

CHAPTER 2

LEGAL ASPECTS

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2.1 OVERVIEW

2.1.1 Introduction

Various drainage laws and rules applicable to highway facilities are discussed in this Chapter. The intention is only to provide information and guidance on the designer's role in the legal aspects of highway drainage. This Chapter should not in any way be treated as a manual upon which to base legal advice or make legal decisions. It is also not a summary of all existing drainage laws and, most emphatically, this Chapter is not intended as a substitute for legal counsel.

The following generalizations can be made in reaching the proper conclusion regarding liability:

- A goal in highway drainage design should be to perpetuate natural drainage, insofar as practicable.
- The courts look with disfavor upon infliction of injury or damage that could reasonably have been avoided by a prudent designer, even where some alteration in flow is legally permissible.
- The laws relating to the liability of governmental entities are undergoing change, with a trend toward increased governmental liability.

2.1.2 Order of Authority

The descending order to law supremacy is Federal, State and local and, except as provided for in the statutes or constitution of the higher level of government, the superior level is not bound by the laws, rules or regulations of a lower level. State permit requirements are an example of law supremacy. Federal agencies do not secure permits issued by State agencies, except as required by Federal law. Many laws of one level of government are passed to enable that level to comply with or implement provisions of laws of the next higher level. In some instances, however, a lower level of government may promulgate a law, rule or regulation that would require an unreasonable or even illegal action by a higher level. An example is a local ordinance that would require an expenditure of State funds for a purpose not intended in the appropriation. Many such conflicts in the laws of different levels of government involve constitutional interpretation and must be determined case by case. Such conflicts should be referred to the Department's legal counsel before any action is taken.

2.1.3 Related Publications

There are numerous publications on the legal aspects of drainage and water laws. For additional information, the reader is referred to the *Highway Drainage Guidelines* (see Reference (1)), which also includes a glossary of legal definitions.

The applicable state laws on drainage and water rights are in the State of Utah Code.

2.2 FEDERAL LAWS

2.2.1 General Laws

Federal law consists of the Constitution of the United States, Acts of Congress, regulations that governmental agencies issue to implement these Acts, Executive Orders issued by the President, and case law. Acts of Congress are published immediately upon issuance and are cumulated for each session of Congress and published in the United States Statutes At Large. Compilations of Federal Statutory Law, revised annually, are available in the *United States Code (USC)* and the *United States Code Service (USCS)*.

The *Federal Register*, which is published daily, provides a uniform system for making regulations and legal notices available to the public. Presidential Proclamations and Executive Orders, Federal agency regulations/documents having general applicability and legal effect, documents required to be published by an Act of Congress, and other Federal agency documents of public interest are published in the *Federal Register*. Compilations of Federal regulatory material, revised annually, are available in the *Code of Federal Regulations (CFR)*.

2.2.2 Drainage

Federal law does not address drainage per se, but many laws have implications that affect drainage design. These include laws concerning:

- flood insurance and construction in flood-hazard areas,
- navigation and construction in navigable waters,
- water pollution control,
- environmental protection,
- protection of fish and wildlife, and
- coastal zone management.

Federal agencies formulate and promulgate rules and regulations to implement these laws, and highway designers and hydraulics engineers should remain informed on proposed and final regulations.

2.2.3 Significant Laws

Some of the more significant Federal laws affecting highway drainage are listed below with a brief description of their subject area:

- DEPARTMENT OF TRANSPORTATION ACT (80 Stat. 941, 49 USC 1651 et seq.). This Act established the Department of Transportation and set forth its powers, duties and responsibilities to establish, coordinate and maintain an effective administration of the transportation programs of the Federal Government.
- FEDERAL-AID HIGHWAY ACTS (23 USC 101 et seq.). The Federal-Aid Highway Acts provide for the administration of the Federal-Aid Highway Program. Proposed Federal-aid projects must be adequate to meet the existing and probable future traffic needs and conditions in a manner conducive to safety, durability and economy of maintenance, and must be designed and constructed according to standards best suited to accomplish these objectives and to conform to the needs of each locality.

- FEDERAL-AID HIGHWAY ACT OF 1970 (84 Sta. 1717, 23 USC 109 (h)). This Act provided for the establishment of general guidelines to ensure that possible adverse economic, social and environmental effects relating to any proposed Federal-aid project have been fully considered in developing the project. In compliance with the Act, FHWA issued process guidelines for the development of environmental action plans. These guidelines are contained in 23 CFR 771 and 23 CFR 795 et seq.
- FEDERAL-AID HIGHWAY ACT OF 1966 (80 Stat. 766), AMENDED BY THE ACT OF 1970 (84 Stat. 1713, 23 USC 109 (g)). This Act required the issuance of guidelines for minimizing possible soil erosion from highway construction. In compliance with these requirements, FHWA issued guidelines that are applicable to all Federal-aid highway projects. Regulatory material is found in 23 CFR 650 Subpart B.
- THE INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA) OF 1991. This Act provided authorization for highways, highway safety and mass transportation for six years. The Act developed a National Highway System that is economically efficient and environmentally sound. It created a foundation for the Nation to compete in the global economy and move people and goods in an energy efficient manner. Under the Act, State and local governments have been given more flexibility in determining transportation solutions, whether transit or highways, and the tools for enhanced planning and management systems to guide them in making the best choices. Funding for the new technologies and activities for enhancing the environment and safety are also available.
- THE TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21) OF 1998. This Act, which provides authorization for transportation programs for six years, builds on the initiatives established by ISTEA. TEA-21 continues the ISTEA programs and increases the emphasis on improving highway safety, enhancing communities and the natural environment, and expanding the nation's economic growth through efficient and flexible transportation. TEA-21 retains the realignment of the Federal-aid highway system established by ISTEA, which included the National Highway System.

2.3 NAVIGABLE WATERS REGULATIONS

2.3.1 Constitutional Power

The Congress of the United States is granted constitutional power to regulate “commerce among the several states.” A part of that power is the right to legislate on matters concerning the instrumentalities of interstate commerce such as navigable waters. The definition of navigable waters expands and contracts depending upon the breadth required to adequately implement the Federal purpose. The result is that Congress can properly assert regulatory authority over at least some aspects of waterways that are not in themselves subject to navigation.

2.3.2 Federal Agencies

Basically, four Federal agencies implement existing Federal regulations, as discussed in the following subsections. When the designer becomes involved in obtaining approvals from the Federal agencies, be aware that these agencies do not always work in concert. Quite often, they will not be in agreement with one another. This can result in significant project delays unless early coordination is initiated and diligently pursued. These conflicts between Federal

agencies occur as a result of their varying rules; some are “regulators” while others are “resource” motivated. For this reason, they will have different goals and, in some instances, different definitions of such elements as wetlands. When conflicts occur, it is best to quickly determine which agency has primary responsibility and attempt to satisfy its needs.

2.3.2.1 US Coast Guard (USCG)

USCG has regulatory authority under Section 9 of the Rivers and Harbors Act of 1899, 33 USC 401 (delegated through the Secretary of Transportation in accordance with 49 USC 1655 (g)) to approve plans and issue permits for bridges and causeways across navigable rivers. As outlined in 23 CFR 650, the area of jurisdiction of USCG and FHWA is established as follows.

FHWA has the responsibility under 23 USC 144(h) to determine that a USCG permit is not required. This determination shall be made at an early stage of project development so that any necessary coordination can be accomplished during environmental processing.

USCG has the responsibility:

- to determine whether or not a USCG permit is required for the improvement or construction of a bridge over navigable waters except for the exemption exercised by FHWA as stated above; and
- to approve the bridge location, alignment and appropriate navigational clearances in all bridge permit applications.

For more information related to navigational clearances for bridges, see 23 CFR 650 Subpart H.

2.3.2.2 US Army Corps of Engineers (USACE)

USACE has regulatory authority over the construction of dams, dikes or other obstructions (which are not bridges and causeways) under Section 9 (33 USC 401). USACE also has authority to regulate Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), which prohibits the alteration or obstruction of any navigable waterway with the excavation or deposition of fill material in such waterway. Section 11 of the Rivers and Harbors Act of 1899 (33 USC 404) authorizes the Secretary of the Army to establish harbor lines. Work channelward of those lines requires separate approval of the Secretary of the Army and work shoreward requires Section 10 permits.

Section 404 of the Clean Water Act (33 USC 1344) prohibits the unauthorized discharge of dredged or fill material into waters of the United States, including navigable waters. Such discharges require a permit. The term “discharge of fill material” means the addition of rock, sand, dirt, concrete or other material into the waters of the United States incidental to construction of any structure. USACE has granted Nationwide General Permits for 26 categories of certain minor activities involving discharge of fill material. Under the provisions of 33 CFR 330.5(a)(15), fill associated with construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, temporary construction and access fills, are authorized under the Nationwide Section 404 Permit, provided that such fill has been permitted by USCG under Section 9 of the Rivers and Harbors Act of 1899 as part of the bridge permit. Therefore, formal application to USACE for a Section 404 Permit is not required, unless bridge approach embankment is located in a wetland area contiguous to said navigable stream. USACE has Section 404 regulatory authority over streams that USCG has

placed in the “advance approval” category. This category of navigable streams is defined as navigable in law but not actually navigated other than by logs, log rafts, rowboats, canoes and motorboats. Notably, this regulation does not apply to the actual excavation or “dredging of material,” provided that this material is not reintroduced into any regulated waterway including the one from which it was removed.

Section 404 of the Clean Water Act (33 USC 1344) requires any applicant for a Federal permit for any activity that may affect the quality of waters of the United States to obtain a water quality certification from Utah Division of Water Rights.

The 1992 Energy and Water Development Appropriation Act provides guidance to use the 1987 Manual of the USACE in the delineation of wetlands. This allows more flexibility in the definition and determination of wetlands.

2.3.2.3 Federal Highway Administration (FHWA)

FHWA has the authority to implement the Section 404 Permit Program (Clean Water Act of 1977) for Federal-aid highway projects processed under 23 CFR 771.115 (b) as categorical exclusions. This authority was delegated to FHWA by USACE to reduce unnecessary Federal regulatory controls over activities adequately regulated by another agency. This permit is granted for projects where the activity, work or discharge is categorically excluded from environmental documentation because such activity does not have an individual or cumulative significant effect on the human environment.

2.3.2.4 US Environmental Protection Agency (USEPA)

USEPA is authorized to prohibit the use of any area as a disposal site when it is determined that the discharge of materials at the site will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife or recreational areas (Section 404 (c), Clean Water Act, 33 USC 1344). Also, USEPA is authorized under Section 402 of the Clean Water Act (33 USC 1344) to administer and issue a “National Pollutant Elimination Discharge System” (NPDES) permit for point source discharges, provided that prescribed conditions are met.

NPDES is the regulatory permit program that controls the quality of treated sewage discharge from sewage treatment plants as established in 40 CFR Part 125 pursuant to the Clean Water Act, 33 USC 1342 (23 CFR 650). In compliance with this regulation, the following factors shall apply to the design of sewage treatment facilities for highway safety rest areas:

- The NPDES permit or UPDES required shall be obtained prior to approval of plans, specifications and estimate and authorization for the advertisement of bids.
- Sewage treatment shall be accomplished at the site as may be necessary to meet effluent limitations. Any effluent shall be monitored in accordance with the standards established by the NPDES permit.

* *EPA or a State under the delegated authority issues NPDES permits for point source discharges from large, municipal, separate storm drain systems (serving a population of 250,000 or more) and from medium, separate storm drain systems (serving a population of 100,000 or more but less than 250,000). Furthermore, highway construction activities are classified as industrial activities. EPA or a State under the delegated authority issues*

an individual or a general permit for storm water discharge associated with industrial activities (including highway construction) involving any regulatory disturbance of one acre (0.4 ha) or more.

2.4 FISH AND WILDLIFE SERVICE

2.4.1 Requirements

The Fish and Wildlife Act of 1956 (16 USC 742 et seq.), the Migratory Game-Fish Act (16 USC 760c-760g) and the Fish and Wildlife Coordination Act (16 USC 611-666c) express the concern of Congress with the quality of the aquatic environment as it affects the conservation, improvement and enjoyment of fish and wildlife resources. The Fish and Wildlife Coordination Act requires that “whenever the waters of any stream or body of water are proposed or authorized to be impounded or diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency shall first consult with the United States Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof.”

2.4.2 Service’s Role

USFWS’s role in the permit review process is to review and comment on the effects of a proposal on fish and wildlife resources. It is the function of the regulatory agency (e.g., USACE, USCG) to consider and balance all factors, including anticipated benefits and costs in accordance with NEPA, in deciding whether to issue the permit (40 FR 55810, December 1, 1975).

2.5 NATIONAL FLOOD INSURANCE PROGRAM

2.5.1 Flood Insurance

The National Flood Insurance Act of 1968, as amended, (42 USC 4001-4127) requires that communities adopt adequate land-use and control measures to qualify for insurance. Federal criteria promulgated to implement this provision contain the following requirements that can affect certain highways:

- In riverine situations, when the Administrator of the Federal Insurance Administration has identified the flood-prone area, the community must require that, until a floodway has been designated, no use, including land fill, be permitted within the floodplain area having special flood hazards for which base flood elevations have been provided, unless it is demonstrated that the cumulative effect of the proposed use, when combined with all other existing and reasonably anticipated uses of a similar nature, will not increase the water surface elevation of the 100-year flood more than 1 ft (304.8 mm) at any point within the community.
- After the floodplain area having special flood hazards has been identified and the water surface elevation for the 100-year flood and floodway data have been provided, the

community must designate a floodway which will convey the 100-year flood without increasing the water surface elevation of the flood more than 1 ft (304.8 mm) at any point and prohibit, within the designated floodway, fill, encroachments, and new construction and substantial improvements of existing structures that would result in any increase in flood heights within the community during the occurrence of the 100-year flood discharge.

- The participating cities and/or counties agree to regulate new development in the designated floodplain and floodway through regulations adopted in a floodplain ordinance. The ordinance requires that development in the designated floodplain be consistent with the intent, standards and criteria set by the National Flood Insurance Program (NFIP).

2.5.2 Flood Disaster Protection

The Flood Disaster Protection Act of 1973 (PL 93-234, 87 Stat. 975) denies Federal financial assistance to local communities that fail to qualify for flood insurance. Formula grants to States are excluded from the definition of financial assistance, and the definition of construction in the Act does not include highway construction; therefore, Federal aid for highways is not affected by the Act. The Act does require communities to adopt certain land-use controls to qualify for flood insurance. These land-use requirements could impose restrictions on the construction of highways in floodplains and floodways in communities which have qualified for flood insurance.

2.5.3 Local Community

The local community with land-use jurisdiction, whether it is a city, county or State, has the responsibility for enforcing NFIP regulations in that community if the community is participating in the NFIP. Consistency with NFIP standards is a requirement for Federal-aid highway actions involving regulatory floodways. The community, by necessity, is the entity that must submit proposals to FEMA for amendments to NFIP ordinances and maps in that community should it be necessary. The highway agency should deal directly with the community and, through them, deal with FEMA. Determination of the status of a community's participation in the NFIP and the review of applicable NFIP maps and ordinances are, therefore, essential first steps in conducting location hydraulic studies and preparing environmental documents.

2.5.4 NFIP Maps

Where NFIP maps are available, their use is mandatory in determining whether a highway location alternative will include an encroachment on the base floodplain. Three types of NFIP maps are published:

- Flood Hazard Boundary Map (FHBM),
- Flood Boundary and Floodway Map (FBFM), and
- Flood Insurance Rate Map (FIRM).

A FHBM is generally not based on a detailed hydraulic study and, therefore, the floodplain boundaries shown are approximate. A FBFM, in contrast, is generally derived from a detailed hydraulic study and should provide reasonably accurate information. The hydraulic data from which the FBFM was derived are available through the regional office of FEMA. This is normally in the form of computer input data records for calculating water surface profiles. A FIRM is generally produced at the same time using the same hydraulic model and has appropriate rate zones and base flood elevations added.

Communities may or may not have published one or more of the above maps depending on their level of participation in the NFIP. Information on community participation in the NFIP is provided in the *National Flood Insurance Program Community Status Book*, which is published semiannually for each State.

2.5.5 Coordination With FEMA

It is intended that there should be UDOT coordination with FEMA where administrative determinations are needed involving a regulatory floodway or where flood risks in NFIP communities are significantly impacted. The circumstances which would ordinarily require coordination with FEMA include the following:

- A proposed crossing encroaches on a regulatory floodway and, as such, would require an amendment to the floodway map.
- A proposed crossing encroaches on a floodplain where a detailed study has been performed but no floodway designated, and the maximum 1-ft (304.8-mm) increase in the base flood elevation would be exceeded.
- A local community is expected to enter into the regular program within a reasonable period, and detailed floodplain studies are under way.
- A local community is participating in the emergency program, and base FEMA flood elevation in the vicinity of insurable buildings is increased by more than 1 ft (304.8 mm). Where insurable buildings are not affected, it is sufficient to notify FEMA of changes to base flood elevations as a result of highway construction.

The Draft Environmental Impact Statement or Environmental Assessment (EIS/EA) should indicate the NFIP status of affected communities, the encroachments anticipated and the need for floodway or floodplain ordinance amendments. Coordination includes furnishing to FEMA the Draft EIS/EA and, upon selection of an alternative, furnishing to FEMA, through the community, a preliminary site plan and water surface elevation information and technical data in support of a floodway revision request as required. If a determination by FEMA would influence the selection of an alternative, a commitment from FEMA should be obtained prior to the Final Environmental Impact Statement (FEIS) or a Finding of No Significant Impact (FONSI). Otherwise, this later coordination may be postponed until the design phase.

For projects that will be processed with a categorical exclusion, coordination may be implemented during design. However, the outcome of the coordination at this time could change the class of environmental processing.

2.5.6 Consistent With Floodways

In many situations, it is possible to design and construct highways cost effectively such that their components are excluded from the floodway. This is the simplest way to be consistent with the standards and should be the initial alternative evaluated. If a project element encroaches on the floodway but has a very minor effect on the floodway water surface elevation (such as piers in the floodway), the project may normally be considered consistent with the standards, if hydraulic conditions can be improved so that no water surface elevation increase is reflected in the computer printout for the new conditions.

2.5.7 Revisions of Floodway

Where it is not cost effective to design a highway crossing to avoid encroachment on an established floodway, a second alternative would be a modification of the floodway itself. Often, the community will be willing to accept an alternative floodway configuration to accommodate a proposed crossing, provided that NFIP limitations on increases in the base flood elevation are not exceeded. This approach is useful where the highway crossing does not cause more than a 1-ft (304.8-mm) rise in the base flood elevation. In some cases, it may be possible to enlarge the floodway or otherwise increase conveyance in the floodway above and below the crossing to allow greater encroachment. Such planning is best accomplished when the floodway is first established. However, where the community is willing to amend an established floodway to support this option, the floodway may be revised.

The responsibility for demonstrating that an alternative floodway configuration meets NFIP requirements rests with the community. However, this responsibility may be borne by the agency proposing to construct the highway crossing. Floodway revisions must be based on the hydraulic model that was used to develop the currently effective floodway but updated to reflect existing encroachment conditions. This will allow the determination of the increase in the base flood elevation that has been caused by encroachments since the original floodway was established. Alternative floodway configurations may then be analyzed.

Base flood elevation increases are referenced to the profile obtained for existing conditions when the floodway was first established.

2.5.8 Data for Revisions

Data submitted to FEMA, through the community, in support of a floodway revision request should include the following:

- copy of current regulatory Flood Boundary Floodway Map, showing existing conditions, proposed highway crossing and revised floodway limits;
- copy of computer printouts (input, computation and output) for the current 100-year model and current 100-yr floodway model;
- copy of computer printouts (input, computation and output) for the revised 100-year floodway model. Any fill or development that has occurred in the existing flood fringe area must be incorporated into the revised 100-yr floodway model; and
- copy of the engineering certification required for work performed by private subcontractors.

The revised and current computer data required above should extend far enough upstream and downstream of the floodway revision area to tie back into the original floodway and profiles using sound hydraulic engineering practices. This distance will vary depending on the magnitude of the requested floodway revision and the hydraulic characteristics of the stream.

If input data representing the original hydraulic model are unavailable, an approximation should be developed. A new model should be established using the original cross section topographic information, where possible, and the discharges contained in the Flood Insurance Study that established the original floodway. The model should then be run confining the effective flow area to the currently established floodway and calibrated to reproduce within 0.10 ft (30 mm) the

“With Floodway” elevations provided in the Floodway Data Table for the current floodway. Floodway revisions may then be evaluated using the procedures outlined above.

2.5.9 Allowable Floodway Encroachment

Where it would be demonstrably inappropriate to design a highway crossing to avoid encroachment on the floodway and where the floodway cannot be modified such that the structure could be excluded, FEMA will approve an alternative floodway with backwater in excess of the 1-ft (304.8-mm) maximum only when the following conditions have been met:

- A location hydraulic study has been performed in accordance with 23 CFR 650 Subpart A, and FHWA finds the encroachment is the only practicable alternative.
- The constructing agency has made appropriate arrangements with affected property owners and the community to obtain flooding easements or otherwise compensate them for future flood losses due to the effects of backwater greater than 1 ft (304.8 mm).
- The constructing agency has made appropriate arrangements to ensure that the National Flood Insurance Program and Flood Insurance Fund will not incur any liability for additional future flood losses to existing structures that are insured under the Program and grandfathered in under the risk status existing prior to the construction of the structure.
- Prior to initiating construction, the constructing agency provides FEMA with revised flood profiles, floodway and floodplain mapping and background technical data necessary for FEMA to issue revised Flood Insurance Rate Maps and Flood Boundary and Floodway Maps for the affected area, upon completion of the structure.

2.5.9.1 Highway Encroachment On A Floodplain With A Detailed Study (FIRM)

In communities where a detailed flood insurance study has been performed but no regulatory floodway designated, the highway crossing should be designed to allow no more than a 1-ft (304.8-mm) increase in the base flood elevation based on technical data from the flood insurance study. Technical data supporting the increased flood elevation shall be submitted to the local community and through them to FEMA for their files.

2.5.9.2 Highway Encroachment On A Floodplain Indicated On An FHBM

In communities where detailed flood insurance studies have not been performed, the highway agency must generate its own technical data to determine the base floodplain elevation and design encroachments in accordance with 23 CFR 650 Subpart A. Base floodplain elevations shall be furnished to the community, and coordination conducted with FEMA as outlined previously where the increase in base flood elevations in the vicinity of insurable buildings exceeds 1 ft (304.8 mm).

2.5.9.3 Highway Encroachment on Unidentified Floodplains

Encroachments that are outside of NFIP communities or NFIP identified flood hazard areas should be designed in accordance with 23 CFR 650 Subpart A.

2.5.10 Levee Systems

For purposes of the NFIP, FEMA will only recognize in its flood hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design operation and maintenance standards that are consistent with the level of protection sought through the comprehensive floodplain management criteria as outlined in the NFIP. The levee system must provide adequate protection from the base flood. Information supporting this must be supplied to FEMA by the community or other party seeking recognition of such a levee system at the time a flood risk study or restudy is conducted, when a map revision is sought based on a levee system, and upon request by the Administrator during the review of previously recognized structures. The FEMA review will be solely to establish appropriate risk zone determinations for NFIP maps and shall not constitute a determination by FEMA on how a structure or system will perform in a flood event. For more information on the requirements related to levee systems see *National Flood Insurance Program and Related Regulations*, FEMA, Revised October 1, 1986 and Amended June 30, 1987 (44 CFR 65.10).

2.5.11 Revisions to NFIP Maps

FEMA has established administrative procedures for changing or correcting effective FIRMs and Flood Insurance Study (FIS) reports based on new or revised technical data. A physical change to the affected FIRM panels and portions of the FIS report is referred to as a Physical Map Revision (PMR).

A PMR is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas, or corrections to base flood elevations or Special Flood Hazard Areas (SFHAs).

Changes to NFIP maps may also be made by a Letter of Map Change (LOMC). The three LOMC categories are described below:

- **LETTER OF MAP AMENDMENT (LOMA).** A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative procedure that involves the review of scientific or technical data submitted by the owner or lessee of property who believes that the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in an SFHA.
- **LETTER OF MAP REVISION BASED ON FILL (LOMR-F).** A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA'S determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.
- **LETTER OF MAP REVISION (LOMR).** A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, because it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

2.5.12 Conditional Letter of Map Revision (CLOMR)

NFIP maps must be based on existing, rather than proposed, conditions. Because flood insurance is a financial protection mechanism for real-property owners and lending institutions against existing hazards, flood insurance ratings must be made accordingly. However, communities, developers and property owners often undertake projects that may alter or mitigate flood hazards and would like FEMA's comment before constructing them. A CLOMR is FEMA's formal review and comment on whether a proposed project complies with the minimum NFIP floodplain management criteria. If it is determined that it does, the CLOMR also describes any eventual revisions that will be made to the NFIP maps upon completion of the project.

Obtaining conditional approval is not automatically required by NFIP regulations for all projects in the floodplain. A CLOMR is required only for those projects that will result in an increase in the water surface elevation greater than 1.00 ft (304.8 mm) for the 100-yr flood for streams with base flood elevations specified but no floodway designated. A CLOMR is also required for any proposed construction within a regulatory floodway that will result in an increase in the water surface elevation for the 100-yr flood. The technical data needed to support a CLOMR request generally involve detailed hydrologic and hydraulic analyses and are similar to the data needed for a LOMR request.

A request for a CLOMR by a private individual, including homeowners and land developers, must be made through the local community participating in the NFIP. The following are reasons why the CLOMR is made through the community:

- The community must be aware of changes by the proposed project and determine if they are consistent with local ordinances.
- The community will collect fees for FEMA that apply to requests for map revisions.
- The community must determine that the existing FIRM is not accurate and that the hydrologic and hydraulic information provided by the private individual is more up to date.

2.6 EXECUTIVE ORDERS

2.6.1 Background

Presidential Executive Orders (EO) have the effect of law in the administration of programs by Federal agencies. Although Executive Orders do not directly apply to State highway departments, these requirements are usually implemented through general regulations.

2.6.2 EO 11988

Executive Order 11988, May 24, 1977, requires each Federal agency, in carrying out its activities, to take the following actions:

- to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare and to restore and preserve the natural and beneficial values served by floodplains; and

- to evaluate the potential effect of any actions it may take in a floodplain and to ensure its planning programs reflect consideration of flood hazards and floodplain management.

These requirements are contained in 23 CFR 650 Subpart A and were published in the *Federal Register*, April 26, 1979 (44 FR 24678).

2.6.3 EO 11990

Executive Order 11990, May 24, 1977, orders each Federal agency to:

- take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values to wetlands;
- avoid undertaking or providing assistance for new construction in wetlands unless the head of the agency finds that there is no practicable alternative and all practicable measures are taken to minimize harm which may result from the action; and
- to consider factors relevant to the proposal's effects on the survival and quality of the wetlands.

These requirements are contained in 23 CFR 771.

2.7 STATE DRAINAGE LAW

2.7.1 Derived From

State drainage law is derived mainly from two sources: (1) common law and (2) statutory law.

2.7.2 Common Law

Common law is that body of principles that developed from immemorial usage and custom and that receives judicial recognition and sanction through repeated application. These principles were developed without legislative action and are embodied in the decisions of the courts.

2.7.3 Statutory Law

Statutory laws of drainage are enacted by legislatures to enlarge, modify, clarify or change the common law applicable to particular drainage conditions. This type of law is derived from constitutions, statutes, ordinances and codes.

2.7.4 Predominates

In general, the common law rules of drainage predominate unless they have been enlarged or superseded by statutory law. In most instances where statutory provisions have been enacted, it is possible to determine the intent of the law. If, however, there is a lack of clarity in the statute, the point in question may have been litigated for clarification. In the absence of either clarity of the statute or litigation, a definitive statement of the law is not possible, although the factors that are likely to be controlling may be indicated.

2.7.5 Classification of Waters

State drainage laws originating from common law, or court-made law, first classified the water that was being dealt with, after which the rule that was pertinent to the particular classification was applied to obtain a decision.

The first step in the evaluation of a drainage problem is to classify the water as surface water, stream water, flood water or groundwater. These terms are defined below. Once the classification has been established, the rule that applies to the particular class of water determines responsibilities with respect to disposition of the water:

- **SURFACE WATERS.** Surface waters are those waters that have been precipitated on the land from the sky or forced to the surface in springs, and that have then spread over the surface of the ground without being collected into a definite body or channel.
- **STREAM WATERS.** Stream waters are former surface or ground waters that have entered and now flow in a well-defined natural watercourse, together with other waters reaching the stream by direct precipitation or rising from springs in the bed or banks of the watercourse. A watercourse, in the legal sense, refers to a definite channel with bed and banks within which water flows either continuously or intermittently.
- **FLOOD WATERS.** Flood waters are former stream waters that have escaped from a watercourse (and its overflow channels) and flow or stand over adjoining lands. They remain flood waters until they disappear from the surface by infiltration or evaporation or return to a natural watercourse.
- **GROUND WATERS.** In legal considerations, ground waters are divided into two classes — percolating waters and underground streams. The term “percolating waters” generally includes all waters that pass through the ground beneath the surface of the earth without a definite channel. The general rule is that all underground waters are presumed to be percolating and, to take them out of the percolating class, the existence and course of a permanent channel must be clearly shown. Underground streams are waters passing through the ground beneath the surface in permanent, distinct, well-defined channels.

2.8 STATE WATER RULES

2.8.1 Basic Concepts

Two major rules have been developed by the courts regarding the disposition of surface waters. One is known as the civil law rule of natural drainage. The other is referred to as the common enemy doctrine. Modification of both rules has tended to bring them somewhat closer together and, in some cases, the original rule has been replaced by a compromise rule known as the reasonable use rule.

Much of the law regarding stream waters is founded on a common law maxim that states “water runs and ought to run as it is by natural law accustomed to run.” Thus, as a general rule, any interference with the flow of a natural watercourse to the injury or damage of another will result in liability. This may involve augmentation, obstruction and detention, or diversion of a stream. However, there are qualifications.

In common law, flood waters are treated as a “common enemy” of all people, lands and property attacked or threatened by them.

In ground-water law, the “English Rule,” which is analogous to the common enemy rule in surface water law, is based on the doctrine of absolute ownership of water beneath the property by the landowner.

2.8.2 Surface Waters

The civil law rule is based upon the perpetuation of natural drainage. The 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. Most States following this rule have modified it so that 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 that the water is not sent down in a manner or quantity to do more harm than formerly.

Under the common enemy doctrine, surface water is regarded as a common enemy that each property owner may fight off or control as he will or is able, either by retention, diversion, repulsion or altered transmission. Thus, there is not cause of action even if some injury occurs causing damage. In most jurisdictions, this doctrine has been subject to a limitation that one must use his land so as not to unreasonably or unnecessarily damage the property of others.

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 several questions:

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

2.8.3 Stream Waters

Where natural watercourses are unquestioned in fact and in permanence and stability, there is little difficulty in application of the rule. Highways cross channels on bridges or culverts, usually with some constriction of the width of the channel and obstruction by substructure within the channel, both causing backwater upstream and acceleration of flow downstream. The changes in regime must be so small as to be tolerable by adjoining owners, or there may be liability of any injuries or damages suffered.

Surface waters from highways are often discharged into the most convenient watercourse. The right is unquestioned if those waters were naturally tributary to the watercourse and unchallenged if the watercourse has adequate capacity. However, if all or part of the surface waters have been diverted from another watershed to a small watercourse, any lower owner may complain and recover for ensuing damage.

2.8.4 Flood Waters

Considering flood waters as a common enemy permits all affected landowners, including owners of highways, to act in any reasonable way to protect themselves and their property from the common enemy. They may obstruct its flow from entering their land, backing or diverting water onto lands of another without penalty, by gravity or pumping, by diverting dikes or ditches, or by any other reasonable means.

Again, the test of “reasonableness” has frequently been applied, and liability can result where unnecessary damage is caused. Ordinarily, the highway designer should make provision for overflow in areas where it is foreseeable that it will occur. There is a definite risk of liability if such waters are impounded on an upper owner or, worse yet, are diverted into an area where they would not otherwise have gone. Merely to label waters as “flood waters” does not mean that they can be disregarded.

The “English Rule” has been modified by the “Reasonable-Use Rule,” which states in essence that each landowner is restricted to a reasonable exercise of his own right and a reasonable use of his property in view of the similar right of his neighbors.

The key word is “reasonable.” Although this may be interpreted somewhat differently from case to case, it generally means that a landowner can utilize subsurface water on his property for the benefit of agriculture, manufacturing, irrigation, etc., pursuant to the reasonable development of his property although such action may interfere with the underground waters of neighboring proprietors. However, it does generally preclude the withdrawal of underground waters for distribution or sale for uses not connected with any beneficial ownership or enjoyment of the land from whence they were taken.

A further interpretation of “reasonable” in relation to highway construction would view the excavation of a deep “cut section” that intercepts or diverts underground water to the detriment of adjacent property owners as unreasonable. There are also cases where highway construction has permitted the introduction of surface contamination into subsurface waters and thus incurred liability for resulting damages.

The following are some Utah state laws that relate to water classification and drainage which relate to highway drainage design:

- Title 17, chapter 8 – The counties are authorized to contract with the United States of America, or any agencies thereof, for the construction of any flood control project within the county.
- Title 17A, chapter 2 part 5 – Describes the formation and authority of drainage districts.
- Title 19, chapter 5 – The Water Quality Act. Part 107, 108 and 114 deal with the discharge of pollutants in Utah Waters.
- Title 72, chapter 7 – This chapter explains the authority of the Department of Transportation to construct and maintain the highway system. Part 303 states that is unlawful cause damage to the system by escaping water or obstructing water.
- Title 73, chapter 1 through 3 – This title deals with water rights in Utah. It establishes the authority of the State Engineer and of the Division of Water rights.

2.9 STATUTORY LAW

2.9.1 Introduction

The inadequacies of the common law or court-made laws of drainage led to a gradual enlargement and modification of the common-law rules by legislative mandate. In the absence of statute, the common law rules adopted by State courts determine surface water drainage rights. If the common-law rules have been enlarged or superseded by statutory law, the statute prevails. In general, statutes have been enacted that affect drainage in one-way or another in the subject areas described below.

2.9.2 Eminent Domain

In the absence of an existing right, public agencies may acquire the right to discharge highway drainage across adjoining lands through the use of the right of eminent domain. Eminent domain is the power of public agencies to take private property for public use.

Title 78, chapter 34 of the Utah Code establishes how the State may exercise the right of eminent domain, which allows the taking of property for public purposes, title 73, chapter 1 of the same code includes the development of watercourse and watershed areas. It is important to remember, however, that whenever any property is taken under eminent domain, the private landowner must be compensated for his loss.

There are numerous statutory provisions delegating the right of eminent domain.

County governments have the right of eminent domain to construct, operate, repair or maintain any floodway, reservoir spillway, levee or diversion, or other flood control improvements. Similarly, any levee or drainage district, through its Board of Directors, has eminent domain powers if it is declared necessary by the Chief of Engineers, United States Army, for the location, construction, operation or maintenance of any levee, channel rectification, drainage canal, floodway, reservoir, spillway or diversion to be constructed by the United States Government.

2.9.3 Water Rights

The water right that attaches to a watercourse is a right to the use of the flow, not ownership of the water itself. This is true under both the riparian doctrine and the appropriation doctrine. This right of use is a property right, entitled to protection to the same extent as other forms of property and is regarded as real property. After the water has been diverted from the stream flow and reduced to possession, the water itself becomes the personal property of the riparian owner or the appropriator.

- *Riparian Doctrine* — Under the riparian doctrine, lands contiguous to watercourses have prior claim to waters of the stream solely by reason of location and regardless of the relative productive capacities of riparian and nonriparian lands.
- *Doctrine Of Prior Appropriation* — The essence of this doctrine is the exclusive right to divert water from a source where the water supply naturally available is not sufficient for the needs of all those holding rights to its use. Such exclusive right depends upon the effective date of the appropriation, the first in time being the first in right.

Following are some rights prescribed by the Utah Code:

Prescriptive easement for water conveyance (57-13a-102) .

(1) A **prescriptive** easement may be established if a water user has maintained a water conveyance for a period of 20 years during which the **use** has been:

- (a) continuous;
- (b) open and notorious; and
- (c) adverse.

(2) If Subsections (1)(a) and (b) are established, there is a rebuttable presumption that the **use** has been adverse.

Generally, the important concept for highway designers to remember regarding water rights is that proposed work in the vicinity of a stream should not impair either the quality or quantity of flow of any water rights to the stream.

2.9.4 Districts

Utah Code 17A, chapter 2, part 5 includes the regulations for organizing Drainage Districts.

- how the district boundaries are determined,
- information that can be obtained from the districts, and
- powers and authority granted to the districts and how this might affect highway drainage)).

2.9.5 Agricultural Drainage Laws

Enlargement for joint use of ditch (73-1-7). When any person desires to convey water for irrigation or any other beneficial purpose and there is a canal or ditch already constructed that can be used or enlarged to convey the required quantity of water, such person shall have the right to use or enlarge such canal or ditch already constructed, by compensating the owner of the canal or ditch to be used or enlarged for the damage caused by such use or enlargement, and by paying an equitable proportion of the maintenance of the canal or ditch jointly used or enlarged; provided, that such enlargement shall be made between the 1st day of October and the 1st day of March, or at any other time that may be agreed upon with the owner of such canal or ditch. The additional water turned in shall bear its proportion of loss by evaporation and seepage

Duties of owners of ditches -- Safe condition – Bridges (73-1-8). The owner of any ditch, canal, flume or other watercourse shall maintain the same in repair so as to prevent waste of water or damage to the property of others, and is required, by bridge or otherwise, to keep such ditch, canal, flume or other watercourse in good repair where the same crosses any public road or highway so as to prevent obstruction to travel or damage or overflow on such public road or highway, except where the public maintains or may hereafter elect to maintain devices for that purpose.

Contribution between joint owners of ditch or reservoir (73-1-9). When two or more persons are associated in the use of any dam, canal, reservoir, ditch, lateral, flume or other means for conserving or conveying water for the irrigation of land or for other purposes, each of them shall be liable to the other for the reasonable expenses of maintaining, operating and controlling the same, in proportion to the share in the use or ownership of the water to which he is entitled.

2.9.6 Environmental Law

Utah Pollutant Discharge Elimination System (UPDES) Permits

Purpose - Necessary for all projects that will disturb more than 1 acre of surface area. This general permit authorizes the permittee to discharge storm water from a specified construction site. This permit must be obtained prior to construction activities. The process for obtaining this permit consists of preparation and submittal of a Notice of Intent form to the State Division of Water Quality (DWQ). At the completion of the project the permit is terminated by preparing and submitting a Notice of Termination form to the same agency.

Construction Permit (for Permanent Detention Pond Features)

Purpose - Necessary for the construction of permanent detention pond features that discharge into waters of the state/US. The design of the pond is reviewed for adequate capacity, settling time, controlled outlet discharge. This permit is obtained by UDOT Region hydraulics or design staff prior to advertising the project for construction.

2.10 LOCAL LAWS AND APPLICATIONS

2.10.1 Local Laws

Local governments (cities, counties, improvement districts) have ordinances and codes that require consideration during design. For example, zoning ordinances can have a substantial effect on the design of a highway and future drainage from an area. On occasion, a question may arise as to whether the State must comply with local ordinances. Generally, the State is not legally required to comply with local ordinances except where compliance is required by specific State statute. Quite often, however, the State conforms with local ordinances as a matter of courtesy, especially when it can be done without imposing a burden on the State.

Following is a discussion of the application of some of the principles and concepts of drainage law.

2.10.2 Municipal Liability

A municipality is generally treated like a private party in State drainage matters. A municipality undertaking a public improvement is liable as an individual for damage resulting from negligence or an omission of duty. 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 accelerate or alter storm runoff. In addition, it is generally held that municipalities are not liable for adoption or selection of a defective plan of drainage.

Municipalities can be held liable for negligent construction of drainage improvements, for negligent maintenance and repair of drainage improvements and if it fails to provide a proper outlet for drainage improvements. 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 storm drains; nor will a municipality be held liable for damages caused by overflow of its storm drains occasioned by extraordinary, unforeseeable rains or floods. Municipal liability will attach where a municipality:

- collects surface water and casts it in a body onto private property where it did not formerly flow;

- 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 storm drain, it would not go; and
- 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.

2.10.3 Acts of Others

The general rule is that a municipality is not liable for the acts of officers, agents or employees that are governmental in nature, but it is liable for negligent acts of its agents in the performance of duties relating to proprietary or private corporate purposes of the city. If the construction, maintenance and repair of drainage improvements is regarded as proprietary or corporate functions, then a municipality may be held liable for the acts of its officers, agents or employees for injuries resulting from negligent construction, maintenance or dangerous conditions of a public facility.

2.10.4 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. The courts are imposing a greater burden or responsibility on municipalities for the drainage consequences of urban development.

2.10.5 Personal Liability

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.

2.10.6 Drainage Improvements

A municipality's inherent police powers enable it to enact ordinances that serve the public health, safety, morals or general welfare. Ordinances addressing drainage problems are clearly a proper exercise of a municipality's police powers.

2.10.7 Special Issues

- *Irrigation Ditches* — Where an irrigation ditch intersects a drainage basin, the irrigation ditch need not take underground waters diverted by a tile-drain. However, the surface drainage must be accepted if the irrigation ditch is constructed in a way into which surface water would naturally flow.
- *Dams And Detention Facilities* — See Utah Code 73.
- *Water Quality* — **Discharge of pollutants unlawful -- Discharge permit required (19-5-107).**

(1) (a) Except as provided in this chapter or rules made under it, it is unlawful for any person to discharge a pollutant into waters of the state or to cause pollution which constitutes a menace to public health and welfare, or is harmful to wildlife, fish or aquatic life, or impairs domestic,

agricultural, industrial, recreational, or other beneficial uses of water, or to place or cause to be placed any wastes in a location where there is probable cause to believe it will cause pollution.

Spills or discharges of oil or other substance -- Notice to executive secretary (19-5-114).

Any person who spills or discharges any oil or other substance which may cause the pollution of the waters of the state shall immediately notify the executive secretary of the spill or discharge, any containment procedures undertaken, and a proposed procedure for cleanup and disposal, in accordance with rules of the board.

2.11 LEGAL REMEDIES

2.11.1 Common Actions

The most common legal actions through which a complainant may seek legal recourse include inverse condemnation, injunction, tort claims and legislative claims.

2.11.2 Inverse Condemnation

The State of Utah allows a private owner the right to sue the state for damage resulted in a “taking or damaging” of his property.

The following is a transcription of the Utah Code on Inverse Condemnation for the Department of Transportation:

Condemnation, inverse condemnation settlements involving the Department of Transportation (63-38b-401).

(1) Notwithstanding the provisions of this chapter, the Department of Transportation need not obtain the approval of the governor **or** the Legislature for financial **or** action settlement agreements that resolve **condemnation or inverse condemnation** cases.

(2) Financial settlement agreements involving **condemnation or inverse condemnation** cases for \$1,000,000 to \$2,000,000 over the Department of Transportation's original appraisal shall be presented to the Transportation Commission for approval **or** rejection.

(3) (a) Financial settlement agreements involving **condemnation or inverse condemnation** cases for more than \$2,000,000 over the Department of Transportation's original appraisal and all action settlement agreements that resolve **condemnation or inverse condemnation** cases shall be presented:

(i) to the Transportation Commission for approval **or** rejection; and

(ii) if the financial **or** action settlement agreement is approved by the Transportation Commission, to the Legislative Management Committee.

(b) The Legislative Management Committee may recommend approval **or** rejection of the financial **or** action settlement agreement.

(4) (a) The Department of Transportation may not enter into a financial settlement agreement that resolves a **condemnation or inverse condemnation** case and requires payment of \$1,000,000 to \$2,000,000 over the Department of Transportation's original appraisal until the Transportation Commission has approved the agreement.

(b) The Department of Transportation may not enter into a financial settlement agreement that resolves a **condemnation or inverse condemnation** case and requires payment of more than \$2,000,000 over the Department of Transportation's original appraisal **or** enter into an action settlement agreement that resolves a **condemnation or inverse condemnation** case until:

(i) the Transportation Commission has approved the agreement; and

(ii) the Legislative Management Committee has reviewed the agreement.

2.11.3 Injunction

Where a statutory right is violated to the landowner's material injury, courts ordinarily grant an injunction. The injunction could enjoin the highway agency from taking a certain action or require the abatement of a certain condition which it has created. This does not prevent the recoupment of compensation for damages that have occurred. As a general rule, injunctions may be granted even though the extent of the injury is incapable of being ascertained or of being computed in dollars.

2.11.4 Tort Claims

In the early development of the law, the courts recognized that, whenever possible, compensation should be awarded to those persons harmed by the actions of another. This was the origin of the theory of tort liability. In essence then, a tort, or civil wrong, is the violation of a personal right guaranteed to the individual by law. A person has committed a tort if he has interfered with another person's safety, liberty, reputation or private property. If the injured party can prove the defendant proximately caused him harm, the court will hold the defendant responsible for the plaintiff's injury and the defendant will be forced to pay for the damage.

2.11.5 Legislative Claims

It is usually possible for a complainant to file a legislative claim in States where immunity from suit is provided by law. Generally, a legislative committee is assigned to evaluate the claim. After a quasi-judicial hearing of testimony and studying evidence presented by both the State agency involved and the plaintiff, the committee prepares a bill for action by the legislature. The legislature may deny the claim; waive the State's immunity from suit, and thus allow the claim to proceed in the judicial system; or allow the claim or a portion of the claim to be paid.

2.12 ROLE OF THE DESIGNER

2.12.1 Responsibility

The designer has a two-fold responsibility for the legal aspects of highway drainage. First, the designer should know the legal principles involved and apply this knowledge to all designs; and, secondly, the designer should work closely with the legal staff of the organization, as necessary, in the preparation and trial of drainage cases. The duties of the designer include direct legal involvement in the following areas:

- conduct investigations, advise and provide expert testimony on the technical aspects of drainage claims involving existing highways; and
- provide drainage design information during right-of-way acquisition to assist appraisers in evaluating damages and provide testimony in subsequent condemnation proceedings, when necessary.

2.12.2 Investigating Complaints

It is imperative that drainage complaints be dealt with promptly and in a unbiased manner. This means accepting that the flooding is a serious problem for the complainer, and not accepting anyone's preconceived conclusions. All facts must be assembled and analyzed before

conclusions can be determined on what happened and why. Also, it is well to list any action by others that could possibly be responsible for the flooding.

When the hydraulics engineer is requested to investigate a complaint, the following guidelines are recommended:

Step 1 Determine Facts about the Complaint.

- Show on a map the location of the problem on which the complaint is based.
- Clearly determine the basis for the complaint by obtaining information including what was flooded, complainer's opinion on what caused the flooding, description of the alleged damages, dates, times and durations of flooding.
- Briefly relate the history of any other grievances that were expressed prior to the claim presently being investigated.
- Obtain approximate dates that the damaged property and/or improvements were acquired by those claiming damages.
- Collect facts about the specific flood event(s) involved:
 - Obtain rainfall data including dates, amounts, time periods and locations of gages. Rainfall data are often helpful regardless of the source.
 - Document observed high-water information at or in the vicinity of the claim. Locate high-water marks on a map and specify datum. Always try to obtain high-water marks both upstream and downstream of the highway and the time the elevations occurred.
 - Determine the duration of flooding at the site of alleged damage. Determine the direction of flood flow at the damaged site. Describe the condition of the stream before, after and during flood(s). Determine if the growth in the channel was light, medium or heavy and if there were drift jams. Determine if the stream carries much drift in flood stage. Determine if the flow was fast or sluggish and if light, moderate or severe erosion occurred.
 - Document the flood history at the site. Determine if the highway was overtopped by the flood. If so, determine the depth of overtopping and, if possible, estimate a flow velocity across the highway. Obtain narratives of any eyewitnesses to the flooding. Obtain facts about the flood(s) from sources outside the Department, such as newspaper accounts, witnesses, measurements by other agencies (USGS, USACE, NRCS and individuals), maps and Weather Bureau rainfall records.
- State facts about the highway crossing involved.

Show profile of the highway across the stream valley. Give the date of the original highway construction and dates of all subsequent alterations to the highway, and describe what the alterations were. Describe what existed prior to the highway, such as county road, city street, abandoned railroad embankment, etc. Also, include a description of the drainage facilities and drainage patterns that were there prior to the highway. Give a description of the

existing drainage facilities. Give the original drainage design criteria, or give capacity and frequency of the existing facility based upon current criteria.

- List possible effects by others.

Determine if there are any other stream crossings in the vicinity of the damaged site that could have affected the flooding. Determine if there are any other contributing factors such as pipelines, highways, streets, railroads or dams. Determine if there have been any significant constructed changes to the stream or watershed that might affect the flooding.

Step 2 Analyze the Facts.

- From the facts, decide what should be done to relieve the problem regardless of who has responsibility for the remedy. Identify others who may possibly provide assistance.

Step 3 Make Conclusions and Recommendations.

- Determine the contributing factors leading to the alleged flood damage.
- Specify feasible remedies. (This should be done without any regard for who has responsibility to effect a remedy).

The list under Determine Facts about the Complaint is not all inclusive, nor is it intended that the entire list will be applied in each case. This outline is given as a guide to the type and scope of information desired from an investigation of a drainage complaint. It is advantageous to have available hydraulic design documentation as outlined in the Documentation Chapter of this *Manual*. When the Department's report is completed, the designer should again analyze the facts, consider the conclusions and recommendations and prepare a response to the complainer explaining the results of the investigation. Documentation of the facts and findings is important in the event there is future action.

2.12.3 Legal Opinion

Drainage matters range from the simple to the complicated. If the facts are ascertained and a plan developed before initiating a proposed improvement, the likelihood of an injury to a landowner is remote, and the Department or developer should be able to undertake such improvements relatively assured of no legal complications.

If the designer needs a legal opinion on a specific drainage problem or improvement, the requested opinion should state at a minimum whether:

- The watercourse under study has been viewed.
- There are problems involved, and what causes them (e.g., obstructions, topography, present and future development).
- The proposed improvements will make the situation better.
- The proposal requires that the natural drainage be modified.
- There is potential liability for doing something versus doing nothing.

- Someone will benefit from the proposed improvements.
- In general, what is proposed is “reasonable.”

2.12.4 As A Witness

The designer should accept the responsibility of providing expert testimony in highway drainage litigation. Witness duty ordinarily requires considerably more time of a witness than the time spent in the courtroom. The best use of the designer’s time can be arranged by consulting with legal counsel to determine what types of information and data will be needed, the types of presentation needed and when testimony will be required.

Testimony often involves presenting technical facts in layman’s language so that it will be clearly understood by those in the courtroom. The designer’s testimony generally describes the highway drainage system involved in the alleged injury or damage, and how that system affects the complainant. Documentation of design considerations and evidence of conditions existing prior to construction of the highway will be necessary to support all testimony.

2.12.5 Witness Conduct

The designer who is to serve as a witness should bear one fact in mind — the purpose of the court is to administer justice. Testimony should have one purpose — to bring out all known facts relevant to the case so that justice can better be served. Following are some pointers in being a witness:

- Tell the truth and do not try to color, shade or change your testimony to help either side.
- Never lose your temper or show prejudice in favor of one side that is not supported by facts.
- Do not be afraid of lawyers and give your information honestly.
- Speak clearly and loudly to be heard by everyone involved in the courtroom proceeding.
- If you do not understand a question, ask that it be explained. If you still do not understand what is being asked, explain that you cannot give an answer to that question.
- Answer all questions directly and never volunteer information the questioner does not ask for.
- Stick to the facts and what you personally know.
- Do not be apprehensive. Your purpose is to present the facts as you know them and that is all that will be expected.
- If you do not know the answer to a question, just admit it. It is to your credit to be honest, rather than try to have an answer for everything that is asked you.
- Do not try to memorize your story. There is no more certain way to cross yourself than to memorize your story and try to fit this story with the questions being asked.
- Work with your lawyer in preparing your testimony and stick to the facts as you know them.

2.13 REFERENCES

- (1) AASHTO, *Highway Drainage Guidelines*, Chapter 5, "The Legal Aspects of Highway Drainage," Task Force on Hydrology and Hydraulics, 2003.
- (2) Federal Emergency Management Agency, "National Flood Insurance Program and Related Regulations," www.fema.gov/nfip/library.htm.
- (3) US Army Corps of Engineers, *Handbook of How to Compute a Floodway* (Copies of this publication can be obtained from Federal Emergency Management Agency Region V, 175 West Jackson Blvd., Fourth Floor, Chicago, IL 60604.), 1987.
- (4) Utah Code