

CHAPTER 2

LEGAL ASPECTS

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2.1 Introduction

Oregon drainage law and regulations that apply to highway drainage facilities are discussed in this chapter. The intention is to only provide information and guidance on the engineer's role in the legal aspects of highway drainage. This chapter should not 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 conclusions regarding liability:

- a goal in highway drainage should be to perpetuate the natural drainage, insofar as practical, and
- the courts look with disfavor upon infliction of injury or damage that could be avoided by a prudent designer, even where some alteration of flow is legally permissible.

Additional information about highways and drainage law is in American Association of State Highway and Transportation Officials (AASHTO) Highway Drainage Guidelines. This reference gives advice on expert testimony and the role of the hydraulics engineer during litigation. This manual can be ordered from the AASTHO website.

2.2 Oregon Drainage Law

Oregon drainage law, which originates from common law or case law, has developed without legislative action, and it is embodied in the decisions of the courts. Therefore, there are no Oregon Revised Statutes to cite pertaining to Oregon drainage law.

Oregon has adopted the civil law doctrine of drainage. Under this doctrine, adjoining landowners are entitled to have the normal course of natural drainage maintained. The lower owner must accept water that naturally comes to his land from above, but he is entitled to not have the normal drainage changed or substantially increased. The lower landowner may not obstruct the runoff from the upper land if the upper landowner is properly discharging the water.

For a landowner to drain water onto lands of another in the State of Oregon, one of two conditions must be satisfied initially: (1) the lands must contain a natural drainage course; or, (2) the landowner must have acquired the right of drainage supported by valuable consideration (i.e. a purchased drainage easement). In addition, because Oregon has adopted the civil law doctrine of drainage, the following three basic elements must be followed.

1. A landowner may not divert water onto adjoining land that would not otherwise have flowed there. "Divert water" includes but is not necessarily limited to:
 - a. water diverted from one drainage area to another, and,
 - b. water collected and discharged which normally would infiltrate into the ground, pond, and/or evaporate.
2. The upper landowner may not change the place where the water flows onto the lower owner's land. (Most of the diversions not in compliance with this element result from grading and paving work and/or improvements to water collection systems.)
3. The upper landowner may not accumulate a large quantity of water, then release it, greatly accelerating the flow onto the lower owner's land. This does not mean that the upper landowner cannot accelerate the water at all; experience has found the drainage to be improper only when the acceleration and concentration were substantially increased.

Subsurface waters which percolate to the surface can be intercepted and diverted for the protection of the highway without regard for the loss of these waters to the adjacent landowners. In those cases where wells and springs are involved, the right-of-way agent should contact the affected owner(s) to prevent any misunderstanding over damage that could be claimed.

Drainage designs should satisfy Oregon drainage law to avoid claims or litigation resulting from improper drainage design. When it is apparent that the drainage design will not satisfy the law, then drainage easements should be obtained from the affected property owners. The legal staff should be consulted in those situations that appear to be unique and could result in litigation.

Where certain drainage patterns have been established over long periods of time (i.e. in excess of at least 10 years), that are not the original natural drainage, there may be legal rights acquired which allow the continuance of the altered drainage pattern. Again, legal staff should be consulted in such situations.

2.3 Common Drainage Complaints

Most complaints about highway-related drainage result from alleged diversion, collection and concentration, augmentation, obstruction, erosion and sedimentation, and groundwater interference. The hydraulics engineer should have a thorough understanding of both the basis of individual complaints when investigating damage claims, and the causes of complaints when evaluating drainage alternatives during highway design. Again, the proper utilization of legal counsel cannot be overstressed. It should be noted that ODOT, by being an owner of property, is in neither a worse or better position than any other property owner in the State of Oregon.

Therefore, the complaints discussed below are also complaints that ODOT can bring against upper and lower property owners.

Complaints regarding drainage conditions should be investigated as soon as possible. If the investigation concludes that the complaint is warranted, then it is advisable to take corrective action.

2.3.1 Diversion

Diversion means unauthorized detention or changing the course of a stream or watercourse from the natural or existing condition. ODOT can be held liable for diverting water from a natural waterway; however, courts generally do not disapprove of a change in drainage in which waters are taken out of their natural course and are later returned to such course without material injury to abutting property owners. Where a diversion is necessary, purchase of drainage easements over the lands adversely affected by the diversion will substantially reduce the risk of complaints.

Highway designers often choose to discharge surface waters into the most convenient watercourse. This practice is generally unquestioned if those waters were naturally tributary to the watercourse. However, if all or part of the surface water has been diverted from one watershed to another, any lower landowner may complain and recover for any damage directly attributable to the diversion.

Consider the situation where the upper landowner diverts the stream or conducts other activities that places water on the highway right-of-way from a different place or position than it came originally. The landowner will be responsible to go back and:

- adjust the drainage pattern either to its original position,
- or so that the water does not reach the highway at a point where it would damage the highway or be costly to ODOT to construct new culverts or ditches to drain the water off of the highway right-of-way.

2.3.2 Collection and Concentration

A common complaint made regarding new or expanded highways is that surface waters are collected more efficiently, and, therefore, the peak flows at the points of discharge from the highway are greater. The cuts and fills required for highways and the associated ditches and culverts that comprise the highway drainage system collect and concentrate the surface water. The courts have recognized the collection of surface water as an economic necessity to a highway facility. The courts have also imposed limitations on such collection based upon both its reasonableness and upon considerations of significant damage to the landowner.

The highway designer should always analyze points of collection and discharge to see if any unreasonable condition is being imposed upon adjacent property and provide such corrective measures as may be necessary. An example of providing a design measure to preclude damage to downstream property would be to secure a drainage easement or additional right-of-way on the upstream side of the highway for the construction of a detention pond. The detention pond would be designed to limit the outflow to the pre-construction discharge. Obtaining drainage easements on the downstream side of the highway can also preclude liability for property damage and would eliminate the need for the upstream detention pond.

2.3.3 Augmentation

An increase in peak flow or volume caused by development is often referred to as augmented flow and also as accelerated flow. As with diversion and collection, a certain amount of augmentation can occur from a highway. The increase in peak flow caused by the highway can be quantified by calculating the peak flow from the watershed with and without the highway. In order for the highway to cause a significant increase in the peak flow, the highway must comprise a large portion of the drainage area in the watershed.

Problems or complaints sometimes occur when the upper landowner discharges more water to the highway right-of-way and ODOT simply passes the water downstream. The lower landowner complains because they are getting more water than they got before and they try to blame ODOT for the increased flow. ODOT should inform the lower landowner that the problem is caused by the upper landowner and it is not ODOT's responsibility to take legal action against the upper landowner. The exception would be if the increased flow were causing damage to the highway, in which case ODOT could take legal action against the upper landowner for the damage to the highway.

Another problem that occurs from land development is that ODOT drainage structures that were once adequate are now inadequate due to increased flows from the development. If the upper landowner increases the flow such that the highway drainage facilities are no longer adequate, it is the upper landowner's responsibility for paying for enlarging the highway drainage facilities to adequately pass the increased flow. They are also responsible for damages that the lower landowners may claim were caused by the increased flow.

2.3.4 Obstruction

Backwater from a bridge or culvert is a common basis of complaint involving obstruction. A basis for complaint may exist when damage to private property results from undersized drainage structures in highway embankments. In the case of a highway paralleling a stream, a roadway embankment that encroaches on the stream's floodplain may obstruct the stream flow in the floodplain. Lack of maintenance of an otherwise adequate opening can be considered obstruction.

Two important legal aspects the hydraulics engineer should consider when evaluating the effects of obstruction are:

- courts have held that the extent of liability due to obstructing flow is limited to the amount of the increase in damages attributable to the obstruction, and
- regardless of the design frequency and discharge used, ODOT can be held liable for the backwater damage. From a legal standpoint, the determination of liability is based on whether the waterway opening was adequate for a flow that reasonably could have been anticipated at the time the opening was constructed (this will include considering the likelihood of possible flood conditions). Since the determination of liability is made “after-the-fact” in a court of law, it is important when selecting the size of an opening to evaluate the backwater damage potential for discharges that exceed the design discharge.

2.3.5 Erosion and Sedimentation

Erosion of private property that can be attributed to the highway can be a basis for a claim. Sediment originating from a highway and deposited off the highway right-of-way can also generate complaints. Therefore, it is important to establish the natural erosion and sedimentation conditions in order to assess the possibility that the observed erosion and sedimentation would have occurred under natural conditions. Erosion and sedimentation problems from highway construction and operation can be minimized through proper design and construction of temporary and permanent erosion and sediment control features. These features are discussed in ODOT’s Erosion and Sediment Control Manual.

2.3.6 Groundwater Interference

Groundwater is often encountered during highway construction. Similar to the laws governing surface waters, any temporary or permanent interference with the flow, quality or level of groundwater can be a basis for a complaint.

Excavations and de-watering operations may deplete groundwater previously available for irrigation and domestic supply. Embankments may compress underlying water bearing soils and restrict the circulation of groundwater, thereby depriving users of normal flow. Another complaint is an alleged decrease in the quality of groundwater as a result of contaminants from highway runoff.

Where groundwater interference is a potential basis for complaint, the groundwater level and quality should be investigated and documented prior to the beginning of construction.

2.4 National Flood Insurance Program

In 1968 the U.S. Congress established the National Flood Insurance Program (NFIP) with passage of the National Flood Insurance Act. The act authorized the Federal Emergency Management Agency (FEMA) to conduct flood studies. The purpose of the studies is to support state and local efforts to:

- regulate the development of land which is exposed to flood damage, where appropriate,
- guide proposed construction away from locations which are threatened by flood hazards,
- assist in reducing damages caused by floods, and
- otherwise improve the long-range land management and use of floodprone areas.

The NFIP is designed to benefit individuals and communities. It enables property owners to purchase flood insurance at reasonable rates, and it requires participating cities and counties to adopt and administer legally enforceable local floodplain management measures aimed at protecting lives and new construction from flooding.

FEMA publishes the flood insurance studies and administrates the NFIP. Once a Flood Insurance Study is published any revisions to the study must be approved by FEMA.

NFIP regulations that are administered by FEMA are contained in Title 44, Chapter 1 of the Code of Federal Regulations (CFR), Parts 59 to 75. The regulations along with a wealth of other information about the NFIP can be found at FEMA's website.

2.4.1 Flood Insurance Studies and Floodways

The published flood insurance studies contain water surface profiles and floodplain maps of flood hazard areas. The water surface profiles should include the backwater effects of existing highway facilities that are located in the study area. For waterways studied in detail, water surface profiles are published for the 10-year, 50-year, 100-year and 500-year floods. For the 100-year flood, a floodway is usually established and the water surface profile associated with the floodway is published in the flood study. The floodway is the channel of the stream, plus any adjacent flood plain areas that must be kept free of encroachment so that the 100-year flood can be conveyed without increasing the water surface elevation more than 1.0 foot. Figure 2.1 shows the floodway schematic. In some instances, local agency officials have adopted a floodway that allows less than a 1.0 foot rise. Therefore, the applicable city or county floodplain ordinance should be consulted for the standards that are in effect.

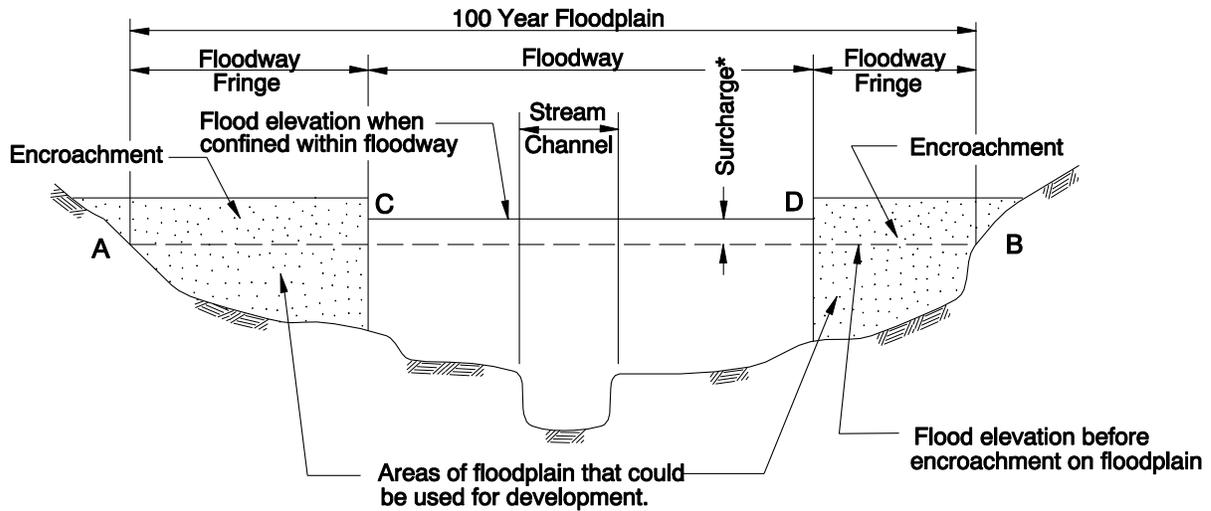
2.4.2 NFIP Maps

Three types of NFIP maps are published:

- Flood Hazard Boundary Maps (FHBM)
- Flood Boundary and Floodway Maps (FB&FM) and
- Flood Insurance Rate Maps (FIRM)

A FHBM is generally not based on a detailed hydraulic study and, therefore, the floodplain boundaries shown are approximate. A FB&FM is derived from a detailed hydraulic study and it should provide reasonably accurate information. The FB&FM will show the boundaries of the floodway, 100-year floodplain, and 500-year floodplain. The FIRM map will usually show the boundaries of the floodway, 100-year floodplain, and 500-year floodplain as well as the flood insurance rate zones and the 100-year flood elevations. The FIRM map is the basis for establishing flood insurance rates. Recent Flood Insurance Studies do not include the FB&FM maps. The floodway elevation and boundary information for studies since 1990 are included on the FIRM maps.

Cities and counties may or may not have published one or more of the above maps depending on their level of participation in the NFIP. The Geo-Environmental Section's Engineering and Asset Management Unit has one copy of each available map. Maps are also available on FEMA's website.



Line A - B is the flood elevation before encroachment
 Line C - D is the flood elevation after encroachment

* MAXIMUM SURCHARGE 1.0 FOOT. A LESSER MAXIMUM MAY BE SPECIFIED BY FEMA OR THE LOCAL JURISDICTION. CONSULT FLOOD INSURANCE STUDY. IN MANY LOCATIONS A PORTION OF THE SURCHARGE HAS BEEN USED AS A RESULT OF EXISTING ENCROACHMENTS.

Figure 2-1 Floodway Schematic

2.4.3 Coordination with Local Jurisdictions and FEMA

There should be ODOT coordination with local jurisdictions and FEMA in situations where administrative determinations are needed involving a regulatory floodway or where flood risks in NFIP communities are significantly impacted. The circumstances that would ordinarily require coordination with local jurisdictions and FEMA include the following:

- when a proposed crossing encroaches on a regulatory floodway and it would require an amendment to the floodway map,
- when a proposed crossing encroaches on a floodplain where a detailed study has been performed but no floodway designated and the maximum 1.0 foot increase in the 100-year flood elevation would be exceeded in the vicinity of insurable buildings,

- when a local agency is expected to enter into the regular program within a reasonable time period and detailed floodplain studies are underway, and
- when a local agency is participating in the emergency program and the 100-year flood elevation in the vicinity of insurable buildings is increased by more than 1.0 foot. Where insurable buildings are not affected, it is sufficient to notify FEMA of changes to the 100-year flood elevation 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 a floodway revision. Coordination means furnishing to FEMA the draft EIS/EA and, upon selection of an alternative, furnishing to FEMA, through the local agency, 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.

2.4.4 Floodway Revisions

In most situations, it is possible to design and construct highways in a cost-effective manner such that their components are excluded from the floodway. This is the simplest and preferred 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 as being consistent with the standards. Hydraulic conditions, however, must be improved so that no water surface elevation increase is reflected in the computer output for the new conditions. One way to compensate for the effect of piers in the floodway is to lengthen the bridge to offset the backwater created by the piers. Other less environmentally friendly solutions include channel excavation or a reduction of Mannings “n” value by removing the vegetation on the channel banks and overbank areas.

A second alternative would be a modification of the floodway itself, where it is not cost-effective to design a highway crossing to avoid encroachment on an established floodway. Since the local agency selects and adopts the floodway, the local agency must agree to modify the floodway, and the request to FEMA to revise the floodway must come from the local agency. Often, the local agency will be willing to accept an alternative floodway configuration to accommodate a proposed crossing provided NFIP limitations on increases in the 100-year flood elevation are not exceeded. This approach is useful where the highway crossing does not cause more than a 1.0 foot rise in the 100-year 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 in order to allow greater encroachment. Such planning is best accomplished when the floodway is

first established. However, where the local agency is willing to amend an established floodway to support this option, the floodway may be revised. Floodway revisions are a lengthy process.

The responsibility for demonstrating that an alternative floodway configuration meets NFIP requirements rests with the local agency. This responsibility will be borne by ODOT for proposed ODOT highway construction projects that impact floodways. ODOT will supply the local agency with revised flood profiles, floodway and floodplain mapping, and background technical data required by FEMA to revise the floodway. After the local agency receives the data necessary to revise the floodway, it is the local agency's responsibility to forward the data to FEMA with a request to revise the floodway.

Floodway modifications resulting in a base flood increase greater than 1.0 feet are eligible for Federal Highway Administration (FHWA) funding in some instances. FHWA floodplain development requirements are in federal regulation 23 CFR 650 Subpart A. This regulation along with explanatory supplements can be viewed on the FHWA website <http://www.fhwa.dot.gov>.

2.4.5 Geo-Environmental Section's Engineering and Asset Management Unit and Region Responsibilities

Relative to the NFIP, the ODOT Geo-Environmental Section's Engineering and Asset Management Unit has the responsibility to advise and assist ODOT personnel with NFIP and FEMA related issues.

The ODOT Regions have the following responsibilities:

- coordinate with FEMA in situations where administrative determinations are needed involving a regulatory floodway or where flood risks in NFIP communities are significantly impacted,
- coordinate with FEMA and the local agency and prepare the data necessary for the local agency to submit to FEMA for floodway revisions,
- provide the engineering analysis necessary for projects to conform to the local floodplain regulations, and
- provide engineering certification required to obtain the floodplain permit from the local agency. The required engineering certification will be one or more of the following:
 - a no-rise certificate or statement of no rise where increased flood elevations are not allowed or desired,
 - a statement that proposed development is limited to the floodway fringe or that the proposed development does not increase surcharge above the published values,
 - a statement that proposed changes within a floodway do not reduce floodway conveyance, or

- a floodway boundary revision request if the proposed changes raise floodway water surface elevations above the published values.

Calculations and other documentation may be required or desired to support the preceding statements.

*Note: The seal of a professional engineer is required on many certification documents, as discussed in **Chapter 3**.*