicable Army Corps of Engineers delineation manual;
- d. A vicinity map indicating the general area and property lines;
- e. An exhibit or map of drainage features and basin boundaries on the site. If the location of the SQCP BMPs are not indicated on the site drainage map than these BMPs should be shown here;
- f. Percentage of steep slope areas must be calculated for the following conditions:

Existing Site: areas greater than or equal to 15% areas greater than or equal to 30%

Developed Area: percent greater than or equal to 15% percent greater than or equal to 30%;

- g. Neighboring areas must be described as to land use and existing pertinent features such as lakes, streams, structures, roads, etc.;
- h. A description of the stormwater quality management planning concept for the site, including both structural and non-structural best management practices;
- i. Hydrologic, hydraulic and all other calculations used to size and design drainage facilities and/or structural BMPs; and,
- j. Maintenance requirements for all proposed BMPs should be discussed including access, schedules, costs, and designation of a responsible party.

### III. SLOPE LIMITATIONS

#### A. PURPOSE AND APPLICABILITY

- 1. Purpose. Disturbance and construction on steep slopes creates increased potential for slope failure, erosion, accelerated runoff, and subsequent water quality impacts. These requirements are intended to reduce those impacts.
- 2. Applicability. **NWCCOG Recommendation:** All development on slopes shall be in accordance with the following requirements:

#### B. SLOPE REQUIREMENTS

- 1. Development is prohibited on slopes of thirty percent (30%) or greater. In situations where this limitation would prevent all reasonable use of the site, disturbance may be allowed but shall not exceed fifteen percent (15%) of the area of the site equal to or greater than thirty percent (30%) slope. In addition, the following is required:
  - a. A slope stability analysis by a registered professional engineer is required for proposed development features.
  - b. Where steeper slopes are disturbed the activity shall be done in a manner that minimizes loss of existing vegetation. For example, it may be necessary to minimize the amount of fill for a road cut.

### IV. WATERBODY BUFFER SYSTEM

#### A. PURPOSE AND APPLICABILITY

- 1. Purpose. The intent of these regulations is to preserve riparian corridors to help protect the physical, chemical and biological integrity of waterbodies from adverse water quality and quantity impacts. Preservation of riparian corridors along waterbodies will help promote

streambank stability and prevent increased stream temperature, accelerated loading of nutrients and sediments and other pollutants. Vegetation in the riparian corridor plays a critical role in the food chain for aquatic organisms. The purpose of the following requirements is to protect these functions of the riparian corridor. Current scientific research indicates that a "tiered approach" to waterbody buffers is more effective than a single setback. This approach provides more flexibility on the location and nature of disturbance in the riparian zone.

2. Applicability. **NWCCOG Recommendation:** The following tiered approach to waterbody setbacks should apply to all activities that require development approvals. Where the development approval is for the "redevelopment" of an existing, nonconforming use, every effort should be made to provide for the restrictive inner buffer zone portion of the buffer system. **[Note: The specific distance for the setbacks below may not work for all towns. These entities need to keep in mind that they will need to have a basis for the distances that they choose. Twenty-five feet (25') has been shown to be the absolute minimum effective "setback" and should still be part of the buffer system described below.]**

## B. BUFFER SYSTEM REQUIREMENTS

1. **Restrictive Inner Buffer.** A setback of twenty five feet (25') **[or the existing setback if greater, as is the case in Eagle County]** measured horizontally from the typical and ordinary high water mark in average hydrologic years on each side of a waterbody or field delineated wetland is required. Earth or vegetation disturbance is restricted within this inner buffer zone. Irrigation and water diversion facilities, flood control structures, culverts, bridges and other reasonable and necessary structures requiring some disturbance within this setback may be permitted. The following items are examples of actions that are not allowed within the restrictive inner buffer zone:
  - a. Placement of material, including without limitation any soil, sand, gravel, mineral, aggregate, organic material, or snow plowed from roadways and parking areas;
  - b. Construction, installation, or placement of any obstruction or the erection of a building or structure;
  - c. Removal, excavation, or dredging of solid material, including without limitation any soil, sand, gravel, mineral, aggregate, or organic material;
  - d. Removal of any existing live vegetation or conducting any activity which will cause any loss of vegetation, unless it involves the approved removal of noxious weeds, non-native species, dead or diseased trees;

- e. Lowering of the water level or water table by any means, including draining, ditching, trenching, impounding, pumping or comparable means; and,
  - f. Disturbance of existing natural surface drainage characteristics, sedimentation patterns, flow patterns, or flood retention characteristics by any means including without limitation grading and alteration of existing topography. Measures taken to restore existing topography to improve drainage, flow patterns, flood control, etc. must be approved.
2. **Variable Outer Buffer Zone** Earth and vegetation disturbance within this variable buffer may be limited where necessary to protect the integrity of the waterbody or special site specific features. For a specific site, this variable buffer may range from zero (0') to one hundred (100') beyond the outer edge of the restrictive inner buffer zone described above (i.e. up to 125' beyond the high water mark of the waterbody during average hydrologic years or wetland boundary.) The width of this variable outer buffer zone may be undulating across a piece of property in order to provide protection to site specific features. Site specific features that could trigger the need for either an outer buffer zone, equivalent mitigation, or a combination of outer buffer zone and mitigation include:
- a. Steep slopes draining into the waterbody or wetland;
  - b. Highly erodable soils are present;
  - c. Presence of unstable streambank conditions;
  - d. The proposed use of the property presents a special hazard to water quality (e.g., storage or handling of hazardous or toxic materials);
  - e. The area is needed to protect trees, shrubs, or other natural features that provide for streambank stability, habitat enhancement for aquatic environments, riparian area protection, or to maintain pre-development riparian plant or animal communities;
  - f. The area provides habitat for plant, animal, or other wildlife species listed as threatened or endangered by the United States Fish and Wildlife Service;
  - g. The area provides habitat for plant, animal, or other wildlife species listed by the State of Colorado as rare, threatened, or endangered, species of special concern, or species of undetermined status;
  - h. The area is within the 100-year flood plain;

- i. The area is needed to prevent or minimize flood damage by preserving storm and flood water storage capacity;
- j. The area is needed to protect fish spawning, breeding, nursery and feeding grounds; or,
- k. The area is needed to preserve areas of special recreational, historical, archeological, scenic, or scientific interest.

### C. SUBMITTAL REQUIREMENTS

- 1. Site plan submittal shall include delineation of all applicable buffer zones. These boundaries should also be shown on all clearing, grading and erosion control plans. Because the variable outer buffer zone is flexible and site specific, the applicant is expected to submit rationale for the size of this buffer zone and identify proposed mitigation measures to be used at the site.

## V. HAZARDOUS MATERIALS MANAGEMENT

### A. PURPOSE AND APPLICABILITY

- 1. Purpose. Hazardous materials stored or used in close proximity to waterbodies create a potential threat to fish and other aquatic life. The purpose of these requirements is to minimize the likelihood of detrimental impacts to the waters and aquatic life from the storage and use of hazardous materials.
- 2. Applicability. **NWCCOG Recommendation:** The following regulations should apply to all non-residential facilities.

### B. REQUIREMENTS FOR HAZARDOUS MATERIALS STORAGE AND USE

- 1. **Compliance with Regulations.** At a minimum, all hazardous materials shall be stored and used in compliance with applicable state and federal hazardous materials regulations.
- 2. **Storage Near Waterbodies Restricted.** The storage of hazardous materials within 100 horizontal feet of any waterbody is restricted. When no practical alternative exists, site specific BMPs must be utilized to minimize potential adverse water quality impacts.

Sand and salt for road traction, while not hazardous materials, shall not be stored within 100 horizontal feet of any waterbody unless there is no practicable alternative, in which case suitable site-specific BMPs must be utilized.

- 3. **Spill Prevention.** Measures shall be designed and implemented to prevent spilled fuels, lubricants or other hazardous materials from entering a waterbody, including ground water, during construction or

operation of a equipment and/or facility. If a spill occurs it should be cleaned up immediately and disposed of properly.

4. **Machine maintenance.** Routine field maintenance of vehicles or mobile machinery shall not be performed within 100 feet of any waterbody. Emergency maintenance can be conducted until the vehicle or machinery can be moved. Routine equipment maintenance should be performed in a designated area and measures such as drip pans used to contain petroleum products.
5. **Fuel storage areas.** Containment measures shall be provided for all fuel storage areas to prevent release to any waterbody. Inventory management or leak detection systems may be required.
6. **Waste Storage.** Areas used for the collection and temporary storage of solid or liquid waste should be designed to prevent discharge of these materials in runoff from the site. Collection sites should be located away from the storm drainage system. Other BMPs such as covering the waste storage area, fencing the site, and constructing a perimeter dike to exclude runoff may also be necessary.

## **VI. SNOW STORAGE**

### **A. PURPOSE AND APPLICABILITY**

1. Purpose. Snow removal often results in the accumulation of sand, oil and grease, metals, trash, pet wastes, and other pollutants found in urban stormwater. The purpose of these requirements is to promote responsible snow storage and management techniques to minimize the likelihood of these pollutants entering waterbodies.
2. Applicability. **NWCCOG Recommendation:** The following regulations should apply to all development. Single family residential units are exempt from these requirements if they are part of a subdivision which provides snow storage and removal.

### **B. SNOW STORAGE REQUIREMENTS**

1. An area equal in size to thirty percent (30%) of the area to be plowed shall be set aside for snow storage. Site specific analysis may also be used to determine snow storage requirements. **[Note: This requirement is an existing standard for the towns of Vail and Silverthorne. A smaller percentage is appropriate for lower areas receiving less snow, e.g., Gypsum. We recommend that each jurisdiction adopting these regulations determine the appropriate area for snow storage in that area]**
2. Designated snow storage area shall not be less than six feet wide. These areas shall be adjacent to the area from which the snow is to be removed when practical, shall not be included in any parking area required by the minimum parking requirements of the town/county and

shall be contained in such a manner that runoff is directed through a detention or infiltration facility or other BMP that removes pollutants, including vegetated areas.

3. Designated plowed snow storage areas shall not be located in the restrictive inner buffer zone. (see Section IV, Waterbody Buffer System). Storage sites must be well drained.
4. In lieu of on-site snow storage, off-site snow storage may be approved if: (1) an appropriate off-site snow storage site is available; (2) arrangements for the off-site removal have been made in a manner assuring the continuation of such practice; (3) assurances of continued availability of such a storage site are made; and, (4) the alternative snow storage site provides adequate water quality protection through the use of appropriate snow storage treatment practices.
5. Design of snow storage treatment facilities for off-site snow storage facilities shall be in accordance with the following:
  - a. Maintain existing peak flow rates for storms up to and including the 25-year, 24-hour rainfall event, in combination with a melt rate from the snow stock pile of 2 inches in 24 hours.
  - b. Sites with favorable infiltration rates are encouraged.
  - c. Minimize run-on by diverting runoff around stock piles if possible.
  - d. Vegetate the storage areas with species appropriate to the site conditions.
  - e. Discharges shall be nonerosive and/or measures shall taken to protect receiving channels.
  - f. Good site access for trash removal and periodic maintenance.
6. Dumping snow plowed from roadways and parking areas into any waterbody is prohibited.

### **C. SUBMITTAL REQUIREMENTS**

1. Snow removal and storage must be identified for all development proposals. Plans for constructed facilities should be prepared by a qualified individual.
2. Off-site storage sites must submit proof of ownership or other legal arrangements for use of the area for snow storage.

## **VII. WASTEWATER SYSTEM STANDARDS**



**[Note: Municipalities and Counties also can regulate siting and extension of municipal and industrial wastewater projects under "1041" ( C.R.S. 24 - 65.1 - 101). If a local government has not chosen to regulate under 1041, these general water quality protection standards can apply to wastewater facilities serving any development.]**

#### **A. PURPOSE AND APPLICABILITY**

1. Purpose. The purpose of the following requirements is to protect waterbodies from the detrimental affects of substandard, failing, and poorly operated or maintained individual sewage disposal systems and ensure that centralized wastewater treatment systems are meeting all pertinent regulations.
2. Applicability. **NWCCOG Recommendation:** Wastewater treatment facilities serving any development shall meet the following additional water quality protection standards.

#### **B. REQUIREMENTS FOR WASTEWATER SYSTEMS**

1. **Centralized Wastewater Treatment Facilities.** Centralized wastewater treatment facilities shall be constructed, operated and maintained at all times in compliance with local, state and federal regulations. All development shall be connected to existing central sewer treatment system if the development is to be located with 400 feet of an existing collection pipe.
2. **Individual Sewage Disposal Systems (ISDS)** All ISDSs shall be designed, installed and operated properly at all times.
  - a. Failure of an ISDS shall be deemed to have occurred if the leach field effluent rises to the ground surface, if the leaching pipes are full of solids, if groundwater monitoring data indicates that nutrients or fecal bacteria is elevated in the groundwater near the ISDS, or if the facility is judged to be a nuisance by the County Environmental Health Department.
  - b. Inspection and maintenance of these systems shall be performed by an approved contractor and a compliance report shall be provided at least annually by August 15 to the permit authority.
  - c. Septic tanks shall be pumped at minimum once every five (5) years.
  - d. ISDS design must be approved and permitted by the County Board of Health in accordance with the County ISDS regulations.

- e. New subdivisions utilizing ISDSs are required to have a contract in place with an approved contractor which outlines annual inspection and maintenance arrangements.

**VIII. WATER QUALITY PROTECTION STANDARDS APPLICABLE WITHIN WATERSHED DISTRICT OR SENSITIVE AREA OVERLAY DISTRICT**

**A. PURPOSE AND APPLICABILITY**

- 1. Purpose. The purpose of this section is to provide additional water quality protection for municipal water supplies pursuant to Section 31-15-707(1)(b)CRS or sensitive aquatic environments,.
- 2. Applicability. **NWCCOG Recommendation:** These requirements shall apply to any activity with the potential to affect water quality proposed within a watershed district designated by a municipality pursuant to Section 31-15-707 (1) (b) C.R.S., or within a sensitive areas overlay designed to protect the aquatic environment. Delineation of the watershed protection district or sensitive area overlay district should be provided on maps. Adoption of these special protection districts should occur through the prescribed public process for a new zoning classification.

**B. STANDARDS**

- 1. **Performance Guaranty.** In addition to any other security that may be required, a performance guaranty letter of credit or other security in a form acceptable to the permit authority shall be posted before any permit is issued in an amount sufficient to cover the full cost of restoring or mitigating any negative impacts to the watershed or aquatic environment caused during construction. The security shall be released upon a finding by the permit authority that: (1) construction is completed; and, (2) the post-construction watershed or aquatic environment is restored to the same quality as pre-construction conditions.
- 2. **Increase in Pollution Prohibited.** All non-point and point sources of pollutants caused or associated with a regulated activity shall not result in any measurable increase in pollution, as measured at the point of compliance established by the permit authority, over the existing water quality in any waterbody affected by the activity.
- 3. **Drainage Alterations.** Any alteration to water drainage courses shall be prohibited which increase or decrease rates of stream flow, increases sediment deposition, causes erosion to stream banks, result in increases or decreases of temperature, or otherwise causes injury to the aquatic environment. Impervious areas are prohibited within seventy-five feet (75') of intermittent streams and one hundred feet (100') of perennial streams.

4. **Timbering.** Any timber harvesting, other than to clear trees for structures, roads or driveways, or to protect the health of the forest ecosystem, shall be prohibited.
5. **Mining.** All surface and subsurface mining operations, with the exception of reclamation activities pursuant to a State approved reclamation plan, shall be prohibited.
6. **Damage to Waterworks Prohibited.** Any activity causing impairment or damage to publicly-owned Waterworks shall be prohibited.
7. **Construction in Waterbodies Prohibited.** Construction, other than permitted streambank reinforcement or repair, water diversion placement or repair, or stream crossings, within any waters in the district shall be prohibited.
8. **Storage of Hazardous Materials Prohibited.** No pesticides, petroleum products, or other substances which have the potential to degrade water quality, shall be stored within 100 horizontal feet of any waterbody. No sand and salt for road de-icing shall be stored within 100 horizontal feet of any waterbody. Open storage of fertilizers within 100 horizontal feet of the waterbody is also prohibited.

**C. SUBMITTAL REQUIREMENTS.** Any activity in a watershed district or overlay district to protect the aquatic environment shall submit the following:

1. **Environmental Assessment and Mitigation Description.** A detailed description of the natural environment; temporary, long-term, individual and cumulative potential impacts to the environment of the activity; and, proposed mitigation including:
  - a. A map of all surface waters, wetlands, and groundwater potentially affected by the proposed land use activity.
  - b. Existing water quality in all potentially affected waters for each parameter established by the Colorado Water Quality Control Commission.
  - c. A description of the potential adverse impacts from the activity on water quality and quantity.
  - d. A description of proposed minimization and mitigation measures for water quality and quantity impacts.
2. **Water Resources**
  - a. A map of all surface waters, wetlands, and groundwater potentially affected by the proposed land use activity.
  - b. Existing water quality in all potentially affected waters for each parameter established by the Colorado Water Quality Control Commission.
  - c. A description of the potential adverse impacts from the activity on water quality and quantity.
  - d. A description of proposed minimization and mitigation measures for water quality and quantity impacts.
3. **Vegetation**
  - a. A map showing the type and extent of vegetation in and adjacent to the site.

- b. A description of the potential impacts the activity will have on that vegetation.
- c. A detailed description of proposed mitigation of impacts to vegetation.

#### 4. **Soils**

- a. A description of soil conditions in the area potentially affected by the activity, including contour map at intervals determined by the town/county, identifying drainage areas, slopes, avalanche areas, debris fans, mud flows, rock slide areas, and soil types.
- b. A description of potential impacts to soils and impacts to soils caused by the activity, and of potential adverse effects to the activity caused by soil conditions.
- c. A description of proposed mitigation necessitated by soil conditions.

#### 5. **Drainage**

- a. A map showing all natural drainage patterns in the area potentially affected by the activity.
- b. A description of potential impacts to natural drainage patterns caused by the activity.
- c. A description of proposed mitigation of impacts to natural drainage patterns, including pre- and post- development drawings.

#### 6. **Water Supply**

- a. A description of the water supply for the activity including any proposed wells, water rights and diversion facilities.
- b. Potential impacts to the watershed associated with the proposed water supply for the activity.
- c. A detailed description of mitigation of impacts to the watershed caused by the activity's water supply.

- 7. **Water Quality Monitoring Plan.** A plan for water quality and quantity monitoring at the location and for the parameters required by the permit authority. This may include biological monitoring.

### **IX. ENFORCEMENT AND PENALTIES**

**[NOTE: If the model water quality standards are integrated into existing subdivision and/or zoning codes, enforcement will be carried out in accordance with those codes. Stand alone enforcement procedures like the following also may be adopted. This section is a list of potential tools, individual entities will develop their own specifics]**

1. **Violation.** Should the permit authority discover any violation of any water quality protection standard, the permit authority shall cause to be attached a "notice of violation" to the property and attempt to deliver a copy of same to the owner or occupier of the property. If the violation is not remedied or an agreement has not been reached on a corrective action plan, the permit authority may revoke any development use permit or approval subject to the water quality protection standards.
2. **Financial Guarantees.** An irrevocable letter of credit or other financial guarantee deemed adequate by the permit authority may be required to be posted by the landowner or developer prior to issuance of occupancy permits to guarantee the success of measures needed to meet these water quality performance standards for two years from the date occupancy permits are issued.
3. **Penalties.** Any person engaging in any activity that is not in compliance with the water quality protection regulations may be enjoined by the permit authority from engaging in such activity and shall be subject to such other criminal or civil liability as may be prescribed by law, including payment of costs and reasonable attorneys fees. All remedies shall be cumulative.
4. **Inspection.** The Permit Authority may enter and inspect any property subject to these water quality standards at reasonable hours for the purpose of determining whether the activity is in violation of the provisions of these regulations.
5. **Exemptions.** As with any design criteria, occasions may arise where the minimum standards are either inappropriate or cannot be practically implemented. In these cases a variance to these criteria shall be considered. Written requests for each variance should be directed to the Town (County) Engineer.