

Chapter 2

Drainage Law

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1.0 Summary of Current General Principles of Drainage and Flood Control Law

1.1 Introduction

Drainage law not only has its basis in law made by the courts and the legislature but also relies to a large extent on the drainage facts that exist in each case. Therefore, a party with the most reliable facts and information will have a distinct advantage in court. Similarly, drainage engineering and design revolves around drainage law as well as the natural law of gravity.



Photograph 2-1. Preserving a natural floodplain, including wetland areas, and using this area for flood control and conveyance, represents sound engineering in concert with established Colorado drainage law.

This chapter deals with the general principles of drainage law along with local government drainage actions, financing, floodplain management, and special matters. This chapter is meant to provide an outline of the general principles of Colorado drainage law for the engineer and agency official. It is not meant to serve as a substitute for a lawyer's opinions, though this chapter may be of interest to practicing attorneys. Also, throughout this chapter cases from other jurisdictions are cited. Although they are from courts located in other states, they are cited since they provide the reasoning and law that most likely would be implemented by courts in the State of Colorado.

In using this chapter of the Urban Storm Drainage Criteria Manual (USDCM), the reader should be familiar with the entire USDCM and should pay particular attention to the *Policy* and *Planning* chapters. In the *Policy* chapter, 12 principles have been stated, with which the reader of this chapter should be familiar. Similarly, the following legal principles are summarized below for ready reference.

1.2 Legal Principles

1. The owner of upstream property possesses a natural easement on land downstream for drainage of surface water flowing in its natural course. The upstream property owner may alter drainage conditions so long as the water is not sent down in a manner or quantity to do more harm to the downstream land than formerly. Bittersweet Farms, Inc. v. Zimbelman, 976 P.2d 326 (Colo. App. 1998).
2. On July 1, 2003 the Colorado Legislature substantially changed the law in regard to the liability of governmental entities and the drainage, flood control, and stormwater facilities that they own or maintain. Governmental entities on and after July 1, 2003 have complete governmental immunity in regard to the drainage, flood control, and stormwater facilities that they own or maintain. The law in Colorado however did not change in regard to other facilities that a governmental entity owns and operates. In regard to those other facilities, a governmental entity's liability is determined as if it is a private party. However, the amount of its liability is limited by the Colorado Governmental Immunity Act.
3. A natural watercourse may be used as a conduit or outlet for the drainage of lands, at least where the augmented flow will not tax the stream beyond its capacity and cause flooding of adjacent lands. Ambrosio v. Pearl-Mack Construction Co., 351 P.2d 803 (Colo. 1960).

4. Ditch corporations that own ditches owe a duty to those property owners through which their ditches pass to maintain their ditches using ordinary care so as to prevent damage to adjoining real property. Oliver v. Amity Mut. Irrigation Co., 994 P.2d 495 (Colo. App. 1999). Further, ditch owners are not required under the law to accept stormwater runoff that is result of development that occurs after the ditch was constructed. The ditch owner would have a legal claim based upon trespass as well as a claim based upon the fact that the ditch is not a natural drainage and most likely the increased flows will be deposited into the ditch in a manner or quantity to do more harm than formerly. Hankins v. Borland, 431 P.2d 1007 (Colo. 1967).
 5. Construction or enlargement of jurisdictional dams or reservoirs is subject to approval by the Colorado State Engineer's Office, which, depending on the size of the dam and the hazard classification, may include requirements for spillways to pass up to the Extreme Storm Precipitation (ESP) event¹. A "jurisdictional dam" is defined as a dam that impounds water above the elevation of the natural surface of the ground creating a reservoir that meets one of the following conditions:
 - i. Has a capacity of more than 100 acre-feet;
 - ii. Has a surface area exceeding 20 acres at the high waterline; or
 - iii. Exceeds 10 feet in height measured vertically from the elevation of the lowest point of the natural surface of the ground where that point occurs along the longitudinal centerline of the dam up to the flow line crest of the emergency spillway of the dam.
- Rules 4 & 5 of the Department of Natural Resources, Division of Water Resources, Office of the State Engineer, Rules and Regulations for Dam Safety and Dam Construction, 2-CCR 402-1, Effective Date: January 1, 2007.
6. The boundaries of the floodplain should be accurately determined and based on a reasonable standard. Mallett v. Mamarooneck, 125 N.E. 2d 875 (N.Y. 1955).
 7. Adoption of a floodplain regulation to regulate flood-prone areas is a valid exercise of police power and is not a taking as long as the regulation does not go beyond protection of the public's health, safety, morals, and welfare. Hermanson v. Board of County Commissioners of Fremont, 595 P.2d 694 (Colo. App. 1979).
 8. The adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking. Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987).
 9. A zoning ordinance is not unconstitutional because it prohibits a landowner from using or developing his land in the most profitable manner. It is not required that a landowner be permitted to make the best, maximum or most profitable use of his property. Baum v. City and County of Denver, 363 P.2d 688 (Colo. 1961) and Sundheim v. Board of County Commissioners of Douglas County, 904 P.2d 1337 (Colo. App. 1995).
 10. The Colorado Governmental Immunity Act (CGIA), in addition to providing complete immunity to

¹ The ESP event represents the greatest depth of precipitation for a given duration that is physically possible over a drainage basin through the application of modern meteorological techniques, based on Colorado extreme storm data approved by the State Engineer.

governmental entities for the drainage, flood control, and stormwater facilities that they own or maintain, also does not require a governmental entity to upgrade, modernize, modify, or improve the design or construction of a facility, including but not limited to the drainage, flood control and stormwater facilities that it owns or maintains. This same protection does not include private parties.

11. A “dangerous condition” constitutes an unreasonable risk to the health or safety of the public, which is known to exist or which in the exercise of reasonable care should have been known to exist and which condition is proximately caused by the negligent act or omission of the public entity in constructing or maintaining such facility. 24-10-103 (1.3) C.R.S. However, a dangerous condition shall not exist solely because the design of any facility is inadequate. Again, this protection does not extend to private parties.
12. Under the CGIA, a governmental entity is not protected by immunity in regard to the operation and maintenance of any “public water facility” or “sanitation facility.” 24-10-106 (f) C.R.S.
13. However, under the CGIA, a “public water facility” does not include a “public sanitation facility;” a natural watercourse even if dammed, channelized, or used for transporting domestic water supplies; a drainage, borrow, or irrigation ditch even if dammed, channelized, or containing stormwater runoff or discharge; or a curb and gutter system. 24-10-103 (5.7) C.R.S.
14. Also, under the CGIA, a “public sanitation facility” does not include a “public water facility;” a natural watercourse even if dammed, channelized, or containing stormwater runoff, discharge from a storm sewer; a drainage, borrow, or irrigation ditch even if the ditch contains stormwater runoff or discharge from storm sewers; a curb and gutter system or other drainage, flood control, and stormwater facilities. 24-10-103 (5.5) C.R.S. Therefore, a public entity will be immune from liability in regard to all drainage and flood control facilities that it designs, constructs and maintains. Again, this protection does not extend to private parties.
15. Under the CGIA, a public entity will not be liable for its failure to upgrade, modernize, modify, or improve the design or construction of a drainage or flood control facility or any other facility that it owns or maintains whether it knows of a deficiency or not or whether it is a dangerous condition or not. 24-10-103 (2.5) C.R.S. The Colorado Legislature in enacting this law found that governmental entities “. . . provide essential public services and functions and the increased legal liability from not having this type of statutory protection poses the danger of disrupting or making prohibitively expensive the provision of such services and functions.”
16. The CGIA has not been challenged in court since its adoption in 2003 although courts have considered whether its application was meant by the Colorado Legislature to be retroactive. Therefore, it is uncertain if the CGIA would withstand a legal challenge. Regardless, governmental entities should, to the best of their ability, attempt to construct, operate, and maintain the drainage, flood control, and stormwater facilities that they own to the same standard that private parties are required to meet.
17. CGIA does not protect a public entity from a claim based upon inverse condemnation. Inverse condemnation is defined as the taking of private property for a public or private use, without compensation, by a governmental or public entity which has refused to exercise its eminent domain power.
18. In imposing conditions upon the granting of land-use approvals, no local government shall require an owner of private property to dedicate real property to the public or pay money to a public entity in an amount that is determined on an individual and discretionary basis, unless there is an essential nexus between the dedication or payment and a legitimate local government interest and the dedication or

payment is roughly proportional both in nature and extent to the impact of the proposed use or development of such property. This law does not apply to any legislatively formulated assessment, fee, or charge that is imposed on a broad class of property owners by a local government. 29-20-203 C.R.S.

19. Public entities that own dams or reservoirs are not subject to strict liability for damages caused by water escaping from their dams or reservoirs. Further, those public entities have no duty to ensure that waters released from an upstream reservoir because of a dam failure would be contained by their facilities or would bypass those facilities without augmentation. Kane v. Town of Estes Park, 786 P.2d 412 (Colo. 1990).
20. A professional engineer is required not only to serve the interests of his or her employer/client but is also required, as his or her primary obligation, to protect the safety, health, property, and welfare of the public. Rule I 2. of The Colorado Rules of Professional Conduct of the State Board of Registration for Professional Engineers and Professional Land Surveyors.
21. Where a municipality imposes a special fee upon owners of property for purposes of providing a service and where the fee is reasonably designed to defray the cost of the service provided by the municipality, such a fee is a valid form of governmental charge within the legislative authority of the municipality. Bloom v. City of Fort Collins, 784 P.2d 304 (Colo. 1989).

2.0 General Principles of Drainage Law

Very little is gained if the same act which dries up one tract of land renders the adjoining tract twice as difficult to redeem. Livingston v. McDonald, 21 Iowa 160, 170 (1866).

2.1 Private Liability

Traditionally, courts have analyzed the legal relations between parties in drainage matters in terms of such property concepts as natural easements, rights, privileges, and servitudes but have based liability for interfering with surface waters on tort principles. See Kenyon and McClure *Interferences With Surface Waters*, 24 Minn. L. Rev. 891 (1940). Drainage and flood control problems attendant with increased urbanization, the trend in tort law toward shifting the burden of a loss to the best risk-bearer, and complete or partial reinstitution of governmental immunity by the legislature will continue to change the traditional rules that have governed legal relations between parties in drainage matters. These changes are reflected in the three basic rules relating to drainage of surface waters that have been applied over a period of time in the United States: the common enemy rule, the civil law rule (later to be called a “modified civil law rule”), and the reasonable use rule.

2.1.1 Common Enemy Rule

Under the common enemy rule, which is also referred to as the common law rule, surface water is regarded as a common enemy, which each property owner may fight off or control as he or she will or is able, either by retention, diversion, repulsion, or altered transmission. Thus, there is no cause of action even if some injury occurs. All jurisdictions originally following this harsh rule have either modified the rule or adopted the civil law rule or reasonable use rule. 5 *Water and Water Rights*, §§450.6, 451.2 (R.E. Clark ed. 1972).

2.1.2 Civil Law Rule

The civil law rule, or natural flow rule, places a natural easement or servitude upon the lower land for the drainage of surface water in its natural course, and the natural flow of the water cannot be obstructed by the servient owner to the detriment of the dominant owner. 5 *Water and Water Rights*, §452.2A (R.E. Clark ed. 1972). Most states following this rule, including Colorado, have modified the rule. Under the modified rule, the owner of upper lands has an easement over lower lands for drainage of surface waters, and natural drainage conditions can be altered by an upper proprietor provided the water is not sent down in a manner or quantity to do more harm than formerly. *Hankins v. Borland*, 163 Colo. 575, 431 P.2d 1007 (1967); *H. Gordon Howard v. Cactus Hill Ranch Company*, 529 P.2d 660 (1974); *Hoff v. Ehrlich*, 511 P.2d 523 (1973); but see *Ambrosio v. Perl-Mack Construction Company*, 143 Colo. 49, 351 P.2d 803 (1960) and *Bittersweet Farms, Inc. v. Zimbelman*, 976 P.2d 326 (Colo. App. 1998).

2.1.3 Reasonable Use Rule

Under the reasonable use rule, each property owner can legally make reasonable use of his land, even though the flow of surface waters is altered thereby and causes some harm to others. However, liability attaches when the harmful interference with the flow of surface water is “unreasonable.” Whether a landowner’s use is unreasonable is determined by a nuisance-type balancing test. The analysis involves three inquiries:

1. Was there reasonable necessity for the actor to alter the drainage to make use of his or her land?
2. Was the alteration done in a reasonable manner?
3. Does the utility of the actor’s conduct reasonably outweigh the gravity of harm to others?

Restatement Torts, §§822-831, 833 (1939); *Restatement (Second) Torts*, §158, Illustration 5. Alaska, Hawaii, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio and Utah have adopted this rule. Some states have restricted their application of the rule to urban areas (South Dakota and Texas). In *Pendegast v. Aiken*, 236 S.E. 2d 787 (1977), the North Carolina Supreme Court traces the common law rule to the civil law rule to adoption by that court of the reasonable use rule, starting at page 793:

It is no longer simply a matter of balancing the interests of individual landowners; the interests of society must be considered. On the whole the rigid solutions offered by the common enemy and civil law rules no longer provide an adequate vehicle by which drainage problems may be properly resolved.

2.2 Municipal Liability

A municipality is generally treated like a private party in regard to the determination of negligence in matters other than drainage and flood control. Harbison v. City of Hillsboro, 103 Ore. 257, 204 P. 613, 618 (1922); City of Golden v. Western Lumber and Pole Company, 60 Colo. 382, 154 P. 95 (1916) (a municipality undertaking a public improvement is liable like an individual for damage resulting from negligence or an omission of duty); City of Denver v. Rhodes, 9 Colo. 554, 13 P. 729 (1887). With regard to drainage and flood control improvements, however, the Colorado legislature has legislatively changed the law to provide for immunity of municipalities and other public entities. Since 2003, public entities have been immune from liability in regard to the construction and maintenance of natural watercourses even if dammed, channelized, or containing stormwater runoff, discharge from a storm sewer; a drainage, borrow, or irrigation ditch even if the ditch contains stormwater runoff or discharge from storm sewers; a curb and gutter system or other drainage, flood control, and stormwater facilities. Although these statutes seem to protect public entities from lawsuits in regard to damage to citizens from drainage and flood control facilities that were negligently designed, constructed, or maintained, the prudent approach in designing, constructing, and maintaining these facilities is to assume such immunity is not available to a public entity. In that way, public entities will always be protecting the best interests of its citizens. However, governmental immunity does not protect a public entity from a claim made in inverse condemnation for the taking of property rights without compensation.

In the case of Jorgenson v. City of Aurora, 767 P.2d 756 (Colo. App. 1988), the Colorado Court of Appeals held that given the constitutional genesis of a claim for inverse condemnation, and considering the nature of the right upon which this action is founded, a claim in inverse condemnation is not subject to the Governmental Immunity Act.

It is becoming more and more common for private developers to design, construct, and maintain drainage and flood control facilities. Obviously, the governmental immunity laws do not apply to them.

2.2.1 Planning Drainage Improvements

As a general rule, municipalities are under no legal duty to construct drainage improvements unless public improvements necessitate drainage—as in those situations in which street grading and paving or construction of schools accelerates or alters storm runoff. Denver v. Mason, 88 Colo. 294, 295 P. 788 (1931); Denver v. Capelli, 4 Colo. 25, 34 Am. Rep. 62 (1877); Daniels v. City of Denver, 2 Colo. 669 (1875). This is because statutory provisions authorizing municipal drainage improvements and flood control are generally written in non-mandatory language. Thus, absent mandatory statutory language imposing a duty on municipalities or judicial imposition of an implied duty to avoid or abate injuries, municipalities are not liable for failing to provide drainage or flood control.

As noted earlier, public entities are immune from liability for the design, construction, and maintenance of drainage and flood control facilities unless a claim is based upon inverse condemnation. Therefore, those same public entities would also be immune from liability for the planning of drainage improvements.

In the case of Larry H. Miller Corporation-Denver v. Urban Drainage and Flood Control District, et.al. 64 P.3d 941 (Colo. App. 203), Urban Drainage and Flood Control District (UDFCD) was sued by a property owner (Miller) who was damaged by severe flooding on its property causing damages to motor vehicles exceeding \$525,000. One of the Miller's claims was that UDFCD had produced a master plan including Miller's property which was intended to analyze the hydraulic, hydrologic, and existing stormwater systems' capacity and to develop alternative plans to handle stormwater flows to minimize safety hazards and damage resulting from flooding of streets and private property and UDFCD did not follow through

and construct the recommended drainage and flood control improvements. The Colorado Court of Appeals held that there was no requirement that UDFCD own, operate, or maintain any drainage facilities or to acquire property to protect it from flooding. Therefore, in most cases, unless there is a specific statutory requirement to act, public entities (even when aware of a potential problem) are not required to expend funds to remedy that problem. The Court's reasoning being that, in this case, UDFCD was in the best position to allocate its resources.

2.2.2 Construction, Maintenance, and Repair of Drainage Improvements

Although municipalities or other public entities can no longer be held legally responsible for damage caused to the public by their negligence, other legal theories have been used to impose liability on municipalities for faulty construction and maintenance of drainage improvements. Thus, a municipality may incur liability for trespass, Barberton v. Miksch, 128 Ohio St. 169, 190 N.E. 387 (1934) (casting water upon the land of another by seepage or percolation resulting from construction and maintenance of a reservoir was a trespass by the municipality); an unconstitutional taking, Mosley v. City of Lorain, 43 Ohio St. 2d 334, 358 N.E. 2d 596 (1976) (the city had effectively appropriated the plaintiff's property by constructing a storm sewer system which channeled a greater volume of water into the creek than the creek could reasonably be expected to handle without flooding); taking, Lucas v. Carney, 167 Ohio St. 416, 149 N.E. 2d (1958) (construction of a public improvement on county property, which greatly increased the amount and force of surface water that flowed onto the plaintiff's property, overflowing and inundating it, raised a claim of pro tanto appropriation); or nuisance, Mansfield v. Bolleet, 65 Ohio St. 451, 63 N.E. 8.6 (1902) (a municipality is liable if it causes drainage to be emptied into a natural watercourse and substantially damages a downstream landowner). Even in the absence of negligence, nuisance, trespass, or taking, the evolving doctrine of inverse condemnation is being used to permit landowners to obtain compensation from a municipality where storm runoff from municipal projects is diverted across another's land on the theory that the city has taken a drainage easement. Thus, like an easement for noise emanating from the municipal airport, physical entry by the public entity or statutory allowance of compensatory damages is not required in order for landowners to recover damages.

In several Colorado cases, however, municipalities have not incurred liability for faulty construction where they are found to be upstream proprietors with a natural easement for drainage—even when water is sent down in a manner or quantity to do more harm than formerly. City of Englewood v. Linkenheil, 362 P.2d 186 (1961) (the city's action in channeling water by a system of drains, catch basins, intakes, and pipes, from a higher place to a place contiguous to the land of the plaintiff, which was a natural drainage area, so as to overflow onto the land of plaintiff did not constitute a taking of property without just compensation); City and County of Denver v. Stanley Aviation Corporation, 143 Colo. 182, 352 P.2d 291 (1960) (plaintiff could not recover from the city for damage caused by flood waters which backed onto lower land on its theory that the city had been negligent or failed to use due care in installing a pipe adequate to carry the waters); Aicher v. Denver, 10 Colo. App. 413, 52 P. 86 (1897) (the city was not found liable for damage where street grade was changed, trolley tracks were permitted in a street, and a culvert was built too small, but the landowner was declared to be in the unfortunate position of having built below the grade of the street).

The CGIA provides in 24-10-103 (1) C.R.S. that maintenance does not include any duty to upgrade, modernize, modify, or improve the design or construction of a facility. Therefore, a public entity, under this statute, would not be found to have failed to maintain a facility if it failed to perform one or more of these enumerated actions. However, if a public entity fails to maintain a facility other than the excluded enumerated actions above, such failure could subject that entity to a claim that such failure was negligent, and such entity would not be protected by the CGIA.

2.2.3 Summary

In general, in the absence of negligence, a municipality will not be held liable for increased runoff occasioned by the necessary and desirable construction of drains and sewers. Denver v. Rhodes, 9 Colo. 554, 13 P. 729 (1887). Nor will a municipality be held liable for damages caused by overflow of its sewers or drains occasioned by extraordinary, unforeseeable rains or floods. 18 McQuillan, *Municipal Corporations*, §53.124 (3rd ed. 1971).

Municipal liability may attach when a claim is made alleging inverse condemnation or the taking of property rights without compensation and where a municipality:

1. Collects surface water and casts it in a body onto private property where it did not formerly flow.
2. Diverts, by means of artificial drains, surface water from the course it would otherwise have taken and casts it in a body large enough to do substantial injury on private land, where, but for the artificial drain, it would not go.
3. Fills up, dams back, or otherwise diverts a stream of running water so that it overflows its banks and flows on the land of another. A municipality is also liable if it fails to provide a proper outlet for drainage improvements constructed to divert surface waters or if it fails to exercise ordinary care in the maintenance and repair of drainage improvements.

This latter liability attaches when it is determined that a municipality has not exercised a reasonable degree of watchfulness in ascertaining the condition of a drainage system to prevent deterioration or obstruction. 13 McQuillan, *Municipal Corporations*, §37.254 (3rd ed. 1971). See, also, Malvern v. City of Trinidad, 123 Colo. 394, 229 P.2d 945 (1951).

Thus, the best rule to follow in planning for the construction of drainage improvements, whether following the natural watercourse or artificially draining surface water, is that a municipality is liable if it actively injures private property as a result of improvements made to handle surface water. A municipality in Colorado appears to be in a much stronger position if it can establish that the improvement followed natural drainage patterns. Drainage District v. Auckland, 83 Colo. 510, 267 P. 605 (1928); City of Englewood v. Linkenheil, 362 P.2d 186 4961; City of Boulder v. Boulder and White Rock Ditch and Reservoir Company, 73 Colo. 426, 216 P. 553 (1923). See Kenworthy, "Urban Drainage: Aspects of Public and Private Liability," July-August 1962, *DICTA*, p. 197; Shoemaker, "An Engineering-Legal Solution to Urban Drainage Problems," 45 *Denver Law Journal* 381 (1968).

2.3 Municipal Liability for Acts of Others

2.3.1 Acts or Omissions of Municipal Officers, Agents, or Employees

The general rule is that a municipality is not liable under the doctrine of respondent superior for the acts of officers, agents, or employees that are governmental in nature but is liable for negligent acts of its agents in the performance of duties relating to proprietary or private corporate purposes of the city. Denver v. Madison, 142 Colo. 1, 351 P.2d 826 (1960). The construction, maintenance, and repair of drainage improvements have been regarded as proprietary or corporate functions. Denver v. Maurer, 47 Colo. 209, 106 P. 875 (1910). Although the governmental-proprietary distinction has been abolished by statute in Colorado, the distinction apparently still applies whenever the injury arises from the act, or failure to act, of a public employee who would be, “or heretofore has been personally immune from liability.” 24-10-106 C.R.S. Thus, a municipality may be held liable for the acts of its officers, agents, or employees for injuries resulting from the design, construction or maintenance of drainage and flood control facilities when the claim is based on inverse condemnation for the taking of property rights without compensation.

Before an individual can recover damages from a public entity for injuries caused by the public entity or one of its employees, the CGIA requires written notice to the public entity involved within 180 days after the date of discovery of the injury. Otherwise, failure to notify is a complete defense to a personal injury action against a municipality. 24-10-109 C.R.S. Kristensen v. Jones, 575 F.2d 854 (1978).

2.3.2 Municipal Liability for Acts of Developers

Unless an ordinance or statute imposes a duty on a municipality to prevent or protect land from surface water drainage, a municipality will not incur liability for wrongfully issuing building permits, failing to enforce an ordinance, or approving defective subdivision plans. Breiner v. C & P Homebuilder's Inc., 536 F.2d 27 (3rd Cir. 1976), reversing the District Court. (In a suit by landowners in an adjacent township against a borough, its engineers, and subdivision developer for damages caused by increased flow of surface water from development where the borough approved a subdivision plan which did not provide drainage facilities and issued building permits, the borough was not liable because it owed no duty to landowners outside its boundaries. However, the developer was held liable.)

One state court, however, has held that a municipality is liable for damages where the municipality has furnished building permits to a contractor for development of an industrial complex which benefited the village financially but also diminished surface area available for drainage of water, causing flooding of neighboring servient estates. Myotte v. Village of Mayfield, 375 N.E.2d 816 (1977). In Myotte, the village's liability was based on the following reasoning:

To require the developer to pick up the cost of flood prevention by requiring him to acquire land along stream margins for widening or deepening to accommodate accelerated flow, would subject him to possible overreaching by riparian owners. The developer has no power of eminent domain. Municipalities do have powers of condemnation. Accordingly, as an advantaged party with the power to protect itself from crisis pricing, it seems reasonable and just that the municipality should either enlarge the stream to accommodate water accelerated from permitted improvements that enrich it or pay the consequences. *Myotte*, supra at 820. (Day, J. concurring.). See also, *Armstrong v. Francis Corporation*, 20 N.J. 320, 120 A.2d 4 (1956); *Sheffet v. County of Los Angeles*, 3 Cal. App. 3d 720 (1970); *Powers, et al., County of Clark and Clark County Flood Control District*, District Court, State of Nevada (No. A 125197) (1978).

There is a trend toward imposing a greater burden or responsibility on municipalities for the drainage consequences of urban development. See Wood Brothers Homes, Inc. v. City of Colorado Springs, 568 P.2d 487 (1977) (where the city abused its discretion by not granting variance and by assessing the entire cost of a major drainage channel on the developer, where the area to be served by the major drainage channel already suffered from occasional flooding and needed an expanded drainage facility whether the property was developed or not).

2.4 Personal Liability of Municipal Officers, Agents, and Employees

An injured person always has a remedy against the original tortfeasor even if no recovery may be had from the municipality for acts of its officers, agents, or employees in discharge of governmental functions. Denver v. Madison, 142 Colo. 1, 351 P.2d 826 (1960). Thus, public employees generally have been personally liable for injuries caused by their negligent actions within the scope of employment, even when the defense of sovereign immunity was available to their employers. Antonopoulos v. Town of Telluride, 187 Colo. 392, 532 P.2d 346 (1975); Liber v. Flor, 143 Colo. 205, 353 P.2d 590 (1960). Since an injured person's right to sue the negligent employee of an immune entity derives from the common law, the Colorado Supreme Court will not infer legislative abrogation of that right absent clear legislative intent. Thus, the CGIA is only directed toward liability of public entities. Kristensen v. Jones, 574 P.2d 854 (1978) (a bus driver for the regional transportation district was found personally liable for injuries sustained in a collision with the district's bus, and written notice was not a condition precedent to a suit against a public employee in his or her individual capacity).

The CGIA provides both for the defense of any governmental employee who is sued individually as a result of the employee's acts during the performance of his or her duties as well as the payment of any judgment or settlement. The act provides in part that a public entity shall be liable for the payment of all judgments and settlements of claims against any of its public employees where the claim against the public employee arises out of injuries sustained from an act or omission of such employee occurring during the performance of his or her duties and within the scope of employment, except where such act or omission is willful and wanton or where sovereign immunity bars the action against the public entity (24-10-110 (b)(1) C.R.S.).

Therefore, it is possible for an employee to be personally liable for a negligent act and the public entity to escape liability. Such a situation would arise when the claimant or employee fails to give proper notice to the public entity, thus providing that entity with the defense of lack of jurisdiction against it. However, the public employee would have no such defense.

3.0 Drainage Improvements by a Local Government

In an era of increasing urbanization and suburbanization, drainage of surface water most often becomes a subordinate feature of the more general problem of proper land use—a problem acutely sensitive to social change. Pendergast v. Arkin, 236 S.E. 2d 787, 796 N. Carolina.

3.1 Constitutional Power

A municipality's inherent police powers enable it to enact ordinances that serve the public's health, safety, morals, or general welfare. Ordinances addressing drainage problems are clearly a proper exercise of a municipality's police powers. Wood Brother's Homes, Inc. v. City of Colorado Springs, 568 P.2d 487, 490 (1977). Hutchinson v. Valdosta, 227 U.S. 303, 308 (1913).

3.2 Statutory Power

3.2.1 Municipal Statutes

Municipal Powers—Public Property and Improvements

31-15-701, 31-15-714 C.R.S. The statute grants municipalities the power to establish, improve, and regulate such improvements as streets and sidewalks, water and water works, sewers and sewer systems, and water pollution controls. In addition, a municipality may, among other powers, “deepen, widen, cover, wall, alter or change the channel of watercourses.” 31-15-711 (1) (a) C.R.S.

Public Improvements—Special Improvement Districts in Municipalities

31-25-501, 31-25-540 C.R.S. The statute authorizes municipalities to construct local improvements and assess the cost of the improvements wholly or in part upon property specially benefited by such improvements. By ordinance, a municipality may order construction of district sewers for storm drainage in districts called storm sewer districts.

Public Improvements—Improvement Districts in Municipalities

31-25-601, 31-25-630 C.R.S. The statute authorizes municipalities to establish improvement districts as taxing units for the purpose of constructing or installing public improvements. The organization of districts is initiated by a petition filed by a majority of registered electors of the municipality who own real or personal property in the district.

Sewer and Water Systems—Municipalities

31-35-401, 31-35-417 C.R.S. The statute authorizes municipalities to operate, maintain, and finance water and sewage facilities for the benefit of users within and without their territorial boundaries. Sewerage facilities are defined as “any one or more of the various devices used in the collection, treatment, or disposition of sewage or industrial wastes of a liquid nature or storm, flood, or surface drainage waters....” 31-35-491(6) C.R.S.

3.2.2 County Statutes

Public Improvements—Sewer and Water Systems

30-20-401, 30-20-422 C.R.S. The statute authorizes county construction, maintenance, improvement and financing of water and sewerage facilities for the county's own use and for the use of the public and private consumers and users within and without the county's territorial limits.

County Public Improvement Districts

30-20-501, 30-20-531 C.R.S. The statute authorizes creation of public improvement districts within any county as taxing units for purposes of constructing, installing, or acquiring any public improvement. 30-20-513 C.R.S. lists special benefits for purposes of assessing improvements within a public improvement district, particularly with respect to storm sewer drainage and drainage improvements to carry off surface waters.

Public Improvements—Local Improvement Districts—Counties

30-20-601, 30-20-626 C.R.S. The statute authorizes a county by resolution to construct local improvements and assess costs thereof wholly or in part upon property specially benefited by such improvements.

Flood Control—Control of Stream Flow

30-30-101, 30-28-105 C.R.S. The statute authorizes the board of county commissioners of each county for flood control purposes only:

...to remove or cause to be removed any obstruction to the channel of any natural stream which causes a flood hazard, and for such purpose only the board of county commissioners shall have a right of access to any such natural stream, which access shall be accomplished through existing gates and lanes, if possible. Such authority includes the right to modify existing diversion or storage facilities at no expense to the diverter of a water right, but it shall in no way alter or diminish the quality or quantity of water entitled to be received under any vested water right. 30-30-102 (1) C.R.S.

Conservancy Law—Flood Control

37-1-101, 37-8-101 C.R.S. The statute authorizes the district court for any county to establish conservancy districts for any of the following purposes:

Preventing floods; regulating stream channels by changing, widening, and deepening the same; regulating the flow of streams; diverting, controlling, or in whole or in part eliminating watercourses; protecting public and private property from inundation...

Drainage Districts

37-20-101, 37-33-109 C.R.S. The statute authorizes owners of agricultural lands susceptible to drainage by the same general system of works to petition the board of county commissioners for the organization of a drainage district.

3.2.3 State Statutes**Colorado Land Use Act**

24-65-101, 24-65-105 C.R.S. The statute establishes a nine-member Colorado land use commission. Among other powers, the commission has authority to assist counties and municipalities in developing guidelines for developing land uses and construction controls within designated floodways.

Drainage of State Lands

37-30-101, 37-30-105 C.R.S. The statute authorizes the state board of land commissioners to make contracts with any person, corporation, association, or drainage district to provide drainage of state lands.

Water Conservation Board of Colorado

37-61-101, 37-60-123 C.R.S. The statute creates a 13-member state water conservation board for purposes of water conservation and flood prevention. An important duty of this board is to “designate and approve storm or floodwater runoff channels or basins, and to make such designations available to

legislative bodies of cities and incorporated towns, and counties of this state.” 30-60-123 C.R.S.

State Canals and Reservoirs

37-88-101, 37-88-109 C.R.S. The statute authorizes the Department of Corrections to locate, acquire, and construct ditches, canals, reservoirs, and feeders for irrigating and domestic purposes for the use of the State of Colorado. The Board of County Commissioners have charge and control of any state reservoir in their county including the obligation to maintain and keep said reservoir in good condition at the county’s expense. In addition, the county in which the state reservoir is located is liable for any damages resulting from breakage of the dams or water discharges there from.

Regulatory Impairment of Property Rights

29-20-201 C.R.S. This law became effective July 1, 1999. One of the legislative declarations of the act is that “The general assembly further finds and declares that an individual private property owner should not be required, under the guise of police power regulation of the use and development of property, to bear burdens for the public good that should more properly be borne by the public at large.” The main thrust of the act is contained in 29-20-203 (1) C.R.S., which reads as follows:

In imposing conditions upon the granting of land-use approvals, no local government shall require an owner of private property to dedicate real property to the public, or pay money to a public entity in an amount that is determined on an individual and discretionary basis, unless there is an essential nexus between the dedication or payment and a legitimate local government interest, and the dedication or payment is roughly proportional both in nature and extent to the impact of the proposed use or development of such property. This section shall not apply to any legislatively formulated assessment, fee, or charge that is imposed on a broad class of property owners by local government.

The act goes on to prescribe the remedies available to a private property owner who believes his or her rights have been violated under the act. However, unlike most litigation, it is the burden of the local government and not the plaintiff “to establish, based upon substantial evidence appearing in the record” that the dedication or payment required by the local government is roughly proportional to the impact of the proposed use of the subject property.

Therefore, the Colorado legislature has now established a standard that is consistent with the leading case law in this area to assist local governments with reaching a safe harbor when imposing conditions on development. The concepts are fairly simple. First, the conditions imposed have to have some causal relationship with the impact of the development and, second, those conditions must be “roughly proportional” to the impact of the development. However, it should be noted that these restrictions relate only to those instances where the local government is negotiating individually with a developer as to what conditions will be imposed by the local government. The act does provide that, if the local government is legislatively imposing conditions for development on a broad class of property owners, the “essential nexus” and “roughly proportional” requirements of the act do not apply to those legislatively imposed conditions.

Intergovernmental Relationships

29-1-201 C.R.S. In 1974, Section 2 of Article XI of the state constitution was amended to permit and encourage governments to make the most efficient and effective use of their powers and responsibilities by cooperating and contracting with other governments. 29-1-203 C.R.S. provides more detail in regard to how that cooperation is to be carried out. It reads in part as follows:

Governments may cooperate or contract with one another to provide any function, service, or facility lawfully authorized to each of the cooperating or contracting units, including the sharing of costs, the imposition of taxes, or the incurring of debt, only if such cooperation or contracts are authorized by each party thereto with the approval of its legislative body or other authority having the power to so approve.

3.2.4 Urban Drainage and Flood Control Act

32-11-101 C.R.S., et. seq., established the Urban Drainage and Flood Control District (UDFCD), including all of the City and County of Denver and the urbanized and urbanizing portions of Adams, Arapahoe, Boulder, Broomfield, Douglas, and Jefferson Counties. A twenty-three member board of directors, comprised of twenty-one elected officials and two professional engineers, is given the power to (1) plan solutions to drainage and flood control problems (with an authorized mill levy of 0.1 mill); (2) construct drainage and flood control improvements (with an authorized mill levy of 0.4 mill); (3) maintain such improvements and other natural drainageways in UDFCD (with an authorized mill levy of 0.4 mill); and (4) construct drainage and flood control improvements in and adjacent to the South Platte River (with an authorized mill levy of 0.1 mill). The board also has the power to adopt and enforce a floodplain regulation.

3.2.5 Drainage Authority

29-1-204.2 C.R.S. et. seq. permits any combination of municipalities, special districts, or other political subdivisions of the State of Colorado to own and operate drainage facilities and, by contract with each other, to establish a drainage authority to be used by such contracting parties to effect development of drainage facilities in whole or in part for the benefit of the inhabitants of such contracting parties or others.

4.0 Financing Drainage Improvements

The ability of one owner to develop land, install impervious surfaces, alter drainage paths, and accelerate runoff onto other properties involves more than issues of what rights and relief should be accorded neighboring property owners. Urbanization may double or triple the peak flows of 5- and 10-year floods. Lands far downstream may be severely affected by the cumulative impact of unplanned and unregulated changes in drainage patterns due to urban clearance, grading, and development. Increasingly, the costs of uncontrolled drainage modifications and stormwater management have fallen on the state and federal budgets. Westen, *Gone With the Water—Drainage Rights and Storm Water Management in Pennsylvania*, 22 Vill. L. Rev. 901, 902 (1976-77).

4.1 Capital Improvement

Resources from the current budget, usually derived from sales, property, and income taxes, can be used to finance drainage improvements. Since the cost is paid from the “general fund” or “capital improvement fund” and no specific property tax is levied, the financing is relatively simple.

4.2 Local Improvement

Financing for drainage improvements through local improvements or as part of a general bond issue requires that all property be assessed on a valuation basis. Since a majority of all taxpaying electors must approve the decision, the success of this method usually turns on how well the facts (needs) have been prepared and how well a plan has been developed.

4.3 Drainage / Stormwater Authority

Drainage authorities also known as stormwater authorities have been created by either single governmental entities or combinations thereof in order to raise funds and use those funds for the design, construction and maintenance of drainage and flood control facilities. Often these authorities fund these improvements by assessing a fee on real property based in part upon the impervious area of each property and whether it is a residence or a commercial property. For example, a significant number of utilities base fees on both total site area and total impervious area. Others utilize “intensity of development” factors. Finally, many others include sophisticated programs of credits and adjustments, depending on site-specific factors. The majority of these authorities have become highly successful since they do not rely on general funds from the forming governments but, instead generate their own source of revenue that does not impact the governmental entities taxing authority. In Colorado, as a result of Colorado statutory law, these drainage and stormwater authorities can be created and funded by the assessment of fees without a vote of the citizens within the boundaries of the authority.

4.3 Special Improvement

When drainage improvements are financed as special improvements, the property assessed must be specially benefited. In Colorado, benefits, for purposes of special assessments, are defined in several statutory sections. (See 30-20-513, 30-20-606, 31-25-507, and 37-23-101.5 C.R.S.). For example, 37-23-101.5 C.R.S. provides:

Determination of special benefits—factors considered. (1) The term ‘benefit,’ for the purposes of assessing a particular property within a drainage system improvement district, includes, but is not limited to, the following: (a) any increase in the market value of the property; (b) the provision for accepting the burden from specific dominant

property for discharging surface water onto servient property in a manner or quantity greater than would naturally flow because the dominant owner made some of his property impermeable; (c) any adaptability of property to a superior or more profitable use; (d) any alleviation of health and sanitation hazards accruing to particular property or accruing to public property in the improvement district, if the provision of health and sanitation is paid for wholly or partially out of funds derived from taxation of property owners of the improvement district; (e) any reduction in the maintenance costs of particular property or of public property in the improvement district, if the maintenance of the public property is paid for wholly or partially out of funds derived from taxation of property owners of the improvement district; (f) any increase in convenience or reduction in inconvenience accruing to particular property owners, including the facilitation of access to and travel over streets, roads, and highways; (g) recreational improvements accruing to particular property owners as a direct result of drainage improvement.

This statute was adopted by the Colorado legislature to define “benefits,” a term previously defined only by courts. See Shoemaker, “What Constitutes ‘Benefits’ for Urban Drainage Projects,” 51 *Denver L. Journal* 551 (1974).

A special assessment for a local improvement must specifically benefit or enhance the value of the premises assessed in an amount at least equal to the burden imposed. Bloom v. City of Fort Collins, 784 P.2d 304 (Colo. 1989). Although a benefit to the premises assessed must at least be equal to the burden imposed, the standard of apportionment of local improvement costs to benefits is not one of absolute equality, but one of reasonable approximation. Satter v. City of Littleton, 185 Colo. 90, 522 P.2d 95 (1974). A presumption of validity inheres in a city council’s determination that benefits specifically accruing to properties equal or exceed assessments thereon. Satter, *supra*. Further, a determination of special benefits and assessments is left to the discretion of municipal authorities, and their determination is conclusive in the courts unless it is fraudulent or unreasonable. Orchard Court Development Co. v. City of Boulder, 182 Colo. 361, 513 P.2d 199 (1973). A determination of no benefit in an eminent domain proceeding does not preclude a subsequent special assessment providing a landowner’s property benefited from construction of the improvement. City of Englewood v. Weist, 184 Colo. 325, 520 P.2d 120 (1974). See, also, Denver v. Greenspoon, 140 Colo. 402, 344 P.2d 679 (1959); Town of Fort Lupton v. Union Pacific R.R. Co., 156 Colo. 352, 399 P.2d 248 (1965); Houch v. Little River District, 239 U.S. 254 (1915); and Miller and Lux v. Sacramento Drainage District, 256 U.S. 129 (1921).

4.4 Service Charge

UDFCD can charge service fees for the use of its facilities or services and thereby finance its improvements. 32-11-217 (l)(e), 32-11-306 C.R.S. provides:

Such service charges may be charged to and collected in advance or otherwise by UDFCD at any time or from time to time from any person owning real property within UDFCD or from any occupant of such property which directly or indirectly is, has been, or will be connected with the drainage and flood control system of UDFCD or from which or on which originates or has originated rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof) which have entered or may enter such system, and such owner or occupant of any such real property shall be liable for and shall pay such service charges to UDFCD at the time when and place where such service charges are due and payable.

Storm and flood control facilities fall within the definition of “sewerage facilities” defined in 31-35-401 (6) C.R.S.; 31-35-402 (1) C.R.S. states:

In addition to the powers which it may now have, any municipality, without any election of the taxpaying or qualified electors thereof, has power under this part for:

(f) to prescribe, revise and collect in advance or otherwise, from any consumer or any owner or occupant of any real property connected therewith or receiving service therefrom rates, fees, tolls, and charges or any combination thereof for the services furnished by, or the direct or indirect connection with, or the use of, or any commodity from such water facilities or sewerage facilities or both...

A service charge is neither a tax nor a special assessment but is a fee for the sole purpose of defraying the cost of establishing and maintaining a storm drainage and flood control utility. Western Heights Land Corp. v. City of Fort Collins, 146 Colo. 464, 362 P.2d 155 (1961). See, also, City of Aurora v. Bogue, 176 Colo. 198, 4-9 P.2d 1295 (1971); Brownbriar Enterprises v. City and County of Denver, 177 Colo. 198, 493 P.2d 352 (1972); and City of Boulder v. Arnold, 978 P.2d 149 (Colo. App. 1976) which upheld the City of Boulder's flood control fee. Counties in Colorado have similar powers pursuant to 30-20-402 (1) C.R.S.

4.5 Developer's Cost

A county planning commission or the board of adjustment of any county may condition any portion of a zoning resolution, or any amendments or exceptions thereto, upon "the preservation, improvement, or construction of any storm or floodwater runoff channel designated and approved by the Colorado Water Conservation Board." 30-28-111 (2) C.R.S.

Every Colorado County is required to have a planning commission to develop, adopt and enforce subdivision regulations. Among the provisions that the board of county commissioners must include in the county's regulations are those requiring developers to submit:

1. A plat and other documentation showing the layout or plan of development, including, where applicable, the following information:
 - i. Estimated construction cost and proposed method of financing of the streets and related facilities, water distribution system, sewage collection system, storm drainage facilities, and such other utilities as may be required of the developer by the county.
 - ii. Maps and plans for facilities to prevent stormwater in excess of historic runoff caused by the proposed subdivision from entering, damaging, or being carried by conduits, water supply ditches and appurtenant structures, and other storm drainage facilities. 30-28-133 (3)(c) C.R.S. Although Colorado law does not require it, in certain instances the maps and plans for facilities are required to include storage, treatment, and conveyance facilities for the total runoff from the proposed subdivision.

In addition, subdivision regulations must include provisions governing standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainage ways, which may require, in the opinion of the board of county commissioners, detention facilities which may be dedicated to the county or the public, as are deemed necessary to control, as nearly as possible, stormwaters generated exclusively within a subdivision from a one-hundred year storm which are in excess of the historic runoff volume of stormwater from the same land area in its undeveloped and unimproved condition. 30-28-133 (4)(b) C.R.S.

The United States Supreme Court in 1987 issued its opinion in the case of Nollan v. California Coastal Comm. 107 S.Ct. 3141 (1987). This was the first United States Supreme Court case to discuss exactions

imposed upon developers by local governments. The Court in Nollan held that the Coastal Commission's requirement that conditioning the granting of a rebuilding permit upon the landowner dedicating an easement that would allow the public to pass across the landowner's beach was an unconstitutional taking under the just compensation clause of the Fifth Amendment. The reasoning of the Court was that the requirement of the grant of the easement had no relationship to the request of the landowner for a rebuilding permit nor was it related to the impact of the issuance of that permit. The Court thus introduced the essential nexus test in regard to governmental exactions in exchange for building permits. In other words, the exaction by the government must have a relationship to the impact of the requested development. Although initially the Nollan case was thought to apply to both exactions of interest in land by government as well as the assessment of fees, subsequent cases have held that Nollan is only applicable to exactions and not fees.

In 1994, the United States Supreme Court in the case of Dolan v. City of Tigard 114 S.Ct. 2309 (1994) considered a case which involved drainage and exactions by the city in the form of dedication of property lying within the 100 year floodplain as well as an additional 15 feet as a pedestrian/bicycle pathway in order to obtain a permit to develop a site within the city. The U.S. Supreme Court added a second consideration to the one already contained in the Nollan case. The Court held that "we must first determine whether the 'essential nexus' exists between the legitimate state interests and the permit condition exacted by the city. If we find that a nexus exists, we must then decide the required degree of connection between the exactions and the projected impact of the proposed development." The Court went on to hold:

We think a term such as "rough proportionality" best encapsulates what we hold to be the requirement of the Fifth Amendment. No precise mathematical calculation is required, but the city must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.

This case too was thought initially to apply to both exactions in land by government as well as the assessment of fees. Again, subsequent cases limited the application of the Dolan case to exactions and not fees.

Subsequent to these cases, the Colorado Legislature enacted a statute codifying the requirements of Nollan and Dolan. See Section 3.2.3 *Regulatory Impairment of Property Rights*.

The "Local Government Land Use Control Enabling Act" C.R.S. § 29-20-104.5 C.R.S. became law in 2001 and its focus was on impact fees charged by local governments. The most important portion of the statute is set forth below.

(1) Pursuant to the authority granted in section 29-20-104 (1) (g) and as a condition of issuance of a development permit, a local government may impose an impact fee or other similar development charge to fund expenditures by such local government on capital facilities needed to serve new development. No impact fee or other similar development charge shall be imposed except pursuant to a schedule that is:

- (a) Legislatively adopted;
- (b) Generally applicable to a broad class of property; and
- (c) Intended to defray the projected impacts on capital facilities caused by proposed development.

(2) A local government shall quantify the reasonable impacts of proposed development on existing capital facilities and establish the impact fee or development charge at a level no greater than necessary to defray such impacts directly related to proposed development. No impact fee or other similar development charge shall be imposed to remedy any deficiency in capital facilities that exists without regard to the proposed development.

(3) Any schedule of impact fees or other similar development charges adopted by a local government pursuant to this section shall include provisions to ensure that no individual landowner is required to provide any site specific dedication or improvement to meet the same need for capital facilities for which the impact fee or other similar development charge is imposed.

(4) As used in this section, the term "capital facility" means any improvement or facility that:

(a) Is directly related to any service that a local government is authorized to provide;

(b) Has an estimated useful life of five years or longer; and

(c) Is required by the charter or general policy of a local government pursuant to a resolution or ordinance.

The "Local Government Land Use Control Enabling Act" restates many of the criteria for the imposition of fees by local governments, in regard to obtaining land-use approvals, which are discussed above. However, it also adds a number of other criteria that need to be met in order to not violate the statute, including the following:

1. The impact fee must be limited to impacts on capital facilities by the proposed development.
2. The local government must quantify the reasonable impacts that are directly related to the proposed development and charge a fee no greater than necessary to defray those impacts.
3. No impact fee shall be imposed to remedy any deficiency in capital facilities that exists without regard to the proposed development.
4. Both an impact fee and a site specific dedication may not be required to meet the same need for capital facilities.
5. A capital facility is defined as having a useful life of five years or longer.

The above is the general framework and legal authority that should be considered when attempting to comply with applicable statutory law and case law addressing the constitutional questions surrounding the imposition of a drainage basin fee.

Developers may be charged for general costs of drainage infrastructure required due to new development within and outside of the basin in which they are developing. However, in order to do so, it must be established that the impact fee is no greater than necessary to defray the cost of the impacts of that specific development. As long as an impact can be established outside of a drainage basin then an impact fee may include those impacts as well as those inside the drainage basin in which the development is located.

Developers may be charged the costs of drainage infrastructure associated with the runoff created by development if, again, those impact fees have been quantified by the local government and those fees directly relate to the impact of a specific development. The method of calculation of those fees only has to have a rational foundation and does not have to be the best, if there is a rational reason for the selection of the method of calculation.

Developers can also be charged for impact fees that contain a calculation for use of existing local government's stormwater systems to accommodate water originating from specific developments. Again, such impact fees must be no greater than necessary to defray the costs of the impacts of that specific development. In addition, the impact fee shall not be imposed to remedy any deficiency in capital facilities that exists without regard to the proposed development. The rationale for permitting an impact fee for use of existing facilities is that the increased runoff diminishes the capacity of the existing facilities which eventually will require additional improvements to address that diminished capacity.

The selection of whether the drainage fee will be uniform throughout the local government's boundary, by groups of basins with similar characteristics or by individual basins, is dictated by each of the requirements to meet the legal criteria set forth above as well as the ease in which the fee can be practically determined and implemented. The questions that need to be answered in the affirmative for one of these options to be selected are as follows:

1. Is there an essential nexus between the impact fee and the area grouping that the fee will apply to?
2. Is the impact fee roughly proportional to the needs of the grouping selected?
3. Does the fee defray impacts directly related to a proposed development?
4. Does the fee not remedy past deficiencies in capital facilities? and
5. Is there a rational foundation for the selection of the particular grouping?

In conclusion, based upon both case law from the U.S. Supreme Court and the Colorado courts as well as Colorado statutory law, there exists some protection for local governments in regard to drainage impact fees if such fees are legislatively enacted and there is no opportunity for local government to individually negotiate an extraction in exchange for a land-use approval.

In Wolf Ranch, LLC v. City of Colorado Springs, 220 P.3d 559 (Colo.2009) a drainage fee was imposed as a condition of land use approvals with a development. The fee was challenged and the Colorado Supreme Court held that because the Colorado General Assembly has authorized the fee, the fee was publicly promulgated on a per-acre basis and equally applied to all new development within the drainage basin; the fee was legally enforceable.

4.6 The Taxpayers Bill of Rights, Article X, Section 20, Colorado Constitution

On December 31, 1992 the Taxpayers Bill of Rights (TABOR) became effective. Its effect is to limit governmental spending generally so that "the maximum annual percentage change in each local district's fiscal year spending equals inflation in the prior calendar year plus annual local growth." In addition to a spending limitation, TABOR imposes a revenue limit that is similar to the spending limit. Finally, districts must have voter approval in advance for:

...any new tax, tax rate increase, mill levy above that for the prior year, valuation for assessment ratio increase for a property class, or extension of an expiring tax, or a tax policy change directly causing a net tax revenue gain to any district.

Prior to the passage of TABOR there were a number of cases that addressed whether a service charge was a tax. The first of note was Zelinger v. City and County of Denver, 724 P.2d 1356 (Colo. 1986) wherein a storm drainage service charge was attacked as an unconstitutional property tax and an unconstitutional denial of equal protection and due process guarantees to property owners. The storm drainage service charge applied to all owners of property in Denver and was used to pay for the operation, maintenance, improvement and replacement of the city's storm drainage facilities. The charge was based on the ratio of impervious to pervious land surface. The higher the ratio of impervious to pervious surface, the greater is the charge per square foot. The Colorado Supreme Court held that such a service charge was not a tax nor was it a violation of due process or equal protection. The court concluded with the following finding:

...although alternative cost allocation schemes may be equally well-suited or arguably better suited to serving the governmental interest in providing storm drainage facilities than the scheme actually adopted, the equal protection clauses do not authorize the invalidation of the scheme chosen unless it is without rational foundation.

The Zelinger case has continued as good law ever since 1986 and has been cited recently as the law of Colorado in regard to these matters. Thus, a storm drainage service charge similar to that adopted by Denver is not a tax and therefore is not subject to the limitations of TABOR.

In 1989 the Colorado Supreme Court revisited fees in the case of Bloom v. City of Fort Collins, 784 P.2d 304 (Colo. 1989). In that case the court considered a transportation utility fee and held that such a fee was not a property tax but rather a special fee imposed upon owners or occupants of developed lots fronting city streets and that such a fee is reasonably related to the expenses incurred by the city in carrying out its legitimate goal of maintaining an effective network of city streets. The court in reaching this conclusion considered any number of possibilities as to what this fee was and rejected the following as not applying: property tax, excise tax, and special assessment. It therefore found that the fee was a special fee that was a charge imposed on persons and property and reasonably designed to meet the overall cost of the service for which the fee is imposed.

Finally, in the case of City of Littleton v. State of Colorado, 855 P.2d 448 (Colo. 1993), the Colorado Supreme Court addressed another stormwater and flood management utility fee. The fee was enacted to prevent damage to property from accumulations and uncontrolled runoff of water. The ordinance declares that as the ultimate beneficiaries and users of the contemplated system, the owners of property within the city shall be required to pay a fee for the costs of constructing, operating, maintaining and replacing the system and its facilities. The state Community Colleges Board challenged the fee as a special assessment and thus something that could not be charged against the state. The court found that, despite the fact that the service fees did not specifically benefit the property owned by the state, it did create the capacity to remove excess water from property and prevent flooding, which benefited all property owners; thus, the fee is a permissible fee.

In conclusion, drainage fees, if properly structured, are not property taxes and can be implemented without TABOR implications. However, outside of Colorado, there have been five recent cases where each have held, for various reasons, that a "stormwater service charge," a "stormwater utility charge", and a "stormwater drainage service charge" are each a tax and not a fee. Those cases are Bolt v. City of Lansing, 561 N.W. 2d 423 (Mich. 1997); Fulton County Taxpayers Association v. City of Atlanta, Georgia, Superior Court of Fulton County, State of Georgia, Civil Action File Number: 1999 cv05897; City of Cincinnati v. United States, United States Court of Appeals for the Federal Circuit, 98-5039; Lewiston Independent School District et. al. v. City of Lewiston, Idaho Supreme Court, November 2011 (the stormwater fee is an unauthorized tax not reasonably related to a regulatory purpose) and Zweig v. Metropolitan St Louis Sewer District, Missouri Court of Appeals, March 2012 (stormwater charge is an unconstitutional tax).

4.7 Water Activities—Enterprise Statute 37-45.1-101 C.R.S.

This statute, which was adopted after the passage of TABOR, takes advantage of the exception in TABOR that the same does not apply to governmental enterprises by setting forth, in regard to water activities, what a governmental entity needs to do to become and remain an enterprise and thus not be subject to TABOR. Numerous Front Range cities have taken advantage of this statute to adopt enterprises without a vote of the people to address drainage and flooding issues in their municipalities.

The statute provides in regard to the establishment of a water activity enterprise that:

Any district which under applicable provisions of law has its own bonding authority may establish or may continue to maintain water activity enterprises for the purpose of pursuing or continuing water activities including...water project or facility activities, including the construction, operation, repair, and replacement of water or wastewater facilities. Any water activity enterprise established or maintained pursuant to this article is excluded from the provision of Section 20 of Article X of the state constitution.

The statute defines “water project or facility” as including a dam, storage reservoir, compensatory or replacement reservoir, canal, conduit, pipeline, tunnel, power plant, water or wastewater treatment plant, and any and all works, facilities, improvements, and property necessary or convenient for the purpose of conducting a water activity. The statute also defines water activity as including stormwater services.

Two restrictions in regard to water activity enterprises are that they cannot receive more than 10 percent of their annual revenues from grants from state and local governmental entities and that an enterprise may not tax.

5.0 Floodplain Management

Floodplain management involves fuller use of non-structural techniques. See 24-65.1-202 (2)(a)(I) C.R.S. Such techniques include:

1. Floodplain zoning and building code ordinances to regulate flood area construction.
2. Flood insurance programs.
3. Flood warning systems, including notification to occupants of floodplains.

See Westen, *Gone With the Water—Drainage Rights and Storm Water Management in Pennsylvania*, 22 Vill. L. Rev., 901, 972 (1976-77).

5.1 Floodplain Regulations

5.1.1 Constitutional Considerations

The general principles of zoning were established in Village of Euclid v. Amber Realty Co., 272 U.S. 365 (1926), in which the U.S. Supreme Court stated:

While the meaning of constitutional guarantees never varies, the scope of their application must expand or contract to meet new and different conditions that are constantly coming within the field of their operation.

The court in Colorado has determined that zoning is justified as a valid exercise of police power, and that this legal basis for zoning legislation must be reconciled with the legitimate use of private property, in harmony with constitutional guarantees. Westwood Meat Market, Inc. v. McLucas, 146 Colo. 435, 361 P.2d 776 (1961); People ex rel. Grommon v. Hedgcock, 106 Colo. 300, 104 P.2d 607 (1940).

The adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking. Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987).

5.1.2 Statutory Grants of Power

Specific legislative action has given local governments authority to proceed in floodplain regulation. In Colorado, cities, counties, and UDFCD all have plenary grants of power.

The governing body of each municipality has the following authority:

To establish, regulate, restrict and limit such uses on or along any storm or floodwater runoff channel or basin, as such storm or floodwater runoff channel or basin has been designated and approved by the Colorado Water Conservation Board, in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or floodwaters. 31-23-301 (1) C.R.S.

Counties in Colorado are directly authorized by statute to adopt zoning plans concerned with regulating use in a floodplain area through the provisions of 30-28-111 (1) C.R.S.:

...the county planning commission may include in said zoning plan or plans provisions establishing, regulating, and limiting such uses upon or along any storm or water runoff channel or basin as such storm or runoff channel or basin has been designated *and* approved by the Colorado Water Conservation Board in order to lessen or avoid the hazards to persons and damage to property resulting from the accumulation of storm or flood waters.

Home rule counties and cities have the same powers as noted above. These powers may be expanded by charter as long as those powers do not violate the Colorado constitution dealing with home rule governmental entities.

UDFCD is authorized to:

...adopt, amend, repeal, enforce, and otherwise administer under the police power such reasonable floodplain zoning resolutions, rules, regulations, and orders pertaining to properties within the district of any public body or other person (other than the federal government) reasonably affecting the collection, channeling, impounding or disposition

of rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof), including without limitation variances in the event of any practical difficulties or unnecessary hardship and exceptions in the event of appropriate factors, as the board may from time to time deem necessary or convenient. In the event of any conflict between any floodplain zoning regulation adopted under this section and any floodplain zoning regulation adopted by any other public body, the more restrictive regulation shall control. (emphasis added) 32-11-218 (1) (f) (I) C.R.S.

Because of the underlined language above, UDFCD has proceeded on the basis that if local governments within UDFCD fail to adopt floodplain regulations, then UDFCD would administer its regulation within that local jurisdiction. Further, since UDFCD's regulation prohibits residential development within the floodway (the most hazardous portion of the floodplain), any local government failing to prohibit residential development within the floodway would be governed by UDFCD's regulation inasmuch as UDFCD's regulation would be "more restrictive" and, thus, controlling under the statute.

5.1.3 Court Review of Floodplain Regulations

The leading Colorado case is Famularo v. Adams County, 180 Colo. 333, 505 P.2d 958 (1973), in which the Colorado Supreme Court upheld the District Court's findings that (1) the Adams County Commissioners had authority to regulate, by resolution, the uses of land in unincorporated areas for "trade, industry, residence, recreation, or other purposes, and for flood control"; and (2) the regulation in question did not so limit the uses of plaintiff's land so as to violate the Colorado Constitution, Article II, §25 or the U.S. Constitution, Amendment XIV.

In the case of Kolwicz v. City of Boulder, 538 P.2d 482 (Colo. App. 1975) the court was asked to determine if a city resident had standing to sue the city to require the city council and its administrator to implement floodplain regulations by adopting a map that delineated the floodway and the flood storage areas within the floodplain, for which the city had adopted a map four years prior to the lawsuit. The court denied the city resident's request on the basis that nothing in the record showed that the resident herself had been aggrieved, wronged, or had any of her rights impaired or threatened as a result of the city council's failure to implement its regulations.

In the case of Hermanson v. Board of County Commissioners of Fremont, 595 P.2d 694 (Colo. App. 1979), the court addressed an assertion by the plaintiff that his property had been taken from him because of a series of regulatory obstructions to its development that had been imposed by the county. The plaintiff alleged that his property had been taken by inverse condemnation, and the court found that such an action is justified when there has been a taking of private property for public use without payment of just compensation by some public body that has the power of eminent domain. However, the court did acknowledge that it is true that the use of property may be regulated by valid exercise of the police power, if the regulation does not go beyond protection of the public health, safety, morals, and welfare. Therefore, it found that, when regulations are designed to depress value with a view to future acquisition, this may form the basis of a cause of action for compensation on the theory of inverse condemnation against the public entity initiating the regulation.

Finally, in the case of Morrison v. City of Aurora, 745 P.2d 1042 (Colo. App. 1987), a property owner alleged that the city's adoption of floodway restrictions was a taking of his property. The court found for the city, since an adoption by a municipality of floodplain ordinances to regulate flood-prone areas is a valid exercise of police power and is not a taking.

In Colorado, the legislature has taken the lead in granting local governments power to regulate flood hazard areas. Usually, courts interpret such regulation that follows on a case-by-case basis, depending on what is "reasonable" under the circumstances. Some guidelines that have emerged in anticipating

"reasonableness" follow.

Restriction of Uses

The restriction of uses on property that would prevent a public harm, as opposed to the creation of a public *benefit*, removes the requirement of compensation to property owners who are restricted from the full use of their property. Dunham, *A Legal and Economic Basis for City Planning*, 58 Colum. L. Rev. 650 (1958).

The restrictions on the uses must not be so severe as to deny the owners a constitutional right to make "beneficial use" of their land because such restrictions would be confiscatory and void. Francis v. City and County of Denver, 160 Colo. 440, 418 P.2d 45 (1966). However, a zoning ordinance is not unconstitutional because it prohibits a landowner from using or developing his or her land in the most profitable manner. It is not required that a landowner be permitted to make the best, maximum or most profitable use of his or her property. Baum v. City & County of Denver, 363 P.2d 688 (Colo. 1961); and Sundheim v. Board of County Commissioners of Douglas County, 904 P.2d 1337 (Colo. App. 1995).

Health Regulations

The relationship of the zoning restrictions to the public's health, safety, morals, and general welfare must be considered. Whether the zoning provisions are reasonable and for the promotion of the public's welfare must be determined by the court from the facts, circumstances, and locality in a particular case. DiSalle v. Giggall, 128 Colo. 208, 261 P.2d 499 (1953).

A similar matter in zoning restrictions was determined by the U.S. Supreme Court in upholding the validity of the police power in a zoning ordinance that prohibited excavation below a certain water table, which in effect deprived the property of its most beneficial use, stated:

The ordinance in question was passed as a safety measure, and the town is attempting to uphold it on that basis. To evaluate its reasonableness, we therefore need to know such things as to the nature of the menace against which it will protect the availability and effectiveness of other less drastic protective steps, and the loss which the appellants will suffer from the imposition of the ordinance. Goldblatt v. Town of Hempstead, (N.Y.) 369 U.S. 590 (1962).

This holding appears to coincide with the Colorado cases on the requirements for the determination by the court from facts, circumstances, and locality in a particular case, as to the reasonableness of the zoning ordinances in their promotion of the general welfare, and to prove that the restrictive use would bear a substantial relation to the public's health, safety, morals, or general welfare. DiSalle v. Giggall, supra; Westwood Meat Market, Inc. v. McLucas, supra.

Determination of Boundaries

The boundaries of the floodplain should be accurately determined and based on a reasonable standard. Mallett v. Mamaroneck, 1313 N.Y. 821, 125 N.E. 2d 875 (1955).

The setting of the boundaries of the floodplain zone to determine the hydraulic reach of a potential flood should be determined accurately. The accuracy of which will be affected by terrain, river course, and other factors that will necessarily cause some variation from the initially adopted boundary.

The Federal Emergency Management Agency (FEMA), U.S. Army Corps of Engineers, Colorado Water Conservation Board (CWCB), UDFCD, and local governments have conducted extensive stream surveys throughout Colorado. There is extensive written guidance about the methodology to be used in conducting these surveys that are required to be completed using reasonable engineering / scientific standards and have often become an integral part of the floodplain zoning ordinances and resolutions

adopted by Colorado's cities and counties.

The CWCBC has actively cooperated in the past to designate and approve such areas as delineated as a storm or "floodwater runoff channel or basin." Such approval or designation of a runoff channel or basin by the CWCBC is required by statute prior to any action by a local government, including UDFCD, to set the boundaries on proposed floodplain zoning resolutions.

5.2 Flood Insurance

The National Flood Insurance Act of 1968, as amended in 1973, provides for a federally subsidized flood insurance program conditioned on active management and regulation of flood plan development by states and local governments. 42 U.S.C., §§4001 and 4128; 24 C.F.R., §1979.1-1925.14 (1975). Communities designated as flood prone by FEMA can obtain flood insurance eligibility for structures within the community upon meeting the qualifications of the act by developing a floodplain management system. Development of a floodplain management system requires the community to promulgate a land use and building permit system that restricts development in flood hazard areas. FEMA publishes a list, updated monthly, of the status of communities. Flood insurance is provided on a subsidized basis through all licensed insurance agents.

Federally regulated lending institutions (FDIC, ESLIC, NCUA) must require flood insurance for loans made on structures in FEMA-identified flood hazard areas in communities where flood insurance is available. The lender is required to give notice to the borrower 10 days in advance that the property securing the loan is located in a flood hazard area, and written acknowledgement of the borrower's knowledge of the flood hazard must be obtained. If flood insurance is not available in the community, the lender may still make the loan, but he or she must notify the borrower that federal disaster assistance may not be available in the event of a flood disaster. Federally insured loans (SBA, VA and FHA) have the same requirements, with the exception that they cannot be made on property located in a FEMA identified flood hazard area if flood insurance is not available in the community.

An area of great concern is whether flood hazard boundaries should be based on current development in the drainage watershed or on future development. FEMA uses current development as its criteria. UDFCD uses future development, which results in the regulation of a larger floodplain area in most instances. Although the watershed may take time to develop in accordance with the local government's Master Land Use Plan and land use requirements may call for on-site upstream detention, it is UDFCD's position that "future condition" criterion is preferable because existing floodplain users are put on notice of what the future may bring, and potential users of the floodplain are also put on notice of the potential hazard. The net result is a more restrictive regulation under 32-11-218 (l)(f) C.R.S. This section of the statute reads as follows: "To adopt, amend, repeal, enforce, and otherwise administer under the police power such reasonable floodplain zoning resolutions, rules, regulations, and orders pertaining to properties within the district of any public body or other person (other than the federal government) reasonably affecting the collection, channeling, impounding, or disposition of rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof), including without limitation variances in the event of any practical difficulties or unnecessary hardship and exceptions in the event of appropriate factors, as the board may from time to time deem necessary or convenient. In the event of any conflict between any floodplain zoning regulation adopted under this section and any floodplain zoning regulation adopted by any other public body, the more restrictive regulation shall control." With UDFCD being granted police powers it is granted discretion to adopt positions that have as their purpose the protection of life and property. Another example of UDFCD's exercise of its police powers is its position of privately owned detention facilities. UDFCD will not permit the recognition of those facilities unless there are written adequate assurances that the detention facility will not be modified in a way that it would reduce its flood control benefits.

5.3 Flood Warning Systems and Notification

UDFCD has adopted a procedure to notify known occupants of identified flood hazard areas (100-year floodplains). Although larger floods can and do occur, the local governments in Colorado are directed by the legislature to identify the areas that would be affected by 100-year storms. The CWCB has been directed by the legislature to coordinate this land use program.

UDFCD's "Flood Hazard Information Official Notice" also suggests actions that individuals can take to help themselves mitigate the hazard. This notice is mailed annually to the occupants of all residential units identified as being in the flood hazard area.

With the use of radar and a communications network, UDFCD has put in place a system to help inform all residents of UDFCD of potential flooding.

There is no legal requirement that UDFCD utilize any of these notification procedures. However, 32-11-220 (1)(c) C.R.S. provides that UDFCD has the power: "To carry on technical and other investigations of all kinds, make measurements, collect data, and make analyses, studies, and inspections pertaining to the facilities and any project, both within and without the district" Therefore, given the power to determine the location of 100-year floodplains and to gather information in regard to potential flooding; it follows that such information should be disseminated to the public.

As noted earlier, UDFCD, by reason of it taking on these tasks, does not assume any liability since it is protected under the Colorado Governmental Immunity Act.

6.0 Special Matters

6.1 Irrigation Ditches

In situations in which an irrigation ditch intersects a drainage basin, the irrigation ditch does not have to take underground waters diverted by a tile drain. However, the surface drainage must be accepted if the irrigation ditch is constructed in such a way that surface water would naturally flow into it. Clark v. Beauprez, 151 Colo. 119, 377 P.2d 105 (1962) (between private parties, the owner of an irrigation ditch can prevent an upstream landowner from diverting waters from their natural course into the irrigation ditch); City of Boulder v. Boulder and White Rock Ditch & Reservoir Company, 73 Colo. 426, 216 P. 553 (1923) (where an irrigation ditch was constructed in a natural drainageway into which surface water would naturally flow, the ditch owners could not complain merely on the ground that the city, in building storm sewers, collected the surface water and accelerated its flow and precipitated or discharged it at some particular point in the line of the ditch instead of spreading it out at different places of entrance).

In urbanizing areas, the conflict between the natural flow of surface water and irrigation ditches which bisect many drainage basins continues to be a difficult condition to resolve, taking into consideration the rights and liabilities of upstream property owners and irrigation ditch owners. Innumerable natural drainageways have been blocked by irrigation ditches, although they were constructed long before the basin became urbanized. This special area of urban drainage points to the need for good land use requirements, as well as identification of potential problem areas.

7-42-108 C.R.S. provides in part that:

Every ditch corporation organized under the provisions of law shall be required to keep its ditch in good condition so that the water shall not be allowed to escape from the same to the injury of any mining claim, road, ditch, or other property.

This provision of Colorado law was interpreted in the case of Oliver v. Amity Mut. Irrigation Co., 994 P.2d 495 (Colo. App. 1999). In this case, the ditch company was being sued for damages to property resulting from a break in the bank of the ditch company's ditch. The court held that the statute imposed a duty of ordinary care, such as a person of average prudence and intelligence would use, under like circumstances to protect his or her own property. The court went on to state that, in order for the ditch company to fulfill its statutory duty, it had to prevent erosion of the ditch bank, keep the ditch free of sediment and debris, and control the amount of water flowing through its ditch, among other things, keeping the spillway at the intersection of its ditch and another free of obstructions. Finally, the court concluded that, although a ditch company is not liable for damages caused solely by an act of God, the company may not escape liability if its negligence contributed to or cooperated with an act of God to cause the damage.

In conclusion, those that own ditches owe a duty to those property owners, whose property their ditches pass to maintain their ditches, using ordinary care so as to prevent damage to the adjoining real property.

6.2 Dams and Detention Facilities

Subdivision regulations adopted by the board of county commissioners must include provisions requiring subdivisions to submit:

Maps and plans for facilities to prevent stormwaters in excess of historic runoff, caused by the proposed subdivision, from entering, damaging, or being carried by conduits, water supply ditches and appurtenant structures, and other storm drainage facilities. 30-28-133 (3)(c)(VIII) C.R.S.

In addition, the regulations must include provisions governing:

Standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainageways, which may require, in the opinion of the board of county commissioners, detention facilities which may be dedicated to the county or the public, as are deemed necessary to control as nearly as possible, stormwaters generated exclusively within a subdivision from a one-hundred year storm which are in excess of the historic runoff volume of stormwater from the same land area in its undeveloped and unimproved condition. 30-28-133 (4)(b) C.R.S. See Shoptaugh v. Board of County Commissioners, 543 P.2d 524 (Colo. App. 1975).

The law in regard to liability for damages caused by failure of a dam or detention facility has changed. In the case of Kane v. Town of Estes Park, 786 P.2d 412 (Colo. 1990), the Colorado Supreme Court considered the issue of whether the Town of Estes Park was negligent for the failure of its dam and reservoir, which was the result of the failure of an upstream dam. The court held that "To impose a burden on a downstream builder to construct facilities adequate to hold or bypass the entire capacity of an upstream reservoir has the potential for foreclosing construction of beneficial downstream storage facilities because of prohibitive costs." The court then concluded as follows:

In summary, we hold that public entities that own dams or reservoirs are not subject to strict liability for damages caused by water escaping from their dams or reservoirs.

Furthermore, we hold that Estes Park had no duty to ensure that waters released from an upstream reservoir because of a dam failure of this magnitude would be contained by its facilities or would bypass those facilities without augmentation.

The Colorado legislature, in response to the 1982 flood that then resulted in the above-referenced lawsuit, amended the statute in regard to storage reservoirs to clarify the law. The applicable sections of 37-87-104 C.R.S. read as follows:

1. Any provision of law to the contrary notwithstanding, no entity or person who owns, controls, or operates a water storage reservoir shall be liable for any personal injury or property damage resulting from water escaping from that reservoir by overflow or as a result of the failure or partial failure of the structure or structures forming that reservoir unless such failure or partial failure has been proximately caused by the negligence of that entity or person. No entity or person shall be required to pay punitive or exemplary damages for such negligence in excess of that provided by law. Any previous rule or law imposing absolute or strict liability on such an entity or person is hereby repealed. See also East Meadows Company, LLC v. Greeley Irrigation Company, 99 P.3d 214 (Colo. App. 2003).
2. No such entity or person shall be liable for allowing the inflow to such reservoir to pass through it into the natural stream below such reservoir.

The law therefore is relatively clear now in regard to the ownership of dams and reservoirs and the owner's liability for them. No longer are dam owners subject to strict liability for damages caused by those dams. Meaning, that now in order to hold a dam owner responsible for damage caused by the dam, it must be established that the dam owner was negligent in maintenance or operation of the dam. However, this test of negligence is further limited by the law's permission to dam owners to pass all inflows through the dam.

The court, in the case of Barr v. Game, Fish and Parks Commission, 497 P.2d 340 (Colo. App. 1972), held that the criteria for the construction of a dam is to safely pass the probable maximum precipitation (PMP). In Barr, the Colorado Court of Appeals found that, since modern meteorological techniques provide a method of predicting the probable maximum storm and flood, liability should be imposed for injuries resulting from a failure to determine the probable maximum flood and to design and construct a dam with a spillway having the capacity to handle that storm. The court stated:

The maximum probable storm, by definition, is both maximum and probable. It can and may occur... Thus being both predictable and foreseeable to the defendant in the design and construction of the dam, the defense of act of God is not available to them.

However, the Colorado State Engineer, pursuant to 37-87-105 (1) and (3) C.R.S. must approve plans and specifications for the alteration, modification, repair, or enlargement of a jurisdictional reservoir or dam and, pursuant to regulation, may impose less stringent requirements than those dictated by consideration of the PMP. In fact, the Colorado State Engineer has issued *Rules and Regulations for Dam Safety and Dam Construction*, 2 CCR 402-1 (September 1988) wherein at Rule 4 dams are classified based upon an evaluation of the consequences of the failure of the dam absent of flooding conditions. Based upon that classification, Rule 5 sets forth the inflow design flood to be used in determining the spillway capacity of that dam.

A question arises, however, regarding the proper criteria to use in determining the size of the floodplain or channel below the dam: the 100-year flood, before the dam was constructed or after construction? This special area has not been resolved by either the legislature or the courts in Colorado. However, since some dams and reservoirs are required by law to safely pass the PMP (storms greater than the 100-year

storm) it might be argued that the watercourse below the dam should be constructed to at least carry the same water as before construction of the dam. Assuming the dam safely passes a 500-year flood, for example, the 100-year floodplain would obviously be inadequate. But with no dam in place, the same floodplain would also be inadequate.

30-28-133 (4)(b) C.R.S. provides: “Standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainage ways, which may require, in the opinion of the board of county commissioners, detention facilities which may be dedicated to the county or the public, as are deemed necessary to control, as nearly as possible, stormwaters generated exclusively within a subdivision from a one hundred year storm which are in excess of the historic runoff volume of stormwater from the same land area in its undeveloped and unimproved condition” Therefore, based upon this statute as well as accepted engineering design standards, if it is possible to design a facility based upon a 100-year storm frequency and to limit development in a 100-year floodplain, that should occur.

Preserving the 100-year floodplain before the dam was constructed, where possible, is prudent and will lessen damage below the newly constructed dam in the larger than 100-year storm, although not for the PMP.

6.3 Stormwater Management and Water Law

Stormwater runoff is a major non-point source of water pollution. In urbanizing areas, where land-disturbing activities are numerous, stormwater washes soil and sediment into surface waters causing increased levels of turbidity and eutrophication, threatening fish and wildlife, and blocking drainage. In developed areas, runoff carries with it the pollutants from surfaces over which it runs, including, oil, litter, chemicals, nutrients and biological wastes, together with soils eroded from downstream channels of the flow. U.S. Environmental Protection Agency, Legal and Institutional Approaches to Water Quality Management Planning and Implementation. VI-I (1977).

It is reasoned that water quality control should be an integral part of any drainage or stormwater management program, since stormwater management techniques are often consistent with water quality objectives. However, this special area, as related to urban drainage, has not been researched adequately enough so as to provide the facts upon which a cost-effective approach could integrate water quality objectives with plans for surface drainage improvements. See City of Boulder v. Boulder and White Rock Ditch & Reservoir Company, 73 Colo. 426, 216 P. 553, 555 (1923).

Currently, counties and municipalities are under regulation through the U.S. Environmental Protection Agency and the State of Colorado to address water quality issues. Volume 3 of the USDCM deals in detail with those requirements.

Water quality has become an integral part of each and every drainage and flood control facility that is being constructed in the United States. Some of the emerging issues in regard to water quality are numeric effluent limits, TMDLs (total maximum daily loads) and LID (low impact development). Although it is not the purpose of this section of the USDCM to address these issues from an engineering standpoint (See Volume 3), it is important to note their existence and, in some cases, their unintended consequences.

In the case of the EPA’s regulation of numeric effluent limits, as a result of litigation, the EPA has agreed to withdraw the numeric turbidity effluent limitation and monitoring requirements and to add a definition of “infeasible” recognizing that there can be a site-specific constraint that makes it technically infeasible

to implement the effluent limits, or that implementing the requirement would be cost-prohibitive.

In regard to TMDLs, the EPA has identified the total pollutant loading that a waterbody can receive and still meet water quality standards, and specifies a pollutant allocation to specific point and nonpoint sources. The difficulty in meeting the TMDL standards is designing a system that addresses those standards without impacting the water rights of others.

LID practices include BMPs that divert and consume rain water (e.g., bioretention facilities, rain gardens, green roofs, and rain barrels). The problem with each of these, especially in the arid West, is that in some cases they may impact on a water right owned by others. If such an issue is raised by either the state or a water rights owner, the impact could cause the use of certain BMPs to become uneconomical. In addition, consideration should be given to the design of certain BMPs when located close to other structures so as to avoid a claim of damage to those adjacent structures by reason of the detained water.

Colorado laws are so strict that even when a pilot program was approved by the Colorado General Assembly (37-60-115 C.R.S.) permitting the collection of precipitation from rooftops and impermeable surfaces for nonpotable uses, the participants were required to replace the water that was captured by those means.

On May 11, 2011 the Colorado Department of Natural Resources Division of Water Resources issued a Memorandum in regard to stormwater management. It required that all detention and/or infiltration facilities that are used for managing stormwater quality and volume of discharge must release all of the water detained from the site within 72 hours of the end of the precipitation event. In regard to green roofs, those may only intercept precipitation that falls directly onto the landscaping and the green roof may not intercept and consume concentrated flow and may not store water below the root zone. This memorandum only applied to individual sites and did not provide legal protection. In 2014, UDFCD requested the same administrative allowance for regional installations and was denied. UDFCD, with support from communities within the region, sought legislation to provide legal protection for both individual and regional water quality and flood control facilities.

In May 2015, Senate Bill 15-212 was signed into law by Governor Hickenlooper and became effective August 5, 2015 as Colorado Revised Statute (CRS) 37-92-602 (8). The statute provides legal protection for any regional or individual site stormwater detention and infiltration facility in Colorado except those in the Fountain Creek watershed that are not required by or operated in compliance with an MS4 permit, provided meets the following criteria:

1. It is owned or operated by governmental entity are subject to oversight by a governmental entity (e.g., required under an MS4 permit);
2. It continuously releases or infiltrates at least 97 percent of all the runoff from a rainfall event that is less than or equal to 85 year storm within 72 hours after the end of the event;
3. It continuously releases or infiltrates as quickly as practicable, but in all cases releases or infiltrates at least 99 percent of the runoff within 120 hours after the end of events greater than a five year storm; and
4. It operates passively and is not subject this storm water runoff to any active treatment process (e.g., coagulation, flocculation, disinfection, etc.).

6.4 Professional Responsibility

The Colorado Rules of Professional Conduct of the State Board of Registration for Professional Engineers and Professional Land Surveyors provides in the *Basis and Purpose* section the following:

In order to safeguard life, health and property, to promote the public welfare, and to establish and maintain a high standard of integrity and practice, the following Rules of Professional Conduct shall be binding on every person holding a certificate of registration and on all partnerships or corporations or other legal entities authorized to offer or perform engineering or land surveying services in Colorado.

These Rules were authorized by Colorado statute and in 12-25-108 (1) C.R.S.

The board has the power to deny, suspend, revoke, or refuse to renew the license and certificate of registration of, limit the scope of practice of, or place on probation, any professional engineer or engineer-intern who is found guilty of:...(e) Violating, or aiding or abetting in the violation of,...any rule or regulation adopted by the board in conformance with the provisions of this part 1,...Rule I—Registrants shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.

2. Rule I shall include, but not be limited to, the following:

- A. Registrants shall at all times recognize that their primary obligation is to protect the safety, health, property and welfare of the public. If their professional judgment is overruled under circumstances where the safety, health, property or welfare of the public are endangered, they shall notify their employer or client and/or such other authority as may be appropriate.

Based upon the law and rule set forth above, a professional engineer is required not only to serve the interests of his or her employer/client but is also required as a primary obligation to protect the safety, health, property, and welfare of the public. Therefore, this obligation of protection is superior to the obligation to an employer/client and therefore must be considered in all professional decisions made by a professional engineer. Therefore, an engineer is required even if there is no law or regulation being violated to act to protect the safety, health, property, and welfare of the public in regard to any portion of a project in which the engineer is involved. In addition, a goal of an engineer should also be to report to an appropriate authority any condition on a project that jeopardizes the safety, health, property, or welfare of the public even if that condition is not his or her responsibility.

6.5 Professional Liability

For those practicing a profession requiring specialized knowledge or skill, reasonable care requires the actor to possess "a standard minimum of special knowledge and ability" and to exercise reasonable care "in a manner consistent with the knowledge and ability possessed by members of the profession in good standing." Rian v. Imperial Municipal Services Group, Inc., 768 P.2d 1260 (Colo.App.1989). This statement of the law applies to engineers in the State of Colorado.

Specific suggestions for design engineers to reduce their liability in regard to drainage-related work include the following:

- Check projected peak flows for reasonableness using multiple methods.
- Check for evidence of historic flooding.
- Make sure to coordinate design work with all applicable local governments and potentially other affected parties, such as railroads, highway departments, adjoining public and private property owners, and others.

- Be very sure of what local, state and federal regulations apply, and bring all of them to the attention of the project applicant.
- Assure that there is an adequate drainage outfall for runoff from the development.
- Be careful about changing the historic drainage status quo—carefully examine upstream and downstream implications.
- Bring in special assistance when merited.
- Stay abreast of new laws, regulations, policies, news events, etc., in the areas in which one is practicing.²

6.6 Miscellaneous Issues

1. Reliance on others' work in performing engineering services including relying on FIRM maps prepared by FEMA. An engineer is not required to re-perform another's work upon which the engineer relies. However, an engineer should critically review the work to determine if there are any obvious errors.
2. Reliance on local governments in regard to the National Flood Insurance Program. The NFIP is a Federal program created by Congress to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally backed flood insurance protection for property owners. In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories. Most areas of flood hazard are commonly identified on Flood Insurance Rate Maps (FIRMs). An engineer should always check the FEMA National Flood Insurance Program Community Status Book to determine whether the community that the engineer is working in has been put on probation, suspended for failure to enforce or withdrawn from the NFIP. If so, caution should be exercised in regard to reliance on the community to enforce the FIRMs applicable to that community.
3. The Urban Drainage and Flood Control District Board is given broad powers in regard to the adoption of master plans. "To adopt, amend, repeal, enforce, and otherwise administer under the police power such reasonable floodplain zoning resolutions, rules, regulations, and orders pertaining to properties within the district of any public body or other person (other than the federal government) reasonably affecting the collection, channeling, impounding, or disposition of rainfall, other surface and subsurface drainage, and storm and flood waters (or any combination thereof), including without limitation variances in the event of any practical difficulties or unnecessary hardship and exceptions in the event of appropriate factors, as the board may from time to time deem necessary or convenient. In the event of any conflict between any floodplain zoning regulation adopted under this section and any floodplain zoning regulation adopted by any other public body, the more restrictive regulation shall control." 32-11-218 (1)(f)(I) C.R.S. As noted in the last sentence of the statute, the more restrictive floodplain boundary will always apply in these matters. In addition, as long as master plans whether adopted by UDFCD or any other governmental entity

² Jonathan E. Jones, P.E., D.WRE

are adopted during a legislative process with public notice, the challenge to those master plans will most likely be unsuccessful due to Colorado law (29-20-203 C.R.S.)

4. If a developer constructs onsite detention but the same is not recognized by UDFCD or another governmental entity, is the developer afforded legal protection from downstream property owners? Whether UDFCD or another governmental entity recognizes a private onsite detention facility, has no bearing on a developer's potential legal liability to downstream property owners. The test, in this case, is whether the discharge from the development is in a manner or quantity to do more harm than formerly downstream. If it is, the developer would be liable for that damage. If it is not, the developer would not be liable to downstream property owners. Hankins v. Borland, 431 P.2d 1007 (Colo. 1967).
5. Engineers should be aware that just following the USDCM or similar manual adopted by a governmental entity in their design efforts might not be enough to meet all of the governmental regulations applicable to the design. For example, zoning ordinances and subdivision regulations, or similar documents may be applicable to the design being prepared. Checking with the governmental department in the community where the structure is to be built usually will provide the engineer with information in regard to all standards that need to be complied with in regard to the design.
6. Changing historic drainage capacity must be carefully analyzed in regard to the impact on both upstream and downstream property owners. If the capacity of a culvert is being increased, before that increase takes place, adequate sizing increases of facilities downstream must take place to accommodate those increased flows otherwise liability to downstream property owners damaged by that increase may occur. Scott v. City of Greeley, 931 P.2d 525 (Colo.App. 1996).
7. Drainage and flood control structures once constructed should be maintained so as to function over the years as designed. Understanding the importance of maintaining UDFCD constructed infrastructure, the Colorado General Assembly added the ability for UDFCD to levy up to one-half mill for these expenses. This ability was added to the UDFCD statute and covers operation and maintenance expenses. The failure to maintain drainage and flood control structures can lead to damage to property and injury or death of individuals. An example of this would be the failure of pipe under a highway while automobiles are travelling on the highway. Not only may the highway be damaged, but the traveling public may be injured due to collapse of the highway.
8. Prior to Colorado law changing in regard to liability of governmental entities for drainage and flood control facilities that they construct, operate and maintain (See Section 1.2 2. of this chapter), governmental entities were found legally responsible for injuries and deaths that occurred in those facilities. In the case of City of Longmont v. Henry-Hobbs, 50 P.3d 906 (Colo. 2002) the Colorado Supreme Court found that a city is liable for a death that occurred in an artificial irrigation ditch of which the city is a shareholder and which is an integral part of the city's storm drainage system. The spillway in which a child drowned was constructed for and adopted by the city as part of the use of the ditch and the alleged negligence related to the design of this spillway. The Court held that thus, his death may have resulted from the operation and maintenance of a sanitation facility.

In a companion case, the Colorado Supreme in the case of City of Colorado Springs v. Powell, 49 P.3d 561 (Colo. 2002) held the city may have been negligent in failing to post warning signs that would have alerted a passersby to the danger of the ditch. Further, the Court held the city may have been negligent in constructing the ditch with steep concrete sides that make it difficult to escape.

Although, governmental entities may be immune from liability in regard to drainage and flood control facilities, this immunity does not extend to privately owned drainage and flood control facilities.

7.0 Conclusion

The force of gravity, which causes all waters flowing on the earth to seek the lowest level, creates natural drainage and provides for the distribution of all water, whether surface or otherwise. This natural drainage is necessary to render the land fit for the use of man.

The streams are the great natural sewers through which the surface water escapes to the sea, and the depressions in the land are the drains leading to the streams. These natural drains are ordained by nature to be used and, so long as they are used without exceeding their natural capacity, the owner of land through which they run cannot complain that the water is made to flow in them faster than it does in a state of nature. 2 Farnham, Water and Water Rights, p. 968.

Drainage is both simple and complicated. If the facts are ascertained and a plan is developed before initiating a proposed improvement, the likelihood of an injury to a landowner is remote, and the municipality or developer should be able to undertake such improvements relatively assured of no legal complications and be able to use several different means of financing the improvement.

An engineer designing drainage improvements should consider the following:

1. Walking the site or watershed under study.
2. Whether there are existing problems and what causes them (obstructions, topography, development, present or future).
3. Whether proposed improvements will make the situation better.
4. Whether the proposed improvements require or result in changes to the natural drainage patterns.
5. Whether there is potential liability for doing something versus doing nothing.
6. Who will benefit from the proposed improvements?
7. If what is proposed is “reasonable,” using the criteria set forth in paragraph 2.1.3.