

Environmental Law

Advisory

A monthly update on law, policy and strategy

Massachusetts DEP Using Aerial Photography to Map and Prosecute Wetlands Violations

In December 2003, the Massachusetts Department of Environmental Protection (DEP) announced the first two prosecutions under its extensive new wetlands protection initiative. Harbingering a likely national trend, DEP used state-of-the-art computer technology to compare aerial photographs taken over time to detect wetlands violations and bring enforcement actions. Using this technology, DEP expects it can now more effectively deter future violations of wetlands laws, impose stringent fines for past violations, and target areas for wetlands remediation.

In light of these enforcement efforts, large-scale landowners and developers should consider the following proactive steps:

- undertake an inventory or audit of wetlands on their property;
- document circumstances associated with inadvertent or other potential wetlands violations by their own agents or prior property owners; and
- develop protocols to guard against future, unpermitted activities in wetlands areas.

Landowners and developers can also anticipate potential permit streamlining, as DEP has suggested this is a natural corollary to more stringent enforcement.

Wetlands Enforcement in the Past

In the past, DEP had no systematic surveillance program for monitoring alterations to wetlands resources, and was forced to rely on complaints from neighbors, investigations by local conservation commissions, or DEP site visits to ensure compliance. Often, DEP did not know where to direct its scarce investigative resources and only became aware of illegal filling of wetlands when neighboring landowners complained of flooding on their lands or siltation of their streams.

The availability of historical aerial photographs, together with computer technology that permits comparisons over time, now makes it possible for DEP to detect possible changes in wetlands resources without going into the field.

DEP's New Initiative

Since the early 1990s, DEP has been analyzing aerial photographs of the state taken during flyovers. Using these photographs, it could delineate wetlands boundaries and record their locations throughout the entire state. However, only recently has DEP had the technology to compare old aerial photographs of wetlands boundaries to updated photographs. Using United States Department of Defense technology, adapted by the National Oceanic and Atmospheric Administration, DEP can

now overlay old aerial photographs with new photographs and scan them through a computer program that can identify areas where wetlands boundaries have changed. As a result, DEP can easily observe wetlands changes throughout the entire state.

In 2000 and 2001, DEP performed flights over the eastern and central regions of the state and took updated aerial photographs of these areas. Flights over the state to provide updated photographs of the western regions of the state are currently taking place, and DEP expects to complete a survey that shows changes to wetlands across the entire state by the end of this year.

Once DEP has the updated aerial photographs and has used its newly acquired technology to compare them to the old photographs, it can identify areas where wetlands boundaries have changed. In addition, DEP can use these detailed photographs to identify the types of wetlands that have changed, the amount of wetlands area impacted and the size, type and location of development projects.

The next step in DEP's new enforcement program is to determine whether changes in wetlands areas since the early 1990s are the result of development activities and, if so, if these development activities are permitted or not. DEP personnel can easily determine if they have permits on file for areas of wetlands development discovered with the help of the new aerial photographs and computer technology. DEP has thus far completed this file review for the entire eastern region and half of the central region of the state.

So far, DEP has identified 3,000 areas in the state where wetlands have decreased, and it estimates that half of these wetlands losses are due to unpermitted activity. In the eastern third of the state alone, DEP has identified 760 acres of wetlands losses since the first sets of aerial photographs were taken in the early 1990s – a larger number than previous DEP estimates had predicted. Now that it can easily discover wetlands violations, DEP can focus its limited enforcement resources

on the most significant violations and violations that occur in sensitive resource areas.

While DEP has compared its data to data compiled by the United States Geological Survey and found it to be accurate, aerial photography is not the most reliable method for wetlands delineation. The photographs are infrared images, showing cooler, wetlands areas as darker areas. As a result, differences and outright mistakes in interpretation can occur. In responding to wetlands charges based on DEP's new technology, therefore, landowners and developers now may need technical assistance in championing alternative interpretations of aerial photographs, in addition to obtaining support from experts in wetlands delineation based on previously established field criteria (soil, vegetation, and hydrology).

For its part, DEP does intend to use aerial surveillance only as a starting point, and will continue to conduct field investigations targeting potential violations based on the new technology. In addition, DEP is giving its information to local conservation commissions, which also are empowered to prosecute wetlands violations. By mid-April of this year, DEP hopes to provide its data to all of the local conservation commissions in the state.

Future Plans for the Wetlands Enforcement Initiative

The next step in DEP's new wetlands initiative will be to identify reforms to be made in both its enforcement and permitting programs. DEP is currently organizing a team to analyze the data it gathers on unpermitted wetlands losses, to identify systemic causes for such losses, and develop new ways to prevent and combat wetlands violations.

DEP also hopes to streamline and make less burdensome the permitting process for development. Since it will be able to more easily identify and stop major wetlands and permit violations, DEP can more credibly reduce the burdens imposed during the

permitting process, relying more on the strong deterrence effect of its new enforcement initiative.

While DEP is using its newly acquired technology to catch up on wetlands changes and violations over the last decade, it is also looking ahead. It is currently seeking grants for future flights over the state and hopes to perform them more regularly. With a narrower window between the taking of aerial photographs and analysis of wetlands changes, DEP will be able to catch wetlands violators more quickly and before substantial damage has been done. DEP also hopes to develop cooperative agreements with other state agencies, such as the state highway department, in order to share the cost of more frequent flights to take aerial photographs of the state.

Wetlands Enforcement at the National Level

While the United States Environmental Protection Agency does not have a nationwide program similar to DEP's, it has shared information with DEP and has helped the state with funding for flights and enforcement of wetlands violations. Most of EPA's enforcement comes from tips and complaints from individuals, the state agencies, or the United States Army Corps of Engineers.

Other states have used flights over coastal and wetlands areas, as well as aerial photography, to delineate these areas and to detect violations. For example, California, Pennsylvania and the South Florida Water Monitoring District have used flights over coastal zone areas and wetlands to detect violations. New York and New Jersey have used these techniques to map out wetlands and determine whether or not to allow development in certain areas. However, few if any states have implemented a systematic procedure to identify and document every wetlands change within their borders. Agencies in some other states have contacted DEP, asking about the new enforcement initiative and seeking guidance on how to implement a similar program. Landowners and developers should take note of these emerging enforcement trends as they review the record of wetlands compliance on their properties and projects in other jurisdictions.

Conclusion

Given the DEP's ability to systematically trace changes in wetlands resources throughout the state, Massachusetts may witness a substantial increase in wetlands enforcement cases in the coming years. Prosecutions for wetlands violations can result in substantial penalties and business disruption. Landowners and developers should consider taking steps now to inventory wetlands on their properties and guard against any unpermitted activities in these areas.

If you would like additional information about the Massachusetts DEP's wetlands enforcement initiatives, please contact:

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