Inverse Condemnation in Flooding Cases

When the Flood Waters Cover the Earth, or "Can Anyone Tell Me Where I Can Find a 'Gopher Tree?'"

In the Old Testament Book of Genesis, God gets the credit or blame for a flood that covers the earth. (Genesis 6 - 7). In order to save Noah and his descendants, God orders Noah to build an ark of "gopher wood." (Genesis 6:14) Notes to this section of Scripture say that this was "an unknown kind of tree." It may be assumed, therefore, that such a tree will be difficult to find today. Therefore, enterprising plaintiffs' lawyers have taken to filing inverse condemnation lawsuits against government, in place of seeking out arks of gopher wood, to help save the victims of flooding in today's world. God no longer gets the blame or credit. Furthermore, God is not accepting service of process. Thus, government and its public projects have become the objects of lawsuits to remedy the damage from flooding occasioned by otherwise natural flooding disasters.

Since becoming the Deputy County Attorney supervising the litigation section of the County Attorney's Office in 2006, it has fallen to me to defend five such cases. The lessons learned from the trial and pending trials of these cases, together with the assistance of some learned geotechnical engineers, serve as the basis of this article.

Why Inverse Condemnation and What Is the Burden of Proof?

An inverse condemnation action is a cause of action by a citizen against a governmental defendant to recover the value of property that has been taken in fact, although no formal exercise of the power of eminent domain has been attempted by the taking agency.[1]

When a public project such as highway construction results in a diversion of water on to private land, the owner may have an inverse claim. Most experts believe that the requirement of a "permanent" taking by the flooding is no longer necessary since the decision in *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles, California*, 482 U.S. 304, 107 S.Ct. 2378, 96 L.Ed.2d 250 (1987). However, recent decisions hold that during the period of inundation, the owner must be deprived of substantially all reasonable use of the property.[2]

Unlike a traditional eminent domain action where the government bears the burden of proof that the taking sought is both a public necessity and for a public purpose, the property owner must carry the burden of proof in an inverse condemnation action. Consistent with Florida law, that burden of proof includes the following:

1. Government action;[3]
2. Taken willfully or knowingly;[4]
3. Which caused a physical invasion of the Plaintiffs' land;[5]
4. Reasonably expected to continually reoccur in the future,[6] or substantially expected to periodically recur;[7]
5. That interferes with all beneficial use of the property,[8] or denies any reasonable use of the property;[9]
6. As of a specific date.

By far the most critical element of proof is "causation." Unless it can be proved, by the greater weight of the evidence, that the government's project caused or substantially contributed to the flooding of the owner's property, there can be no recovery. This issue, coupled with the question of whether the flooding resulted in the owner being deprived of substantially all beneficial use of his/her property, usually decides the outcome of the inverse condemnation trial.

How "Causation" Is Proved or Disproved
Computer Modeling and Expert Engineering Witness

During 2004 and 2008 Florida, which normally receives plentiful rainfall, often in bursts during the summer months, incurred unusually high rainfall amounts from three hurricanes (August and September 2004) and Tropical Storm Fay (August 2008). Since most retention ponds are designed for a hurricane type event (10 to 12 inches of rainfall within a 24 hour period), many ponds were simply overwhelmed.

A. How the Problem Occurs
[The Engineer's Perspective]

Devo Seereeram, Ph.D., P.E., is an expert geotechnical engineer who has served as an expert witness for both plaintiffs and defendants in numerous civil cases involving flooding of private property. The following are his comments on how the problem arises and the areas of trouble for both sides of these cases.

<u>The Engineer's Perspective</u>

When rain falls on pervious and impervious land surfaces, stormwater runoff is generated and this surface water moves by gravity from higher elevations to lower elevations (i.e., water always flows downhill). This runoff moves through conveyance systems and can be detained in ponds on its way to an outfall point in a lake or a canal or natural channel or even the ocean.

Impervious surfaces (such as asphalt pavement and driveways) quite naturally produce more runoff than pervious surfaces (such as turf grass). For example, for a one (1) inch rainfall event, the runoff produced is a percentage of this one (1) inch which can vary from zero runoff on high and dry sandy soils, about 30% on a vegetated site with high water table, and as much as 80% for impervious surfaces.

One of the first things you learn about rainfall in Florida is that a storm event with (1) inch of rain is a fairly significant storm. Most people tend to think one (1) inch of rain is a small storm but it is a very heavy storm; check your rain gage one day after a heavy rain event and you will be surprised at what it takes to fill a rain gage to a depth of one (1) inch.

The runoff forms as "sheet flow" and then may enter a minor collection system such as a roadside gutter before it enters a major conveyance system (such as a pipe, swale, ditch, creek, etc.). This water is conveyed to a storage system (such as a pond) where it is held and then slowly released by ground infiltration or through a small diameter opening; in rare instances a pumped discharge is used. Runoff volumes in excess of the design holding capacity of the storage system flows out at a higher rate through a high level and wider outfall.

Stormwater storage ponds are usually sized to meet certain quantitative regulatory criteria which are presumed to protect downstream as well as upstream land owners and ecosystems. Even though a permit is obtained, it does not mean that the system will prevent flooding or eliminate offsite impacts. Here are some examples of the failures which may occur with stormwater systems:

1. First, during construction, the contractor may not have considered the natural flow paths for stormwater runoff through his work site with the result that some flow lines are obstructed leading to upstream blockages and impoundments, some of which may fail with a "tidal wave" effect. These failures cause significant erosion and environmental damage since they release a lot of sediment-laden water.

2. After the system is constructed, the drainage flow pattern may become altered where stormwater is now diverted into areas where it was not intended or may be impounded in upstream areas causing flooding. Some badly designed diversions can also dehydrate wetland ecosystems.

3. Stormwater storage and/or conveyance systems may be under-sized in some cases due to calculation errors by the design engineer or some other design deficiency which affects system performance (such as a mis-estimate of the water table in the ground or account for too much ground infiltration in the stormwater holding pond).

4. Stormwater impoundment failures leading to sudden releases of stormwater causing flooding and damage to downstream properties.

5. Seepage through pond berms or an artificial rise in the water table in the locality of a stormwater storage system which causes nuisance flooding or chronic wetness/seepage/flooding to adjacent land owners. Some lake level modification projects which raise lake levels can impact lakeshore residents, especially those on septic tanks.

6. Construction errors such as improper sand in filter systems, incorrect elevations for berms (too low), dumping debris in fill berms, no seepage collars on pipes to prevent blow-outs, etc.

7. Impoundment side-slope design errors which lead to slope failures or blowouts from seepage forces.

8. Maintenance issues which result in system being plugged up and performing below its design intent.

9. Increase in impervious area can sometimes lead to increased discharge volume with some types of systems and this could elevate the levels of downstream water bodies.

10. Land-locked lakes are lakes without a positive outfall (or very limited discharge capacity) below the 100 year flood elevations These water bodies can accumulate runoff over prolonged periods of excess rainfall with a startling and chronic rise in water level, especially during the multi-day storms. This type of stormwater management system is not forgiving and requires extra care in design. Except for FDOT regulations, current water management district criteria do not truly recognize the long-duration storm events which are most critical for management of these unforgiving systems.

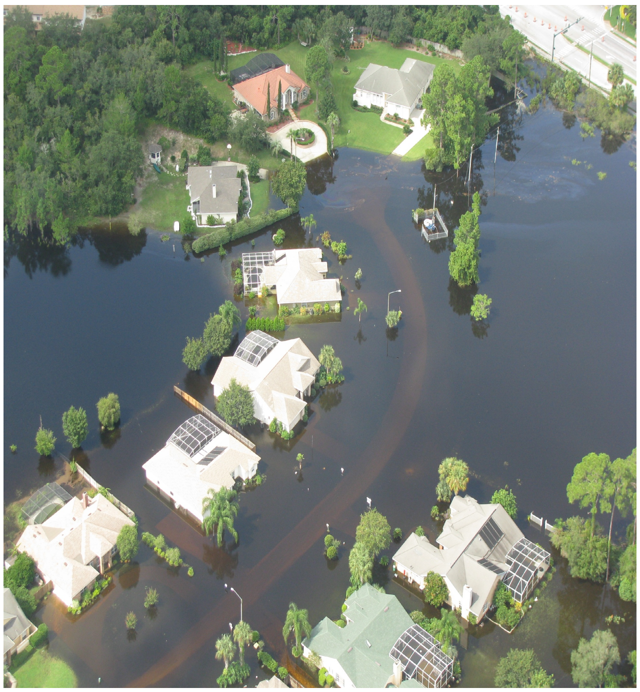
11. Mis-estimating capacity of discharge facilities such as underground drainage wells, especially in South Florida where this is the primary drainage mechanism in many areas.

12. Under-estimating the "tailwater conditions" which means that the water surface elevation for the outfall water body is estimated too low with the result that the outfall system backups into the facility instead of flowing the other way.

13. Failure to consider impacts of construction equipment trafficking stormwater basins whish are designed to infiltrate into the ground the accumulated stormwater. Some types of soils seal off significantly with equipment traction and compaction, resulting in dramatic reductions in natural percolation capacity.

14. Allegation that County (or public agency responsible for emergency management) fails to respond to a structural flood threat in a timely manner with a sufficient number of pumps.

15. Claims that county failed to maintain (de-silt) or repair outfall systems (such as collapsed pipes) leading to a rise in level of upstream water bodies.



Engineer's Use of Computer Modeling

For the past 25 years, Orlando has been at the epicenter of stormwater modeling software development. Models such as "adiCPR" (Streamline Technologies), CHAN (Aquarian software), and "PONDS" (Devo Engineering) have emerged as the industry standards with capabilities for modeling complicated systems. These models have the ability to model the stormwater runoff for complex events and then "route" this stormwater runoff through conveyances and into storage systems with and without overflow structures. Modeling techniques have evolved now where real-world storm events can be input to generate the runoff which is then used to replicate the field observations of flood levels. This is an engineering procedure known as "calibration" wherein the model is tuned (within a reasonable set of input parameters) to reproduce the field observations. A "calibrated model" can then be used to make predictions for "what if" scenarios, which is ideal for litigation. These models can be used to predict flood levels for various scenarios including before an improvements project and after an improvements project to show the net impact. This is more commonly known as a pre-post analysis and is the most powerful demonstrative tool.

Cost of Experts and Computer Modeling

Based on my personal experience as an expert, the expert fees for a geotechnical/drainage expert can range from $10,000.00 for the simplest case to as much as $400,000.00 for complicated high liability cases with exposure of over $100 million. Generally speaking, expert fees of $40,000-$75,000.00 are more typical if analysis is comprehensive and the plaintiff is proactive.

B. How to Discover Problems or Prove That Flooding Not Caused by Government Project [Lawyer's Perspective]

From the lawyer's perspective on these "computer models," the principle of "garbage in, garbage out" still applies. So, the primary test is almost always whether the information input into the computer is accurate or the best information available. Such issues as accurate topographic surveys, the location of stations from which the expert obtained rainfall amounts, groundwater levels [surficial and Floridan aquifer levels at the time of the storm], the size and configuration of the drainage basin used by the engineer, review of plans of historical drainage structures/infrastructure to ascertain all elements contributing runoff to a particular location, field observations conducted during actual rain events to confirm the "flow" of stormwater runoff to the drainage basin in question, can affect the accuracy of the modeling and the ultimate credibility of the expert opinion. Based on our experience, historical aerial photography often shows past flooding events pre-existing the government projects.

In the end, the critical question, from our experience, is whether the property in question would have flooded with or without the government project. Phrased another way, "but for" the government project, would the property have experienced substantially the same flooding from the storm event in question? It is the inability of property owners and their experts to answer this question accurately that results in the loss of these cases.

C. Conclusion

Inverse condemnation cases involving flooding events are not for the fainthearted and should not be undertaken without a very careful expert analysis and a detailed understanding of the issues involved and the cost of going forward to suit. These cases are tough to win and easy to lose. It may well be easier to find "gopher wood" than to establish "causation" in such cases.

[1] *Florida Eminent Domain Practice and Procedure*, Seventh Edition, The Florida Bar, 2008, section 13.2, page 13-2.

[2] *Hansen v. City of DeLand*, 32 So.3d 654 (Fla. 5th DCA 2010).

[3] *State Dept. of Health and Rehabilitative Services v. Scott*, 418 So.2d 1032 (Fla. 2d DCA 1982).

[4] *Broward County v. Rhodes*, 624 So.2d 319 (Fla. 4th DCA 1993); *State Road Dept. of Florida v. Darby*, 109 So.2d 591, 593 (Fla. 1st DCA 1959).

[5] *South Florida Water Management District v. Basore*, 723 So.2d 287 (Fla. 4th DCA 1999).

[6] *Elliott v. Hernando County*, 281 So.2d 395, 396 (Fla. 2d DCA 1973).

[7] *Associates of Meadow Lake, Inc. v. City of Edgewater*, 706 So.2d 50, 52 (Fla. 5th DCA 1998).

[8] *Diamond K Corp. v. Leon County*, 677 So.2d 90, 91 (Fla. 1st DCA 1996).

[9] *Associates of Meadow Lake* at 52.

Larry Smith is the Deputy County Attorney in Volusia County, Florida, supervising the litigation section of that office and lead trial attorney during numerous inverse condemnation cases involving flooding claims.

Devo Seereeram, Ph.D., P.E., is the Principal Engineer and owner of Devo Engineering, LLC located in Orlando, Florida. Devo received all of his degrees from the University of Florida. Devo developed the popular *PONDS* computer program which is widely used in the State of Florida (and other parts of the world) for drainage design and regulatory permitting.