



State's ability to plan for water supply could be affected

N.C. Supreme Court says water authority owes hydroelectric producers compensation for takings under Fifth Amendment

by Jeri Gray

On December 14, 2012, the North Carolina Supreme Court decided that it had erred in agreeing to review a unanimous Appeals Court ruling in the case of L & S Water Power, Inc., et al v Piedmont Triad Regional Water Authority (PTRWA). This leaves standing the Court of Appeals ruling that PTRWA owes downstream hydroelectric producers compensation for permanently reducing flow in the Deep River and thereby taking their property rights (background on the case can be read in the October-December 2012 issue of the *WRRI News*).

The decision turns on the Appeals Court application of the “takings clause” of the Fifth Amendment to the U.S. Constitution and its interpretation of North Carolina’s common law doctrine of riparian rights and what constitutes property rights.

Eminent domain

The takings clause of the Constitution says that if an entity that possesses the authority of eminent domain takes property for a “public use” through condemnation, it owes the property owner “just compensation.” Therefore, this decision applies only to entities that exercise eminent domain.

The federal government and state governments hold the power of eminent domain. States can delegate this power to other entities. Chapters 40A and 136 of the N.C. General Statutes govern use of

eminent domain in North Carolina, listing the entities to whom the power of eminent domain is delegated, the purposes for which they can exercise eminent domain, the procedures they must follow and how damages are to be measured. In North Carolina, there are two types of “condemners”: private (such as public utilities) and public (such as local governments).

In 2006 in the wake of the U.S. Supreme Court decision in *Kelo v. City of New London*, the General Assembly amended the statutes governing eminent domain to delete provisions that expressly allowed taking of private property for economic development. House Bill 8 under consideration in the current General Assembly, would put before voters a proposed amendment to the N.C. Constitution to provide that “private property shall not be taken by eminent domain except for a public use” and to provide that any party can ask for a jury to determine the amount of “just compensation.”

Property rights and riparian rights

Exactly what the term “property rights” comprises is the subject of long-standing disagreement in the United States. In *L&S Water Power et al. v. PTRWA*, the Appeals Court decided that persons owning land bordering rivers and streams have a *property* right to water flowing by their land, as opposed to a *usufructory* right, or a right to use the water. Further, the Appeals Court decided that riparian owners have the right to water flow undiminished by upstream use as opposed to water flow that may be diminished by “reasonable use” of riparian owners upstream. Both of these decisions are counter to previous interpretations of riparian rights in North Carolina.

Consequences of the decision

A number of entities with the power of

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eminent domain submitted friend-of-the-court briefs to the Supreme Court in *L&S Water Power et al. v. PTRWA*, offering their views of the consequences of the Appeals Court decision for them (see WRRI News). In a January workshop organized by the N.C. Bar Association Foundation, attorneys specializing in North Carolina water law (of which there are said to be only a few), offered additional insight into possible consequences of this departure from accepted interpretations.

According to Matthew Hanchey of the law firm Hunton & Williams (which represented PTRWA in the case), the decision seems to require entities with eminent domain to pay for water withdrawals that private riparian owners can take for free. Further, said Hanchey, because the decision frames riparian rights as Constitutionally protected property rights, it does not recognize the modification of common law riparian rights by statute or administrative agency action. Therefore, the decision calls into question the ability of the General Assembly to modify existing water rights through legislation, implying that the legislature cannot pass laws to allocate water in areas where water use conflicts arise.

Hanchey also said that while the decision might seem to adversely affect municipal water suppliers, these entities were probably already at risk in riparian rights cases since case law had established that municipal water supply is not a "reasonable use." He pointed out that if the Court of Appeals had ruled that municipal water supply is a reasonable use, but that a reduction in flow is not reasonable, it could have resulted in compensation being paid to the plaintiffs and at the same time corrected a pre-existing problem for public water suppliers and modernized the riparian rights doctrine in a way more consistent with state policy on water supply planning.

"In short," said Hanchey, "I think this case has ensured that the venerable

doctrine of riparian rights will continue to play a role in water allocation policy, whether it is well suited to modern circumstances or not."

However, Hanchey said that because the decision did place riparian rights within the scope of condemnation authority, it suggests that local governments could use that authority to purchase necessary riparian rights at reasonable prices by avoiding impact to highest value uses. "It is an unfortunate aspect of PTRWA's situation that it has impacted a string of facilities that are essentially in the business of monetizing river flow," he said.

Public water systems

Richard Whisnant of the UNC Institute of Government and co-author of the Water Allocation Study for the General Assembly's Environmental Review Commission, said that the decision in *L&S Water Power v. PTRWA* demonstrates that North Carolina courts are not well situated for resolving water conflicts and that unpredictability will continue to result if such conflicts are left to the courts. He said that because North Carolina water law is sparse, the courts have to go back to very old cases for precedent, while society, science and policy have moved forward.

"The doctrine of natural flow had to give way for dams and mills to operate, so the courts developed the doctrine of reasonable use," he said. "This decision runs counter to the course of law in the United States."

Whisnant said that—added to earlier rulings that taking water out of a stream and piping it offsite for drinking or industrial uses is not a riparian right—this decision places public water systems in the position of the frog in the pot of water heating up.

"The General Assembly will have to act to straighten this out somehow," he said.



ISSN 0549-799X

Number 381

January-March 2013

This electronic newsletter is published by the Water Resources Research Institute of the University of North Carolina. It is financed in part by the Department of the Interior, U.S. Geological Survey, as authorized by the Water Resources Research Act of 1964. You may sign up to receive the electronic newsletter via an electronic listserv by sending an email to water_resources@ncsu.edu.

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Electric utilities under pressure on coal ash ponds

Across the United States, there are upwards of 2,000 coal combustion residuals (fly ash, bottom ash, boiler slag and gypsum) disposal sites, including hundreds of wet ponds with an average size of 149 acres. According to the U.S. EPA, coal-fired power plants produced more than 136 million tons of coal combustion residuals (also called coal ash) in 2008. About 60% goes into storage and disposal sites, and about 40% is used “beneficially” for construction and geotechnical applications.

Coal ash managed on site at power plants is typically sluiced to impoundments where the ash settles to the bottom and clear water from the top is discharged or sometimes recycled. The settled ash may be dredged for beneficial use or left in place.

According to the Electric Power Research Institute, precise characteristics of coal ash depend upon the type and source of coal and the reactions that occur during combustion of the coal and subsequent cooling of the flue gas. In general about 90% of the mineral content of coal ash is oxides of silicon, aluminum, iron, and calcium. Magnesium, potassium, sodium, titanium, and sulfur account for about 8% of the mineral component, while trace constituents including toxics such as arsenic, cadmium, lead, mercury, and selenium, together make up less than 1%. Coal fly ash (lightweight particles removed from flue gas) contains significant levels of boron, which is potentially phytotoxic if it is in a soluble state.

Management and disposal of coal ash is currently exempt from federal regulation, and state regulation is inconsistent or, in some cases, non-existent.

Public attention

Coal combustion residuals were not

on the public’s radar screen until a few days before Christmas 2008 when a huge coal ash disposal pond failed at a TVA coal-fired power plant near Kingston, Tennessee. The failure spilled more than 5.4 million cubic yards of coal ash slurry into the Emory River, covering nearly 300 acres with sludge, destroying three homes, and damaging others.

Field investigations and laboratory studies by EPA and independent scientists documented leachable contaminants including arsenic, selenium, boron, strontium and barium in the spilled wastes. Field investigations by Dr. Avner Vengosh and colleagues at Duke University found high levels of these toxics in areas with restricted water exchange and in sediments and water filling spaces among sediments downstream of the spill.

Regulatory attention

Regulatory attention then focused on the structural stability of coal ash ponds. EPA undertook to identify the number and location of all coal ash surface impoundments in the country and to investigate structural hazards associated with the ponds.

In North Carolina, coal ash ponds had been below the regulatory radar as well. Following the Kingston pond failure, the N.C. Environmental Management Commission (EMC) began asking questions of staff of the Department of Environment and Natural Resources about its authority to regulate coal ash ponds. They found that coal ash ponds were exempt from the Dam Safety Act and therefore not inspected by the Dam Safety Program for structural integrity.

The General Assembly acted in 2009 to remove the exemption, and when the Dam Safety Program began surveying utilities to identify coal ash ponds that would be brought under its

authority, it found—not the 14 they expected—but 50 ash ponds large enough that they must be inspected and monitored for structural integrity.

The EMC also learned that its regulatory authority regarding water quality concerns linked to coal ash ponds comes through state law governing groundwater protection and federal Clean Water Act regulation of discharges to land and surface waters. Discharges to surface waters from dewatering of coal ash sludge in ponds are permitted under National Pollutant Discharge Elimination System (NPDES) regulations, which currently have few limits applying to coal ash pond effluent.

EPA efforts to regulate coal ash

A 1980 amendment to the federal Resource Conservation and Recovery Act (RCRA) exempted coal ash from regulation under the act, directed EPA to assess the waste, submit a formal report to Congress, and make a determination as to whether or not coal ash should be regulated as a hazardous waste under RCRA Subtitle C.

In 1988, EPA delivered *Report to Congress on Wastes from the Combustion of Coal by Electric Utility Power Plants*. In the report, the Agency said that while coal combustion residuals contain a number of toxic substances, including arsenic, lead, chromium, and selenium, EPA’s leaching studies indicated that the toxics in leachate did not rise to RCRA levels and that, therefore, coal ash should not be regulated under subtitle C but under Subtitle D, which governs non-hazardous wastes and would put states’ solid waste programs in charge of regulation.

In 2000 EPA issued a regulatory determination proposing to regulate coal ash disposal in impoundments

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and landfills under Subtitle D. The Agency did conclude, however, that because the volume of coal residuals being disposed of in the United States was so large and the size of disposal units—many unlined—was so large, that some metals (particularly arsenic) could leach from impoundments and landfills at levels of potential concern.

By 2004, EPA had gathered evidence that 75% of coal ash ponds in use were 25 years old or older and that 62% were unlined, making groundwater contamination more likely. Under pressure from environmental groups, EPA also investigated incidents of groundwater and surface water contamination by coal ash ponds. By the time of the Kingston pond failure, EPA had documented 27 cases of proven damages to surface and groundwater and 40 cases of potential damage associated with the “improper” management of coal ash.

Following these and other studies and the Kingston pond failure, EPA re-examined its thinking about regulation of coal ash. In 2009, the agency issued draft proposed regulations for coal ash as a hazardous waste under RCRA Subtitle C. After a flood of negative comments from the electric utility industry and others, the agency revised its regulatory determination and in 2010 published proposed rules that laid out two alternatives:

- (1) regulation as hazardous waste under Subtitle C, including Subtitle C permitting, cradle-to-grave regulation, national standards for new treatment and disposal facilities, and retrofitting or closing of unlined ponds within 5 years, or
- (2) regulation as non-hazardous waste under Subtitle D, which would establish national standards for ponds and landfills and require retrofit or closure of unlined ponds but leave implementation and enforcement up to states.

EPA held eight public hearings and took hundreds of comments but has not yet promulgated final rules. In April 2012, eleven environmental groups filed suit to compel EPA to promulgate rules to

regulate coal ash under RCRA.

Environmental groups sue to force action

However, with EPA unlikely to act in the absence of a permanent administrator but Congress likely to introduce new legislation prohibiting the agency from regulating the residuals under Subtitle C (bills to do so had been introduced in 2011), environmental groups across the country are taking the initiative under existing laws and regulations to deal with what they see as a major threat to human health and the ecosystem.

* In November, 2012, environmental groups petitioned the N.C. EMC to issue a declaratory ruling that would require electric utilities to clean up groundwater contamination from old coal ash ponds regardless of how far the contamination has spread. The EMC declined to make the ruling, saying that DENR is implementing groundwater rules correctly. The groups have appealed that decision in Wake County Superior Court.

* In February 2013, the same groups filed a Notice of Intent (NOI) to sue Progress Energy for violations of the Federal Clean Water Act at its Skyland power plant at Asheville, alleging that seepage from coal ash ponds there is contaminating the French Broad River with a number of toxic substances. The groups also filed NOI to sue the TVA under the Clean Water Act for ongoing coal waste contamination at its Colbert Fossil Plant.

* A similar NOI filed by the Catawba Riverkeeper Foundation with South Carolina Electric & Gas in 2012 resulted in a settlement in which SCE&G agreed to remove all coal ash from ponds at its Wateree power plant southeast of Columbia and recycle or place it in lined landfills.

* In December 2012 environmental groups in South Carolina filed suit against the state-owned Santee Cooper electric utility seeking clean up of coal waste ponds at the Grainger power station on the Waccamaw River at Conway.

* In July 2012, after public interest law firms filed NOI against First Energy for contamination caused by its Little Blue Run coal ash pond, the Pennsylvania Department of Environmental Protection filed in federal court a lawsuit and consent decree in which the utility agreed to submit a plan to close the plant by the end of 2016, pay a fine of \$800,000, supply 21 households with hook-ups to municipal water systems, and conduct an environmental impact study on the area.

Recent suits have also been filed against Mirant Mid-Atlantic in Maryland and Midwest Generation in Illinois. In addition groups of residents living near coal ash disposal units have launched letter writing campaigns to EPA, Congress and electric utilities, alleging health effects and demanding closure and clean up of coal ash ponds.

Back where it all began

In the wake of the Kingston debacle, the board of TVA adopted a 10-year plan for conversion of wet ash impoundments to dry systems throughout its fleet of coal-fired plants. The federal utility has released an assessment saying that the cost will be between \$1.5 billion and \$2 billion. A 2009 analysis by EOP Group put the cost of phasing out ash management ponds industry wide over 20 years at \$39 billion. The report also says that the cost of conversion could lead to closure of small coal-fired plants and plants with limited remaining useful life, forcing replacement of more than four percent of all electricity generated in the United States.

Scientists investigate impacts of surface water discharges from coal ash ponds

Most of the legal action brought by environmental groups discussed in the previous article focus on ground-water contamination from old, unlined coal ash ponds. However, permitted surface water discharges from these impoundments may pose an even greater threat.

One of the most notorious documented cases of environmental damage from coal ash pond discharge occurred in North Carolina. The case is documented in the 2007 EPA report *Coal Combustion Waste Damage Case Assessments* and by articles in scientific journals by Dennis Lemly, a fisheries scientist with the U.S. Forest Service.

Belews Lake in Stokes, Rockingham, Guilford, and Forsyth counties was impounded in the 1970s to serve as a cooling reservoir for Duke Power's Belews Creek Steam Station. From 1974 to 1986, the lake received discharges from a 350-acre ash pond. According to a 1997 article by Lemly, the discharge contained 150-200 µg/L of selenium. The toxicant bioaccumulated in the aquatic food chains and essentially wiped out fish life in the lake. Lemly reported that a decade after Duke switched to a dry-ash handling system, elevated selenium residues and associated biological effects in fish were still present, primarily due to selenium in the sediment-detrital food pathway.

Among the 85 damage case assessments in its 2007 report, EPA also included as a proven damage case, selenium effects on fish at Hyco Lake in North Carolina.

WRRRI-sponsored research on pond discharges

Recently completed research funded by WRRRI has focused on the quality

of effluents discharged from coal ash settling ponds and the impact on associated waterways in North Carolina. (Vengosh, Avner; Heileen Hsu-Kim; Laura Ruhl; Gary Dwyer; Grace Schwartz; Autumn Romanksi; and Daniel Smith. (2012). *The Impact of Coal Combustion Residuals on the Quality of Water Resources in North Carolina*. Report No. 414 of the Water Resources Research Institute of The University of North Carolina. <http://www.lib.ncsu.edu/resolver/1840.4/8145>)

From August 2010 to February 2012, Duke University Professor Avner Vengosh, colleagues and cooperators collected more than 300 samples of coal ash pond effluent, cooling water effluent and surface water and pore water from lakes and rivers receiving effluents from power plants. They measured the concentrations of major and trace elements in 76 coal ash pond effluent samples, 129 surface water samples from lakes and rivers from different downstream and upstream (background) sites, and 98 pore water samples extracted from the lake sediments.

In general the investigators found:

- Cooling water effluents sampled were not enriched in any constituents compared to their upstream waters and the reference lake (Jordan Lake).
- Overall the coal ash pond effluents were enriched in many constituents (calcium, magnesium, strontium, lithium, boron, vanadium, chromium, selenium, molybdenum, arsenic and thallium) compared to their upstream waters and

the reference lake. Many of the same constituents were elevated in waters downstream of discharges as well. Even when discharges accounted for less than one percent of the natural water flow, concentrations of many constituents were elevated. The calculated overall discharge of boron was 278 metric tons per year. For arsenic, discharge was 0.7 metric tons and for selenium, 0.8 metric tons.

- Analysis of shallow pore water extracted from bottom sediments revealed elevated levels of iron, manganese, strontium, arsenic, molybdenum, antimony, and vanadium that were significantly higher than those of the overlying bottom water. These trace elements can be recycled through adsorption on suspended particles and release to deep surface water or pore water in bottom sediments during periods of thermal water stratification and induced anoxic conditions, thus causing contaminant accumulation.
- At power plants where flue gas desulfurization (FGD) material is entrained into ash pond wastewater, the effluent has significantly higher concentrations of selenium, calcium, magnesium, boron, and chromium compared to outfalls with only ash pond water or cooling water disposal. At plants with no FGD system, but with wet ash disposal systems effluents had higher concentrations of arsenic, vanadium, antimony, lithium, thallium and molybdenum
- Following is information relative to specific sampling locations:

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- Hyco Lake (Person County) receives average ash pond discharge of 11 million gallons per day (MGD) of effluent from Progress Energy's Roxboro Steam Station. The investigators sampled this discharge monthly over the year-long study. Cooling water is blended with pond effluent, significantly reducing contaminant concentrations but because of the lake's relatively small size, power plant withdrawals, and longer residence time, ash pond discharge has a major effect on water quality. Boron concentration was determined to be 958 µg/L, compared to the upstream concentration of 3 µg/L. Studies have suggested ecological concerns when the boron concentration exceeds 1,000 µg/L.
- Mayo Reservoir (Person County) receives an average of 7 MGD effluent from Progress Energy's Mayo Steam Station. It was sampled monthly for a year. Yearlong average selenium concentration exceeded the 5 µg/L EPA Chronic Criterion Concentration (CCC) for aquatic life. Several samples were almost 4 times the CCC limit.
- Lake Norman (Catawba, Iredell, Lincoln and Mecklenburg counties) receives an average discharge of 8 MGD of ash pond effluent from Duke Energy's Marshall Steam Station. Lake Norman supplies drinking water to Lincoln County, Iredell County, Mooresville, Charlotte, Davidson and Huntersville. The effluent was sampled once in summer 2011.
- Mountain Island Lake (Gaston and Mecklenburg counties) and the Catawba River receive an average discharge of 4 MGD of ash pond effluent from Duke's Riverbend Steam Station. Discharge was sampled in summers of 2010 and 2011. Mountain Island Lake provides drinking water for residents of Charlotte, as well as Mount Holly and Gastonia. In 2011, arsenic concentration of 92 µg/L in coal ash effluents exceeded the EPA drinking water standard of 10 µg/L.
- Lake Wylie (Gaston, Mecklenburg and York, SC, counties) and the Catawba River receive an average discharge of 15 MGD of ash pond effluent from Duke's Allen Steam Station. The discharge was sampled once in summer 2011. Lake Wylie is a drinking water source for Belmont and Rock Hill, SC.
- High Rock Lake (Davidson and Rowan counties) receives an average discharge of 4 MGD of pond effluent from Duke's Buck Steam Station. The discharge was sampled once in summer 2011.
- Belews Lake (Stokes, Rockingham, Guilford, and Forsyth counties) and the Dan River receive an average discharge of 9 MGD of pond effluent from Duke's Belews Creek Steam Station. It was sampled once in summer 2011.
- The French Broad River and Lake Julian (Buncombe County) receive an average discharge of 3 MGD of pond effluent from Progress Energy's Asheville Steam Station. The discharge was sampled once in summer 2011. Arsenic concentrations of 44.5 µg/L were above the EPA drinking water standard of 10 µg/L; selenium concentrations were over 17 times the Chronic Criterion Concentration for aquatic life; and antimony, cadmium and thallium concentrations exceeded other human and aquatic life benchmarks.

The researchers point out that air quality regulations requiring capture of atmospheric pollutants by installation of flue gas desulfurization scrubbers has resulted in a trade-off between cleaner air and significant enrichments of contaminants in solid wastes and wastewater discharged from power plants. They also point out that as regulatory agencies encourage power plants to conserve water by installing recycled cooling water systems rather than once-through systems, less dilution will occur and the result could be greater concentrations of contaminants in receiving waters.

EPA to address coal pond effluents

In a study completed in 2009, EPA examined toxic substances in wastewater discharges to surface water from coal ash ponds and documented 70 incidents of environmental impacts from coal combustion wastewater. EPA determined that current NPDES effluent guidelines should be revised because of the high level of toxics in the discharges and the expectation that these discharges will increase significantly in the next few years as new air pollution controls are installed.

Under a consent decree settling a suit by environmental groups, EPA has announced its intention to begin a rulemaking to address wastewaters from coal ash ponds and has provided its regions permitting guidelines to assist states in establishing permit requirements until effluent limitations are revised in 2014.

Environment-related legislation introduced in the N.C. General Assembly

The regular session of the 2013-2014 North Carolina General Assembly convened on January 9. Public bills must be filed in the House by April 17 and in the Senate by March 28. Crossover date is May 16. Following is a list of environment-related legislation introduced as of February 15.

S 10 AN ACT ESTABLISHING THE GOVERNMENT REDUCTION AND EFFICIENCY ACT OF 2013 Eliminates certain boards and commissions, including the Legislative Commission on Global Climate Change. Terminates upon ratification of bill the terms of all currently serving members of the Coastal Resources Commission, Environmental Management Commission, Public Utilities Commission, Wildlife Resources Commission, and N.C. Lottery Commission. Provides for appointment of new members. Terminates any member of the Board of Elections who has served more than three four-year terms. Changes number of members and qualifications of members of various boards and commissions. Provides that the governor will appoint the chairman of the State Board of Education. Abolishes seats of Special Superior Court Judges, except for three seats designated as business court judges. Provides that the Board of Transportation is ex officio the Authority Board of the North Carolina Turnpike Authority.
<http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S10v3.pdf>

S 24 AN ACT TO AMEND THE GAMELAND BUFFER REQUIREMENT APPLICABLE TO CERTAIN NEW SANITARY LANDFILLS. Reduces to 500 feet the separation between a sanitary landfill and a state gameland owned and operated by the Wildlife Resources Commission under specific circumstances. <http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S24v1.pdf>

S 32 (=H 74) AN ACT TO PROVIDE FOR THE PERIODIC REVIEW AND EXPIRATION OF RULES. Provides that unless re-adopted, permanent rules expire on specific dates. Rules under Title 15A of the N.C. Administrative Code, Environment and Natural Resources, are to expire Dec 31, 2017. <http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S32v1.pdf>

S 34 AN ACT TO ELIMINATE OBSOLETE BOARDS AND COMMISSIONS, AS RECOMMENDED BY THE JOINT LEGISLATIVE ADMINISTRATIVE PROCEDURE OVERSIGHT COMMITTEE. Among others, provides that the National Heritage Area Designation Commission shall terminate July 1, 2013. <http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S34v1.pdf>

S 36 APA Technical Clarifying Changes (short title). Among other things, modifies the requirements for notice of the proposed text of a rule to eliminate the procedure by which a person can object to a proposed rule and the requirements for subjecting a proposed rule to the legislative review process. <http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S36v1.pdf>

S 58 AN ACT TO PROVIDE ADDITIONAL FUNDING FOR DREDGING OF THE STATE'S SHALLOW DRAFT INLETS. Establishes a Shallow Draft Inlet Dredging Fund to be used for dredging projects in coastal inlets to maintain navigability and safety. Provides that the Wildlife Resources Commission shall transfer on a quarterly basis at least fifty percent (50%) of each one-year certificate of number fee and at least fifty percent (50%) of each three-year certificate of number fee collected to the fund. Sets fees based on vessel length and provides that the Wildlife Resources Commission shall transfer at least \$10 of each title fee to the Dredging Fund quarterly. Projects funded by this Dredging Fund must be cost-shared with non-State dollars on a one-to-one basis.
<http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S58v1.pdf>

S 76 AN ACT TO (1) AUTHORIZE THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO ISSUE PERMITS ON OR AFTER MARCH 1, 2015, FOR OIL AND GAS EXPLORATION AND DEVELOPMENT ACTIVITIES IN THE STATE, INCLUDING THE USE OF HORIZONTAL DRILLING AND HYDRAULIC FRACTURING TREATMENTS FOR THAT PURPOSE; (2) DIRECT THE MINING AND ENERGY COMMISSION TO STUDY DEVELOPMENT OF A COMPREHENSIVE ENVIRONMENTAL PERMIT FOR OIL AND GAS EXPLORATION AND DEVELOPMENT ACTIVITIES USING HORIZONTAL DRILLING AND HYDRAULIC FRACTURING TREATMENTS; (3) MODIFY APPOINTMENTS TO THE MINING AND ENERGY COMMISSION; (4) MODIFY PROVISIONS IN THE OIL AND GAS CONSERVATION ACT CONCERNING THE MINING AND ENERGY COMMISSION'S AUTHORITY TO SET "ALLOWABLES"; (5) ELIMINATE THE REGISTRATION REQUIREMENTS FOR PERSONS CONDUCTING LANDMEN ACTIVITIES IN THE STATE; (6) AMEND THE STATUTE GOVERNING SUBSURFACE INJECTION OF FLUID; (7) PROVIDE A TAX FOR THE SEVERANCE OF ENERGY MINERALS FROM THE SOIL OR WATER OF THE STATE, REPEAL OUTDATED OIL AND GAS TAX STATUTES, AND AUTHORIZE THE SUSPEN-

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SION OF PERMITS FOR FAILURE TO FILE A RETURN FOR SEVERANCE TAXES; (8) APPROPRIATE MONIES FROM THE MINERAL INTEREST FUND TO THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO OPERATE THE MINING AND ENERGY COMMISSION AND FOR RELATED EXPENDITURES; (9) ASSIGN FUTURE REVENUE FROM ENERGY EXPLORATION, DEVELOPMENT, AND PRODUCTION OF ENERGY RESOURCES IN ORDER TO PROTECT AND PRESERVE THE STATE'S NATURAL RESOURCES, CULTURAL HERITAGE, AND QUALITY OF LIFE; (10) ENCOURAGE THE GOVERNOR TO DEVELOP THE REGIONAL INTERSTATE OFFSHORE ENERGY POLICY COMPACT; (11) AMEND THE ENERGY POLICY ACT OF 1975 AND THE ENERGY POLICY COUNCIL; AND (12) DIRECT THE MEDICAL CARE COMMISSION TO ADOPT RULES AUTHORIZING FACILITIES LICENSED BY THE DEPARTMENT OF HEALTH AND HUMAN SERVICES TO USE COMPRESSED NATURAL GAS AS AN EMERGENCY FUEL.

<http://www.ncga.state.nc.us/Sessions/2013/Bills/Senate/PDF/S76v2.pdf>

H 8 AN ACT TO AMEND THE NORTH CAROLINA CONSTITUTION TO PROHIBIT CONDEMNATION OF PRIVATE PROPERTY EXCEPT FOR A PUBLIC USE, TO PROVIDE FOR THE PAYMENT OF JUST COMPENSATION WITH RIGHT OF TRIAL BY JURY IN ALL CONDEMNATION CASES, AND TO MAKE SIMILAR STATUTORY CHANGES.

<http://www.ncga.state.nc.us/Sessions/2013/Bills/House/PDF/H8v2.pdf>

H 59 AN ACT TO REPEAL THE REQUIREMENT THAT MOTOR VEHICLES REGISTERED IN THIS STATE HAVE AN ANNUAL SAFETY INSPECTION, ETC. Eliminates vehicle safety inspections and tinted windows inspections, which eliminates safety inspection fees and civil penalties and eliminates safety fee contributions to the Highway Fund, the Volunteer Rescue/EMS Fund, and the Rescue Squad Workers Relief Fund. Contributions to these funds are to be made from registration fees, which are to be increased by \$1.00 per vehicle. Sets emission inspection and authorization fee (combined) at \$16.40. Requires DMV and DENR to develop and implement a management improvement plan for the Motor Vehicle Emissions Inspection program. <http://www.ncga.state.nc.us/Sessions/2013/Bills/House/PDF/H59v1.pdf>

H 66 (=S 60) AN ACT TO AMEND THE LAW PROVIDING FOR THE ISSUANCE OF CAPTIVITY LICENSES AND PERMITS BY THE WILDLIFE RESOURCES COMMISSION. Provides that wild animals and birds lawfully taken may be held in captivity for scientific, educational, exhibition or other purposes, including "for use or display in an annual, seasonal, or cultural event, so long as the animal is captured from the wild and returned to the wild at or near the area where it was captured." Appears to legalize the New Year's Eve Possum Drop in Brasstown. <http://www.ncga.state.nc.us/Sessions/2013/Bills/House/PDF/H66v3.pdf>

H 89 AN ACT TO REQUIRE THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO SUPPORT THE APPLICATION OF A REGIONAL WATER SUPPLY SYSTEM FOR ALL REQUIRED FEDERAL APPROVALS, AS RECOMMENDED BY THE ENVIRONMENTAL REVIEW COMMISSION. Provides that DENR shall provide its full support and favorable endorsement of any State or federal permit applications for the preferred alternative for development of a regional water supply when the water system has acquired property for construction of a water supply reservoir or other resource, implemented appropriate conservation measures and a leak prevention program, and has signed an agreement to pay expenses incurred by DENR .

<http://www.ncga.state.nc.us/Sessions/2013/Bills/House/PDF/H89v1.pdf>

H 94 AMEND ENVIRONMENTAL LAWS 2013 (short title). Provides for five- and ten-year phased permitting of landfill operations. Provides that when a local government operating an erosion and sediment control program assesses a civil penalty, the notice of assessment shall direct the violator to either pay the assessment or contest the assessment within 30 days by filing a petition for hearing with the local government as directed by procedures within the local ordinances or regulations adopted to establish and enforce the erosion and sedimentation control program. Provides that clear proceeds of civil penalties collected by a local government shall be remitted to the Civil Penalty and Forfeiture Fund.

Sixteen gages discontinued

USGS gage infrastructure supports array of critical programs

Fifteen stream flow gages (some that also recorded precipitation) operated by the U.S. Geological Survey in eastern North Carolina have been discontinued and removed, after the Floodplain Mapping Program in the Department of Emergency Management ceased cooperative funding for them. Most of the discontinued gages were in the Tar River Basin, but some in the Neuse and Lumber were also lost. Discontinued gages are listed on the USGS N.C. Water Science Center website at http://nc.water.usgs.gov/endangered_gages.html.

According to the North Carolina Floodplain Mapping Program website, the gages were put into place to improve flood forecasting after Hurricane Floyd caused flooding of unexpected magnitude and extent in the Tar River Basin. The gages were used to produce flood inundation maps and to support a flooding alert network in real-time.

Flood prediction and alert is only one of many programs and purposes the USGS gage infrastructure supports. Also dependent on USGS gages are:

- power companies that must monitor flows below dams to meet minimum flow requirements of their FERC licenses,
- highway engineers who must have

historical data on stream discharge, height and flooding velocity to design culverts and bridges,

- state regulators who must have data on actual stream flows in order to calculate wasteload allocations for National Pollutant Discharge Elimination System permits,
- canoeists and kayakers who need to know if water levels in streams are dangerously high or too low for actual paddling,
- scientists studying a wide range of water quality and water quantity issues, and
- state agency personnel planning for management of the state's water resources.

Fred Tarver of the N.C. Division of Water Resources, which provides cooperative funding for a network of permanent USGS gages, says the gages provide critical support for many of the division's efforts.

DWR is charged with building river basin models to support water resources planning. Tarver points out that "With basin modeling efforts to plan for future water use, it is important to have a historic flow record to verify that the model is accurately representing water usage patterns in the basin over time."

DWR is also charged with sup-

porting the efforts of the Ecological Flows Scientific Advisory Board to develop the scientific basis for incorporating ecological flows into basin planning. "Planning for the pattern of flows in streams to support aquatic organisms and essential abiotic processes, typically referred to as ecological flows, requires some insight into the flow characteristics.

"Using gages to record daily flows over many years provides an understanding of these characteristics. It is important to have a network of gages in North Carolina's mountain, piedmont and coastal plain streams because factors such as slope and geology influence the stream flow characteristics."

In addition to the fifteen gages defunded by the Floodplain Mapping Program, a gage was decommissioned on the Rocky River in the Yadkin Basin when the Water and Sewer Authority of Cabarrus County found it no longer needed the data it provided. These recent losses of USGS gages is a reminder not only of the importance of the gage network but also of the risky nature of some funding. While funding for gages in the federal/state permanent network has been fairly reliable, gages funded by local governments or other entities for specific purposes are sometimes at risk.

2013 WRRRI Research Awards

Through its competitive grants process, WRRRI has awarded research grants to the following for fiscal year 2013:

Mark D. Sobsey, Kenan Distinguished Professor

UNC-Chapel Hill Department of Environmental Sciences and Engineering

Methods to detect fecal indicator viruses and protozoan surrogates in NC reclaimed water: Optimization, performance evaluation, protocol development, validation, collaborative testing, and outreach

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Matthew Polizzotto, Assistant Professor
NCSU Department of Soil Science

Surface and subsurface properties regulating manganese contamination of groundwater in the North Carolina Piedmont

Detlef Knappe, Professor

NCSU Department of Civil, Construction, and Environmental Engineering
Bromide occurrence in North Carolina drinking water sources: Effect on disinfection by-product formations

Michael Burchell, Assistant Professor and Extension Specialist

NCSU Department of Biological and Agricultural Engineering
A mesocosm study to determine nitrogen assimilation capacity of a restored wetland slated to receive pumped drainage water: A critical component to maximize improvement to the Pamlico Sound

David Buchwalter, Associate Professor

NCSU Department of Environmental and Molecular Toxicology
Environmental approaches to understanding temperature and flow responses of select North Carolina macroinvertebrates

Tarek Aziz, Assistant Professor

NCSU Department of Civil, Construction, and Environmental Engineering
Sustainable Anaerobic Co-Digestion of Grease Interceptor Waste

Jennifer Dorton, Outreach and Education

UNC-Wilmington's Carolinas Regional Coastal Ocean Observing System
City of Durham Water Quality Web Portal

**The 15th WRRRI Annual Conference &
10th NCWRA Symposium
March 20-21, 2013**

Jane S. McKimmon Center, Raleigh, NC

Join us for the 15th Annual WRRRI Conference, the premier research conference focusing on North Carolina's Water Resource Issues, Solutions, and Opportunities. A draft agenda is available at http://go.ncsu.edu/wrriac_agenda

This year's North Carolina Water Resources Association (NCWRA) symposium will address nutrient credit trading and explore the barriers and opportunities for such a program in NC.

The conference will conclude with the Progress Energy Seminar, "Water, Energy, Security: Colliding Imperatives," which will feature a keynote address by Steven Solomon, author of *Water: The Epic Struggle, for Wealth, Power, and Civilization*. The seminar is open to the public free of charge but RSVP is required. To register for ONLY the Progress Energy Seminar go to <http://tiss.sanford.duke.edu/programs/CollidingImperatives.php>

WRRRI Annual Conference early registration deadline is March 15.

Registration information can be found at <http://go.ncsu.edu/wrriac>

Upcoming Events

North Carolina Lake Management Society

Spring Workshop: "Lake Management Issues in the Piedmont Triad Region of N.C."

Thursday, March 14, 2013
Bryan Park Golf and Conference
Center, Greensboro, NC

More information available at
<http://www.nclakemanagement.org/>

North Carolina Erosion and Sedimentation Control Planning and Design Workshops

April 5, 2013: The Wake
County Commons Building,
Raleigh, NC

These workshops are structured to educate and familiarize design professionals with the NC Sedimentation Pollution Control Act (SPCA), the rules implementing the Act, design standards for erosion and sedimentation control BMPs and elements that are necessary to submit an erosion control plan. 7.5 PDHs* will be offered for professional engineers and land surveyors, and 7.5 CEUs* will be offered to landscape architects (*contingent on board approval)

**Registration deadline:
Monday, March 25, 2013**

For more information and to download a registration brochure and the agenda please visit:
<http://ncsu.edu/wrri/code/events.htm>