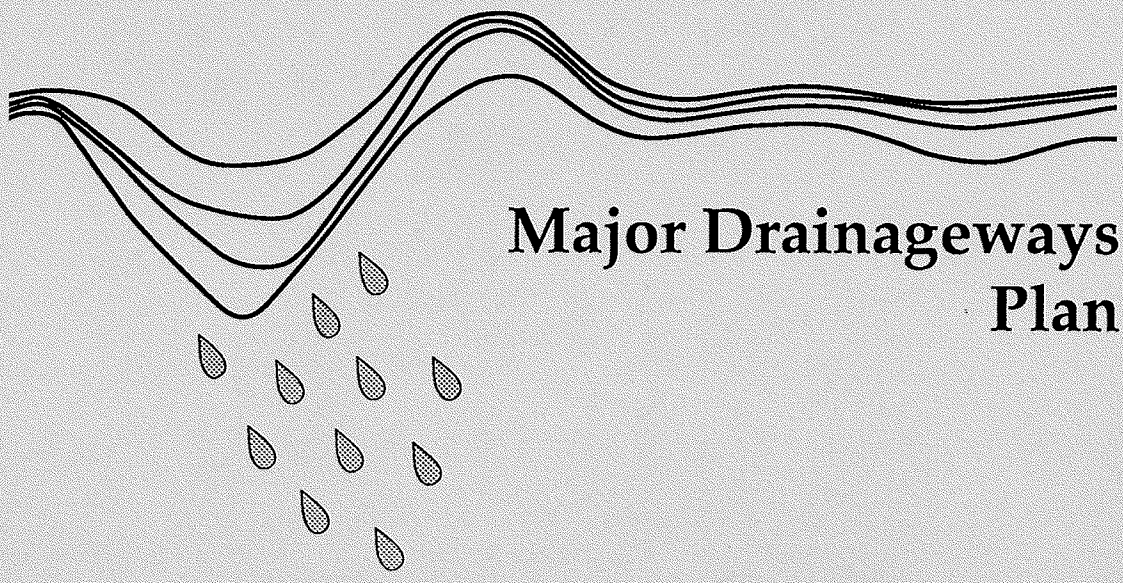
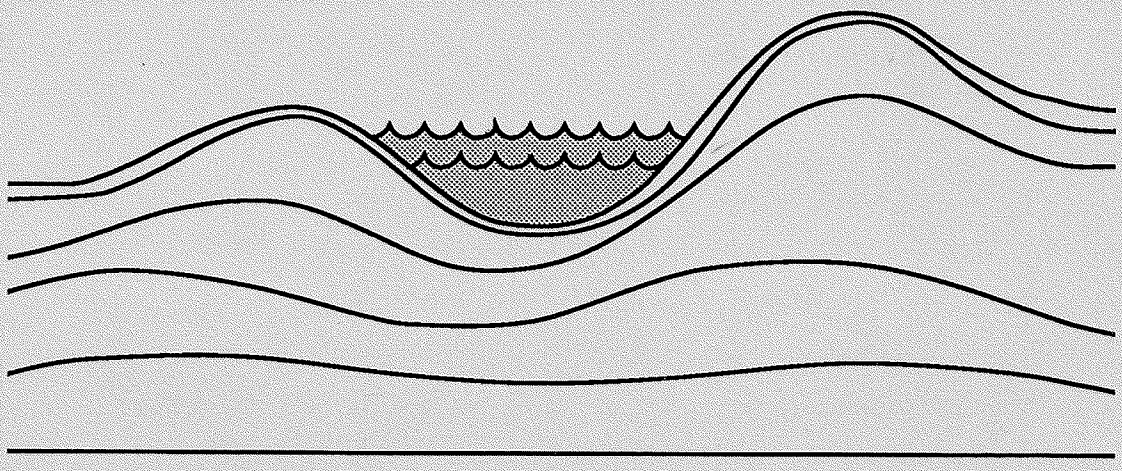
# City of Reno



# Major Drainageways Plan



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Prepared by: Reno Department of Planning & Community Development
Leann J. McElroy, Planning Director

Project Staff: Bill Thomas, Senior Planner
Catherine McCarthy, Junior Planner
Jeff Nicholes, Graphics Technician

# 1. Introduction

Major drainageways are significant geographical features which have shaped and defined Reno and helped to distinguish it from other places. They provide important open spaces which improves the quality of life of the residents of Reno. Their appearance and treatment can either add to or detract from the aesthetics of the community. The Planning Commisison and City Council have determined that certain drainageways are important to the character of Reno and should therefore be preserved and/or enhanced.

Prior to 1986, numerous subdivisions had been approved, platted, or were under construction, which crossed or abutted major drainageways. Although all the drainageways were left open, (i.e., none were piped) their treatment varied. In one case, lot lines were extended to the center of a channel, building was prohibited within the area of the 100 year storm, and the City was granted drainage and access easements. In another, the channel was designated as open space, with maintenance responsibility explicitly assigned to a single project owner. In the greatest number of cases, drainageways were merely excluded from platted areas; it was understood that no development would be permitted in the "open area" and no explicit arrangements for maintenance were made. "No Development" is not, however, synonymous with "undisturbed", and in many instances these "open areas" have been channelized.

In spite of procedures adopted in the Spring of 1987, case by case decision-making has continued to invite inappropriate treatment in the major drainageways and failed to recognize that these drainageways are systems. Such inappropriate treatment often becomes justification for future projects with inappropriate filling or disturbing of the channels. Although the procedures provided a more effective approach to the implementation of City codes and policies, they failed to detail exactly how or what should be done and which major drainageways should remain open.

The Major Drainageways Plan identifies critical drainage areas in the City of Reno and its Sphere of Influence and presents strategies for their care and treatment.

The Major Drainageways Plan is concerned with environmental results and appearance. Protection or enhancement of the function and appearance of drainageways is of great public value. By identifying the assets of our community, we can take positive steps toward preventing degradation of our landscape. Property values are not only the result of the quality of development but also the result of City efforts to preserve public resources. These policies will shape not only the use of the drainageways, but also the perception of their value.

# 2. Purpose & Intent

As an important step in following through with the City's mandated policies to preserve major drainageways as open and recreational space, the Major Drainageways Plan defines and maps drainageways. The objectives of the plan are as follows:

1) To ensure the safety of people and property by providing for drainage of storm waters.
2) To maintain, preserve or enhance the quality of the water in both the Truckee River and Stead basins.
3) To maintain or improve wildlife habitats, native vegetation, and natural terrain.
4) To reduce the need for the expenditure of public funds to remedy or avoid flood hazards, erosion, or other situations caused by inappropriate alterations of natural watercourses.
5) To provide open space land, especially in environmentally sensitive areas, with development where high densities require new approaches and attention to open space needs.
6) To improve or enhance wildlife corridors in urban areas to maintain the quality of life and the ecological balance of the community.
7) To assure that drainageways are used for public access and recreational facilities, where determined appropriate.

The plan identifies those drainageways which are important to public health, safety, and welfare and that provide these important community benefits. The plan also identifies drainageways which have been disturbed by construction activities but which retain certain public values. The overriding purpose of the plan is to save and improve these public resource areas for future generations.

It is important to note that this plan is intended to address only the visual appearance and the uses of certain major drainageways. It is not intended to establish requirements or identify improvements which are needed to adequately protect people and property from flooding. This is addressed in the Public Works Design Manual.

# 3. Definitions

Historically, concern about drainageways has focused on "major drainageways" as defined by the storm water regulations of the Reno Municipal Code. These regulations define a "major drainageway" as any drainageway which drains a land area of 100 acres or more. This plan recognizes that not all "major drainageways" provide public benefits other than perpetuating storm water flows. Therefore, drainageways have been further classified into "natural", "disturbed" or "landscaped" drainageways. All drainageway types are identified on the Major Drainageways Map included in this document and some or all of the following characteristics:

(1) drain an area of 100 acres or more;
(2) have biological and physical characteristics associated with the conveyance of water;
(3) connect neighborhoods, schools or open spaces such as parks or public land;
(4) provide a continuous system which may provide pedestrians/bicycle or wildlife corridor opportunities;
(5) provide important open space between similar or different development types.

Specifically, the three drainageway types are defined as follows:

"Disturbed" - Drainageways which have been or will be significantly graded, filled or otherwise altered by man.

"Natural" - Drainageways which have not been or should not be altered by man or which have significant vegetation or which by their nature provide for filtration or impoundment of stormwaters.

"Landscaped" - Drainageways which have been or will be improved with landscaping and may include turf or non-native plant species. These drainageways are generally part of a park or planned unit development and are designed to address aesthetics, and should also include water quality, stormwater management and recreation functions where appropriate.

Additionally, because of the values provided by drainageways, alterations are supported only where they result in a situation which is better than what currently exists. This concept, enhancement, is defined as follow:

> Enhancement - The improvement of a drainageway which results in a treatment which is better than the existing drainageway in terms of recreation, filtration, impoundment of storm waters or diversity of plant species provided species to be introduced serve to filter storm water and create food and cover for wildlife.

# 4. Resource Analysis

Development of the Major Drainageways Map involved use of United States Geological Survey (USGS) 7 1/2 and 15 Minute Maps, 1987 and 1990 Cooper aerial photographs (scale of 1=400'). The features plotted represent natural channels with concentrated flows. Some of the drainageways are Regional Drainageways, as defined by the draft Washoe County Flood Control Master Plan.

It is important to recognize that the drainageways operate in two conditions. The first condition marks the presence of storm waters, and the second condition exists when waters have subsided. The second condition represents the predominant state of the natural system and its corresponding appearance. Within these two conditions, each drainageway system typically has a variety of improvements. The spectrum of improvements range from a natural state, to developed on either side, to piped. Hence, parts of these drainageways are in fact no longer in a natural state.

Geology

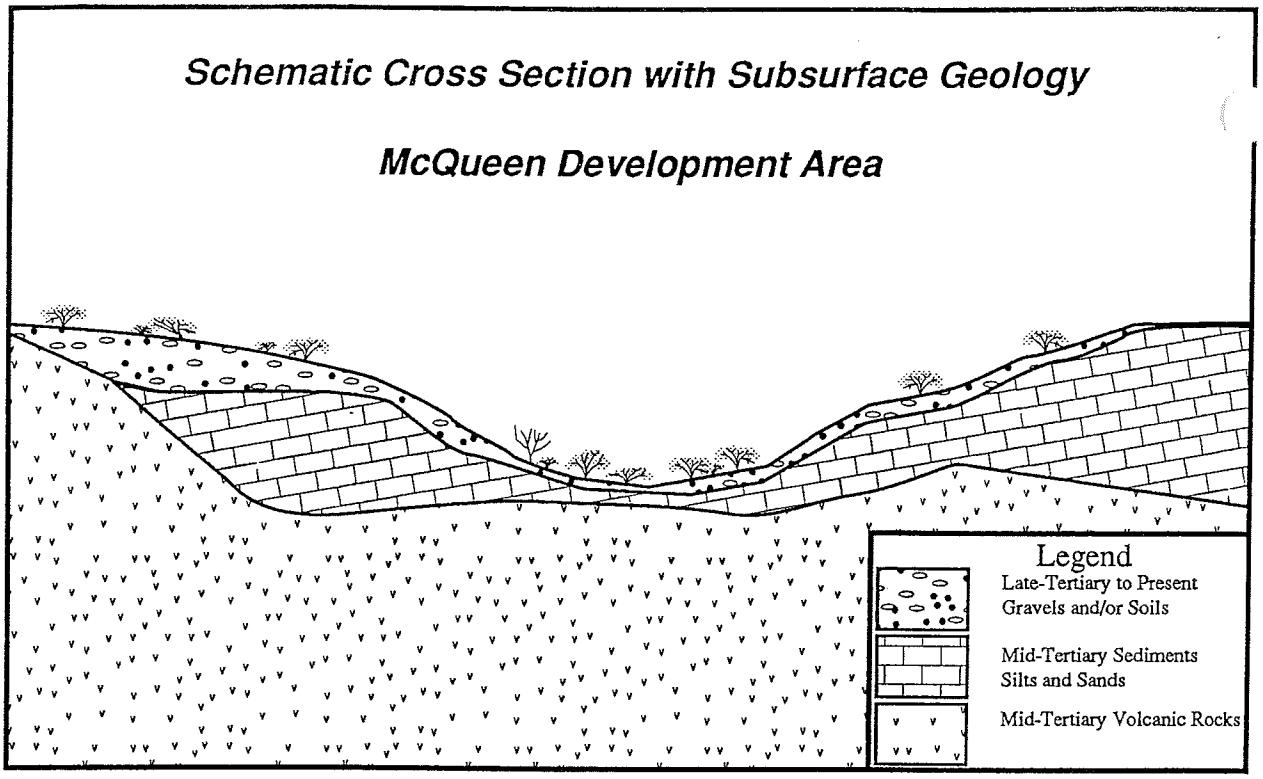
The City of Reno is located in a transitional zone between the Great Basin and the Sierra Nevada Mountain Range. Structural uplift and faulting account for the most recent mountain and hill forming processes. Other slope forming processes include normal stream erosion, landslides, and surface slumping on steep slopes. Human activity has contributed significantly to Reno's changing landscape.

Despite Reno's arid climate, we occasionally experience heavy rains and flooding. Drainageways are the result of centuries of water movement, runoff from snow pack, cloudbursts, and in more recent times, urban development. The action of water and the composition of the ground act together to create the contours of the landscape. Sand, stone, clay, and silt deposits typically make up the drainageways and are easily eroded by wind and water.

The ground in the drainageway generally drains well, moving water readily but not rapidly, making it available to plants and animals. The depth of soil deposits is usually shallow or restricted over bedrock, creating a thin cover of gravelly soil with biological substances. Nutrient values vary with the geologic layers. The drainage system on the whole is actively changing, along with the capabilities of surface layers and deposits.

The uniqueness of each drainageway is not necessarily obvious to the naked eye and requires independent analysis. Figure 1 illustrates a cross section of a typical drainageway in the McQueen Area. The depth of deposits indicated are merely representative of what one might find and shows the relationship of materials.

Figure 1




Vegetation

Vegetated drainageways tend to be more aesthetically pleasing and are important to the community. Vegetation also plays a critical role in the function of drainageways. While transporting water, drainageways also carry trash and other polluting substances. Vegetation often acts to trap or filter sediments and pollutants resulting from runoff from contiguous properties. Without vegetation, whatever enters the drainageway would have the potential for moving through the entire system to the Truckee River.

Public concern for the visual problems of trash keep the City abreast of maintenance needs. Although trapped trash and sediments require continued maintenance action, they also demonstrate how effective the drainageways are in preventing trash and other pollution from spreading, and over the long term, prevent water treatment cost from accelerating. Encouragement of desirable vegetation can also help reduce maintenance expenditures.

Production of forage in a drainageway is limited by the amount of precipitation, available water, and the depth of the root zone over solid rock. Some drainageways may include hydric soils and vegetation, which result in wetlands. Most wildlife species are dependent on one or a few plant communities to provide their life requirements. These critical interdependencies infer that the loss of a plant community may also result in the loss of the wildlife dependent on it. Altering the drainage system through

grading, dams, roadways and installation of inappropriate vegetation impacts its physical and biological character, often to the detriment of wildlife.

Our high desert environment sustains a delicate, balanced habitat and requires careful attention to repair itself. Improving a system can cause more harm than good if it results in poor plant selection and management practices. Vegetation observed in the McQueen Area included ragweed, cottonwoods, and willows.

Wildlife

Wildlife data was collected from a preliminary survey. Within the drainageways viewed in the McQueen Area, three bird species were observed: California Quail, Western Meadowlark, American Water Pipit. Historically, the Peavine/McQueen Area has provided a deer wintering corridor. The drainageways now provide an important escape route for deer which occasionally wander into urbanized areas. Altering the drainage system through grading, dams, and roadways impacts its physical and biological character, often to the detriment of wildlife. A more comprehensive survey of wildlife would provide valuable data and insight. However, it was clear from this survey that significant amounts and types of wildlife reside in these drainageways.

Areas near any type of watercourse may quickly attract watchable wildlife and have potential for development as interpretive areas. Maturing trees from adjacent development work with vegetation in drainageways to enhance feeding, nesting, and breeding. Urban wildlife populations depend upon the availability of roughage and escape cover, all of which are commonly asociated with open space. Wildlife opportunities ultimately depend on the potential of the site and are generally limited within the drainageways. Some drainageways, though, may be natural riparian areas and have tremendous potential for wildlife if properly maintained.

Runoff & Infiltration

Insuring the continued recharge of groundwater and reducing both the increased volume and peaking effect of runoff from paved surfaces are some of the major problems resulting from land development. As urbanization and land development occurs, the proportion of precipitation which runs off, or infiltrates, depends largely on the percentage of paved and impervious surfaces. Typically, as paved surface percentages increase, so does runoff, and infiltration decreases. Problems of flooding often become aggravated. The network of natural drainageways allows for increased opportunitites for infiltration and may reduce storm water runoff.

Soil Erosion & Sedimentation

A drainageway can be visualized as a belt, or series of channels, which, depending on the amount of rainfall and runoff, varies its path over time. The condition of the drainageway bed and edges indicates the present course. The process of disturbing the drainageway, mitigating disturbance, and disturbing again sets up a chain of actions and reactions, which can progressively degrade the physical form and function of the natural system. The increased occurrence of bank erosion and generation of sediments creates the second largest form of water pollution in our area, and stresses the self-purification system of the Truckee River.

Runoff generated while construction activities are occurring has the potential to seriously negatively impact water quality. Potential for muddy, sediment loaded waters moving down the drainageways has caused water quality problems downstream. Retaining or enhancing the natural drainage system and associated vegetation helps limit turbidity, but engineered solutions that work with the natural system may also be needed to enhance water quality. The technology used should remain secondary and subordinate to the aesthetic quality of the natural environment, merging with the landscape. Conservation of the natural function of the drainageway will help reduce future governmental remedial costs resulting from environmental degradation or installation of high maintenance landscaping.

Fences

As development has occurred on either side of the channels, fencing has been provided for privacy or enclosure and, to a lesser degree, to protect people and property from the drainageway and to protect the drainageway from careless practices. Typically, six (6) foot high wooden fences are placed at the edge of the drainageway, which creates a solid wall down the drainageway. Some property owners adjacent to the channels have thrown debris over the fence into the channel, degrading it's quality. In order to provide aesthetic continuity, consistent open fencing should be provided along the channel with solid wooden fences discouraged. Chain link fences of brown, green or black wooden split-rail and ornamental iron fences offer protection and yet provide a more open feeling to the drainageways. Adjacent property owners are also more likely to police areas they can see, and will be discouraged from throwing debris into the drainageway.

Bicycle and/or Pedestrian Paths

Drainageways which are most appropriate for the construction of bicycle/ pedestrian paths are shown on the Major Drainageways Map.

A bicycle/pedestrian path is typically constructed of asphalt to a width of

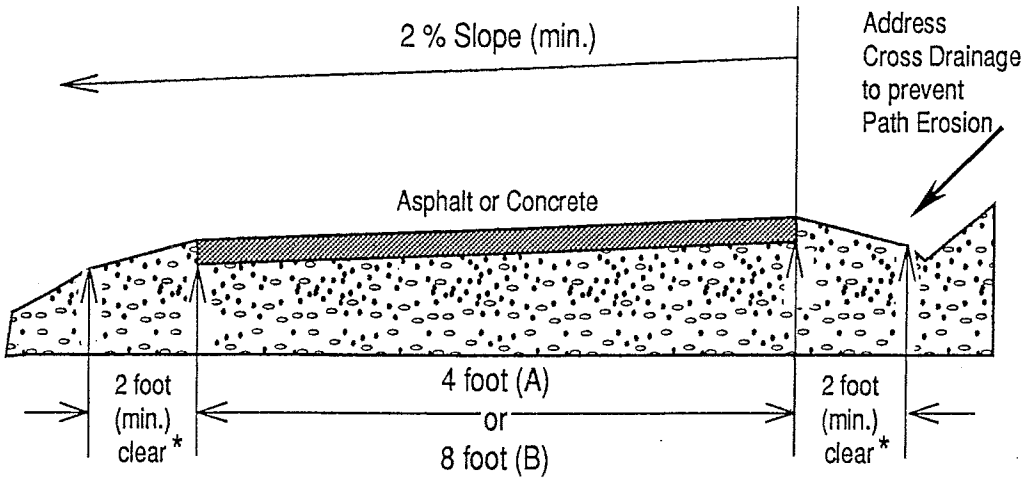
eight (8) feet. If it is determined that a particular path should be limited to pedestrians then the width may be reduced to four (4) feet. These pedestrian only paths may also be constructed of materials other than asphalt or concrete when deemed appropriate by the City.

The construction cost for an 8 foot wood or asphalt path is approximately $20.00/lineal foot (1991 dollars). There are no identified funding sources for such paths. With development along drainageways, developers should be required to provide for construction of the designated bicycle/pedestrian paths. In exchange for constructing these paths the City should waive the requirements for sidewalks where there is an approved comprehensive pedestrian access plan for the project.

Design standards for bicycle/pedestrian paths will be those shown in Figure 2 of this plan.

# Bicycle / Pedestrian Path

Figure 2




Not To Scale

(A) = Pedestrian only or one-way bicycle path

(B) = Two way path

* not necessary if path is for pedestrians only

# 5. Policy Analysis

In preparing this plan it was necessary to review existing and proposed policies and regulations pertaining to water quality, flood control and erosion. This section identifies and discusses these policies and regulations.

Interlocal Storm Water Discharge Permit

The cities of Reno and Sparks, Washoe County and the Nevada Department of Transportation have jointly received a storm water discharge permit from the State of Nevada. This permit makes the City of Reno the Lead Agency with the authority to:

- control pollutants in stormwater discharge;
- prohibit illegal discharges and control spills; and
- require compliance and carry out inspections.

Within each of the entities' jurisdictions they are responsible for the adoption of ordinances to implement stormwater management programs including the adoption and implementation of recommended best management practices for the control of pollutants in urban runoff. One of the requirements of this permit is that the City develop "a comprehensive master plan to develop, implement and enforce controls to reduce discharges from areas of new development and redevelopment". Failure by the City to comply with the permit may result in administrative or judicial sanctions (N.R.S. 445.324 - 445.334) or the revocation of the City's right to discharge stormwaters to the Truckee River.

Erosion Control

The Reno Municipal Code currently requires an erosion control plan with each application for a grading permit, including a dust control plan approved by the Washoe County District Health Department if the site is larger than one acre in size. In the future, as we learn more about the quality of the storm water in our area, these erosion control plans will probably come under greater scutiny.

Truckee Meadows Regional Plan/Reno Master Plan

The Major Drainageways Plan is in conformance with the Truckee Meadows Regional Plan, adopted March 21, 1991. The conservation element of the Regional Plan states that, "We must recognize the enormous economic and aesthetic value of our natural environment ..... We need to protect this backdrop to our communities and design our built environment and communities to incorporate these features into our everyday lives."

Within the Regional Plan, goals, objectives and policies have been established

for floodplains and water resources. The policies support the adoption of a Regional Flood Control Master Plan and whenever possible, favor the design of facilities and improvements which preserve natural areas, provide open space, create pathways, protect riparian areas, and enhance water quality. The acquisition of wetlands and the preservation of open space should also be utilized to reduce the need for structural flood control improvements.

Incorporation of natural or enhanced drainageways into new development offers an distinctive transition between land uses, relief to the urban scene, and habitat for plant and wildlife communities. In addition to mandating open drainageways, policies of the Reno Master Plan recognize the dependence of urban wildlife populations on the availability of open space and encourage preservation of open space for passive recreation.

One element of the City of Reno Master Plan is the Community Design Handbook. The handbook consists of a series of design objectives which are used to evaluate development. The first chapter focuses on site design and establishes eight design objectives. These objectives review such topics as preparing a site analysis, retaining significant natural features, maintaining vistas, providing usable outdoor spaces, achieving an undulating, naturalistic appearance with grading, reducing the negative physical and visual impact of cutting and filling, and preserving ridgelines.

Draft Regional Flood Control Master Plan

A technical team from regional agencies has been reviewing what flood control improvements are needed, how to raise funds to make capital improvements and how to create an organization to manage flood control and storm drainage in our region. A draft flood control master plan has been developed and is currently under review. This plan will identify certain regional drainageways and identify how they will be treated. The City intends that the Major Drainagways Plan will reflect the City's desired treatment of regional drainageways within the City of Reno.

Engineering Design Requirements

Current requirements of the Reno Municipal Code prescribe that development of property shall not adversely affect any natural major drainage facility or natural water course. A major drainage facility is defined as a channel that has a drainage basin of 100 acres or more. The requirements generally dictate that runoff from the 5 year storm be collected on site and piped to the major drainage facility or storm drain system. For rates exceeding the 5 year, development is required to transport storm water overland to a major drainage facility. Discharge of storm drain waters into a major drainage facility is not allowed to increase peak flows above that which exist at present or provide proof demonstrating that flows will not adversely affect downstream properties. Within this context, development is to retain

the natural facilities in as near a natural state as is practicable.

Recognizing that the most preferred management practice is to maintain stable drainageways in their natural and undisturbed state, the engineering requirements reiterate the goal to preserve the performance of the natural systems. Man-made improvements are considered desirable when they provide an enhancement or improvement to the effectiveness of the natural conditions and should not be installed simply to replace them. The technology used should remain secondary and subordinate to the aesthetic quality of the natural environment, and should be appropriate to the site. Therefore, stripping the channel of vegetation or creating steep, barren side slopes is considered unacceptable.

Existing Procedures (1991)

In an effort to develop a consistent and effective approach to the implementation of City codes and policies, six procedures were affirmed by the City Council in February 1987. The procedures are as follows:

1. The City should require that, with development, developers dedicate to the City lands classified by the City as major drainage courses.
2. The criteria used to delineate the boundaries of established major drainage courses should be these:
   a. In areas of significant relief, the boundary shall be located 15 feet from the lateral side of each side of the ravine or drainageway.
   b. In areas where the drainageway is characterized by low relief, and thus difficult to define, the boundary shall be 15 feet beyond the 100 year flood line on either side of the channel.
3. Offers of dedication should be obtained prior to the recordation of final subdivision maps or if subdivision of land is not involved, prior to the issuance of any permit, acceptance of dedications should take place after subdivision or project improvements are accepted.
4. Drainageways should remain undisturbed except for low intensity recreational uses and such improvements as are deemed necessary by the City Engineer to maintain the channel.
5. These policies should be applied to undeveloped lands and unrecorded subdivisions.
6. The City should request that existing major drainage courses in private ownership be dedicated to the City.

Maintenance Policies

The responsibility of the City to ensure the safety of people and property by providing for adequate drainage of storm waters (N.R.S. Chapter 278.250) and the desire to preserve the natural environment (addressed in the various elements of the Reno Master Plan), compel the City to maintain drainageways.

Since 1987, the City has required, with development approvals, vehicle access into the channels for removal of trash and other materials. Because it is difficult to associate an owner to the garbage encountered, the City traditionally responds to complaints. The Public Works Director and the Maintenance Engineer, with assistance from the Department of Planning and Community Development, recently implemented a pilot program to inspect and clear debris from the channels twice a year. With the help of Zoning Enforcement Officers, problem areas will also be addressed as discovered.

Legal Issues

In discussing these open drainageways, the issue of liability always arises. In order to protect the city and encourage public use of the drainageways for recreational purposes, it is recommended that legislation be investigated. At a minimum, private property owners should have their immunity expanded to limit liability to dangerous or hazardous conditions of which he/she has had notice and a reasonable opportunity to correct.

In addition, the City should have its liability immunity expanded to include the protection afforded private property owners, at least as to unimproved property. In other words, the City should have no duty to make safe unimproved property. The California Recreational Use Statute, which was enacted to encourage private land owners to allow public use of their properties for recreational purposes, can also offer guidance in potential legislation.

# 6. Implementation Strategies

In order to incorporate these implementation strategies into the decision making process, this plan will be adopted as part of the Reno Master Plan and should be used to determine conformance for new developments which require:

Subdivision Maps (Tentative and associated Final Maps)
Special Use Permits
Site Plan Review

It is not intended that the standards and procedures included in this plan would apply to projects which were approved prior to the adoption of the plan provided such projects maintain the validity of their approvals. Such projects shall develop in accordance with applicable ordinances and policies as they existed at the time of approval.

The following steps have been established to guide development through the approval process:

1. Applicant determines what type of review the project requires.
2. Applicant determines location and condition of drainageways:
   a. reference Major Drainageways Map;
   b. if the drainageway on the property is not a natural drainageway and the project would disturb the drainageway or if it is a natural drainageway and enhancement is proposed, explain the existing conditions, including but not limited to vegetation, soils, geology, existing engineered improvements, storm drainage capacities, hydrologic resources, any potential flow impediments, and adjacent and connecting land uses;
   c. delineate on submittal plans the location of the drainageway(s) and the cross section view(s) and vegetation before and after construction.
3. Applicant submits development application.
4. City staff will review the application and evaluate the relationship of proposed improvements to the drainageway system in place and to the requirements of this plan, and will evaluate whether the applicant has incorporated the Major Drainageway Plan requirements into the design of the project.
5. Staff will discuss what methods have been selected to ensure conformance to the requirements of this plan and accountability on the part of the applicant in the staff report. Options include but are not limited to:
   a. dedication of lands to the City of Reno as permanent open space
   b. homeowner's association for ownership and maintenance
   c. performance bonds
   d. granting of open space easement
   e. other conditions of approval deemed necessary to carry out the intent of this plan.

6. Development application will then be forwarded through the Development Review Process.

7. Staff will periodically prepare a summary of activity affecting drainageways as a part of the Master Plan Update Report, in order to examine the effectiveness of the process and these requirements.

# 7. Requirements

The following requirements will apply to new and existing development, as applicable:

1. All drainageways delineated on the Major Drainageway Map shall be managed under the requirements of this plan.

2. All "natural" drainageways shall remain undisturbed except for enhancements to existing vegetation. No grading shall occur within a "natural" drainageway except for that which is required for the construction of bicycle/pedestrian paths or necessary roadway or utility crossings.

3. Unless otherwise specified through the approval of a special use permit, all drainageways shall be the width of the 100 year flood plain with a minimum fifteen (15) foot wide area on each side as shown in Figure 2.

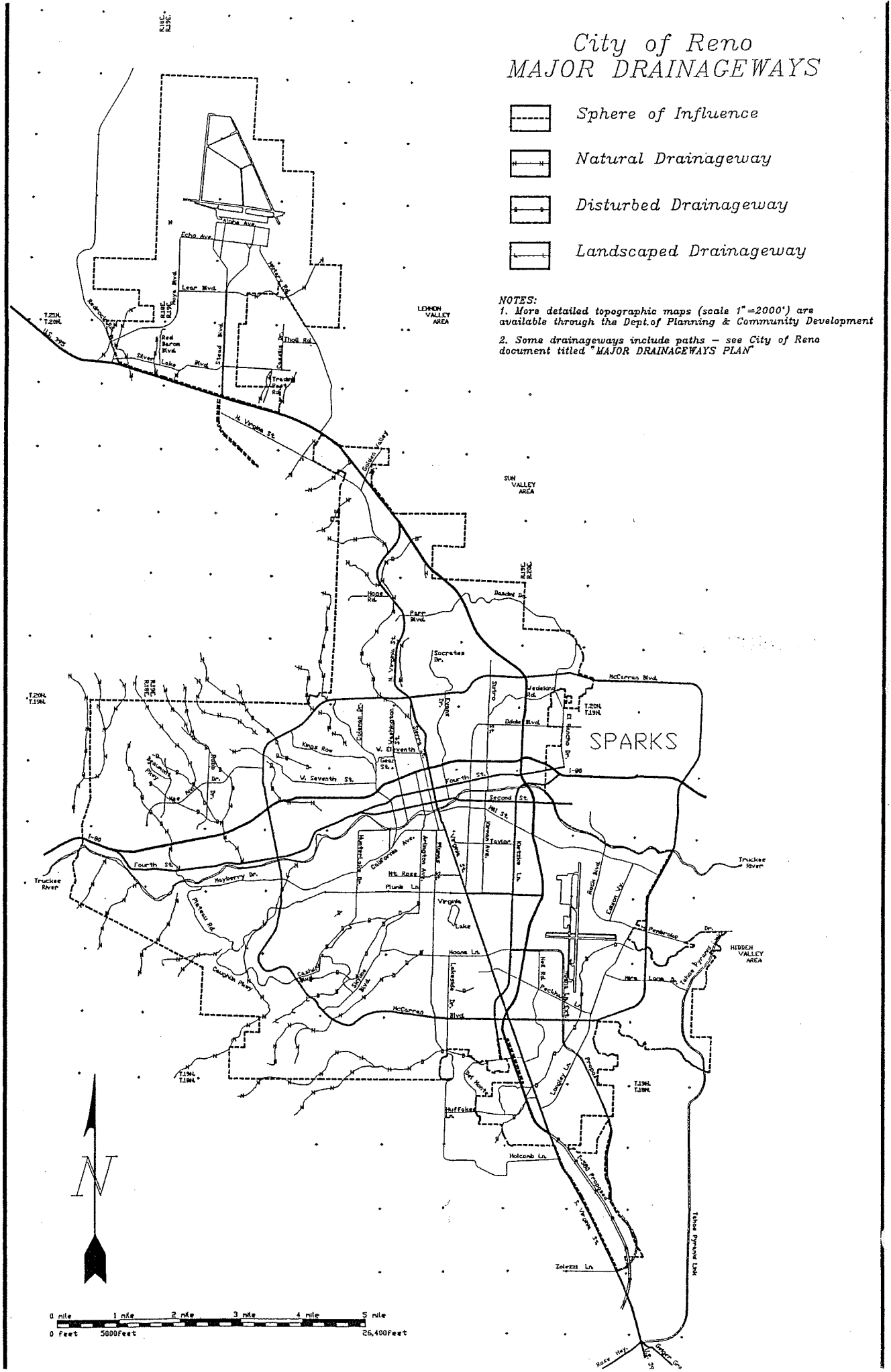
4. The design standards for drainageways as shown in Figure 3 may vary only with the approval of a special use permit. Approval of the special use permit must be based on the following considerations:
   (a) provision of adequate maintenance and emergency access;
   (b) the appropriateness of the fence treatment as it relates to the width of the drainageway;
   (c) impacts of the design on the ability of the drainageway to adequately accommodate any proposed bicycle/pedestrian path;
   (d) visual and aesthetic impact particularly as viewed from public streets, parks or open spaces; and
   (e) impact of the design on any wildlife and water quality values.

5. Maintenance of the drainageways shall be performed by the property owner. Maintenance shall include but not be limited to, removal of trash, clearing of sediments and debris, and clearing of weeds. Information and guidelines for the prevention of destructive clearing practices and removal of beneficial vegetation will be provided by the City.

6. Whenever development comes in contact with a natural drainageway the drainageway shall be marked and restricted as a non-construction area during construction, i.e. no stock piling of materials, no parking of equipment, no dumping of refuse, soils, or rocks, and no construction roads. Sediment fencing or other suitable treatment shall be employed to protect the channel from sediment loaded runoff into the drainageway.

7. In the event that a drainageway is disturbed during development

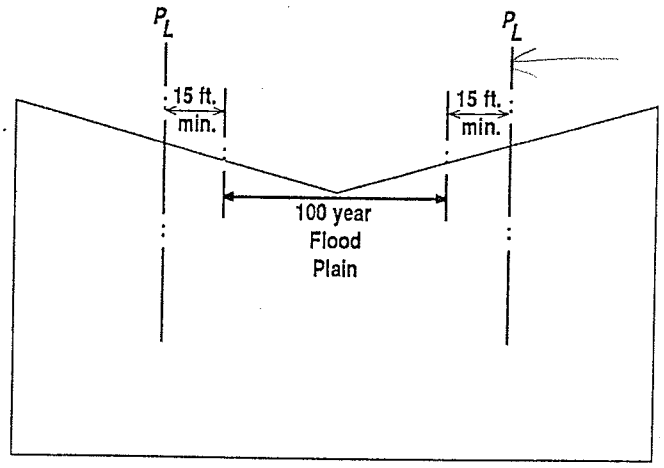
# City of Reno
# MAJOR DRAINAGEWAYS



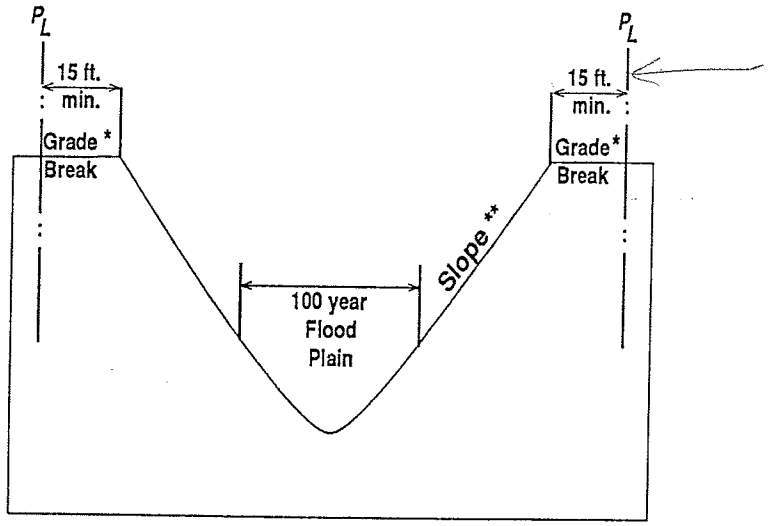
# Design Standards for Drainageways

Figure 3

Areas of Low Relief




Areas of Significant Relief




$P_L$ means Property Line

* exact location of Grade Break to be determined in the field by City Staff

** Slopes must not be disturbed in "Natural" drainageway; maximum slope of 4 : 1 for cut or fill in "Disturbed" or "Landscaped" drainage way

Variations from these standards are permissable only with the approval of a Special Use Permit

activity, (e.g. stripping of natural vegetation), the applicant will be required to:

a. perform analysis of soils including pH, texture, depth, type, and compaction;
b. identify the direction of exposure, i.e. southern, of all surfaces and slopes of the drainageway;
c. prepare discussion of the characteristic behavior of water and moisture in the drainageway;
d. except for drainageways designated to be "landscaped", prepare listing of diversified plant communities, with an emphasis on shrubs and forbs and consideration of wildlife needs, proposed for planting in the drainageway and the methods for irrigation;
e. submit above with any other information explaining process by which the drainageway will be enhanced or the natural condition reestablished for review and approval by the Department of Planning and Community Development;
f. if the rehabilitation or modification is deemed acceptable, the Owner/Developer shall deposit with the Department of Building and Safety, a bond or letter of credit in the amount determined by the City to assure that plantings within the natural drainageway will be permanently established. The security shall remain in effect until the City determines that plantings have been permanently established, or for a period of not more than 2 years plus 1 month; and
g. in the event the City determines that rehabilitation and plantings have not been permanently established within the 2 year period following construction, the City will determine the cost to replace and permanently establish such plantings. Such costs shall be deducted from the security and retained by the City for rehabilitating the drainageway. Any remaining security plus accrued interest will be returned to the Owner/ Developer.

8. Soils, grading spoils, rubbish, abandoned autos and auto bodies, etc., which impair the usefulness or capacity of the drainageway as a water storage and transport area, shall not be introduced into the drainageway. In the event that such materials are introduced, the property owner or the person determined to have disrupted the channel will be required to perform general maintenance as described in Requirement #4 in addition to standard abatement. In cases of severe destruction (cannot be remedied by general maintenance) of the drainageway's vegetation and capacity as a water storage and transport area, the property owner or the person determined to have disrupted the channel will be required to rehabilitate the drainageway back into a stable, condition comparable to pre-disturbance capacity, a described in Requirement #7.

9. The preferred fencing of properties adjacent to the natural drainageway shall be no more than six (6.0) feet in height and shall be black, green, or brown chain link, wooden split-rail, ornamental iron or an acceptable alternative. Such alternative treatment shall be described in detail at the time the project is presented to the Planning Commission. Slats will not be allowed in the chain link fence, however, vegetative screening is permissible. Solid wooden fences are strongly discouraged adjacent to drainageways. Any development adjacent to a drainageway shall submit a detailed fencing plan for approval by the Planning Commission or Zoning Administrator.

10. Engineered improvements to the drainageway shall emphasize reducing erosion, improving water quality, and controlling velocities, and shall be performed as follows:
    a. required improvements shall favor vegetative stabilization over mechanical, with an emphasis on diversified and indigenous plant communities of shrubs and forbs;
    b. techniques shall be used to prevent and control pollutants in storm water discharges from erosion and construction activity including but not limited to good site planning and nonstructural vegetative controls;
    c. mechanical stabilization in the drainageways shall be limited to transition points, the entrance or exit of a pipe and where storm flow velocities warrant. The amount of rock rip-rap or other method of mechanical stabilization shall be limited only to that which is needed to address these situations;
    d. the crossing of drainageways with roadways is strongly discouraged and considered acceptable only if no other reasonable alternative is available. When crossings do occur they will be the absolute minimum necessary to provide access to the development. Crossings should be for arterials or collectors and not local streets whenever possible. If a collector street crosses a drainageway where a path is proposed, then pedestrian signage and lighting, as deemed necessary by the City, must be provided. If an arterial street or freeway crosses a drainageway where a path is proposed, then a grade separated bicycle/pedestrian crossing must be provided. In determining the acceptability of any roadway crossing the City will also consider the following:
        (1) the proximity of the proposed roadway crossing to other existing or proposed roadway crossings of the same drainageway;
        (2) the potential for access to be achieved from other existing or proposed roadway crossings;
        (3) the impact of the crossing on vegetation, water quality, and wildlife;

(4) the potential and need for the proposed roadway crossing to provide access to other properties such that future crossings are minimized; and

(5) future utility infrastructure needs such that utility and roadway crossings of a given drainageway are combined.

When alternative roadway crossings of drainageways exist, crossings of landscaped or disturbed drainageways are preferred over crossing of a natural drainageway. All roadway crossings of a drainageway shall be subject to requirement #7 of this plan.

11. The drainageway may only qualify as land for park dedications if it is so designated in the Master Plan. If the applicant wishes to dedicate the drainageway, offers of dedication will be obtained prior to the recordation of a final subdivision maps, or if subdivision of land is not involved, prior to the issuance of any permit. Acceptance of dedications will take place after subdivision or project improvements are accepted by the City.

12. The City of Reno will accept by dedication slopes that are 3:1 or steeper, only if they are in their natural, undisturbed state or have have been rehabilitated according to requirement #7 and have stabilized slopes.

13. The use of native and drought tolerant or riparian vegetation, which ever is deemed most appropriate, in the natural or disturbed drainageway is mandatory.

14. The City will require the construction of drainageway paths with the development of adjoining properties. In these cases the City will permit the construction of drainageway paths in lieu of sidewalks upon approval of a comprehensive pedestrian access plan for the project.

# 8. Recommendations

Upon Council adoption, this plan will become a part of the Reno Master Plan. It is further recommended that the following actions be taken:

1. That those amendments to Title 18 of the Reno Municipal Code which are deemed necessary to carry out the objectives of this plan be adopted.

2. That community groups and city advisory groups be appproached to provide support for rehabilitation projects and construction of paths. Plans should be put forth to rehabilitate the channels, along with inventories of vegetation, soils and wildlife, and removal of debris.

3. That the City pursue state legislation that limits liability for bicycle/pedestrian trails in the drainageways in the 1992/93 legislative session.

4. That the Recreation and Parks Commission review this plan and recommend those drainageways which would be appropriate as public parks by December 1, 1992.

5. That the Recreation and Parks Commission use this plan to locate parks which adjoin or connect the drainageways shown in this plan.

# 9. Appendix - Existing Policies

From the Reno Policy Plan, 1984

Compulsory Development Policies

II.B.24 - Preserve as open space all natural drainage courses within developing areas.

II.B.25 - Require that any channelization of natural drainage courses utilize natural materials and prevent concrete channelization.

II.B.26 - Assure that new development will not interfere with important wildlife habitats.

Physical Development Policies

I.C.20 - The City will encourage bicycle and pedestrian routes which create links between commercial/community areas and residential neighborhoods.

Contained in the Parks and Open Space Guide, 1984

C.3.- To maintain the natural beauty of the City and to ensure the provision of sufficient quantities of parks, open space, and recreational facilities equitably distributed according to community needs.

C.3.7 - Encourage preservation of open space where feasible for such purposes as passive recreation, scenic vistas, and pedestrian and bicycle corridors.

C.3.10- Participate in park and open space planning efforts with those of Washoe County and the City of Sparks.

C.3.12 - Encourage programs to protect important wildlife habitats for purposes of wildlife survival and community education, research, and recreation.

McQueen Area Development Plan, amended 1989

Policy 14 Require dedication of sufficient land to allow for adequate rights-of-way for all major roads and bikeways and pedestrian paths in the planning area.

Policy 29 Preserve as open space all natural drainage courses to perpetuate natural drainage flows, and require a minimum 15-foot building setback from ridgelines to preserve views.

Policy 30 Require that any channelization of natural drainage courses

utilize natural materials and prevent concrete channelization.

From the Truckee Meadows Regional Plan, adopted 3/21/91

Policy 10d — The Region shall adopt design and construction standards for agriculture and new development adjacent to permanent lakes, rivers, streams and playas, in order to protect water quality, minimize erosion and sedimentation, and preserve or improve natural drainage, recharge, habitat, and aesthetic functions. Standards shall address runoff flow rates and the type, quality and quantity of particulates carried by runoff. Urban stormwater runoff should meet standards in the NPDES permit. The standards should encourage the use of best management practices. Runoff should be used to recharge groundwater resources where the runoff meets quality standards equal to or higher than that of the groundwater being recharges*d* by the runoff. All runoff shall be periodically tested for conformance with the quality standards.

Policy 12a — Within one year of the adoption of this Regional Plan, the RWRMA shall adopt and the Governing Board shall certify, a Regional Flood Control Master Plan. The Regional Flood Control Master Plan shall be consistent with the Regional Plan. This Master Plan shall define precise standards for the construction of improvements to the flood control and storm drainage systems of the Region, and shall identify facilities needed to accomplish the Regional flood control objectives.

Policy 12f — Wherever possible, facilities and improvements designed to address stormwater discharge and floodplain management should also be designed to serve other Regional objectives, including but not limited to, the preservation of natural areas, the provision of accessible open space corridors, creation of bike/pedestrian paths, protection of riparian areas, and enhancement of water quality.

Policy 12g — Acquisition of wetlands and preservation of open space should be utilized to reduce the need for structural flood control improvements

# 10. Bibliography

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Nevada Department of Wildlife, Nevada Department of Wildlife, Wildlife and Wildlife Habitats Associated with the Humboldt River and its Major Tributaries, pg.12, 1989

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