



ARM Group Inc.

Resource

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PA House and Senate Pass Water Resources Bill

Is the glass half full or half empty? That remains to be seen, but all Pennsylvanians should be pleased and optimistic about the prospects that the new Water Resources Planning Act (House Bill 2302), passed by the House and Senate in November, will improve our citizens' future access to sufficient quantities and quality of water supplies. With everyone highly sensitized to the effects of prolonged drought, as experienced throughout the Commonwealth over five of the past seven years, there is promise that this act will be given its due attention. For the first time, we as a Commonwealth, will measure the amount of water we're using, determine the quantity of water needed to meet ever growing demands, quantify the amount that is currently available, and determine the variation in available water resulting from periods of sustained drought.

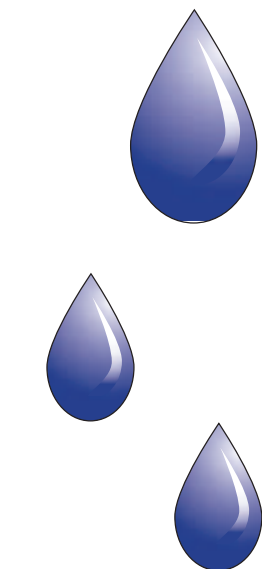
Something unsaid within the text of the bill is the fact that even in the worst of droughts, Pennsylvania is still blessed with far more rainfall than about two-thirds of the nation, under normal conditions. Fortunately, the Water Resources Planning Act, to be administered by the Pennsylvania Department of Environmental Protection (PADEP), represents a "collaborative" process, whereby active involvement of all stakeholders is required as part of the process of formulating Regional and State Water Plans. Consequently, it is likely that the State Water Plan will stimulate the development of available and under-utilized resources, and promote the conservation and recycling of over-utilized or insufficient resources.

Major components of the Water Resources Planning Act are:

- Requirement that all uses of 10,000 gallons of water per day (gpd) or greater be registered;
- Establishment of a state-wide water resources database, available on a fee-basis;
- Establishment of State-wide and Regional Water Resources Committees that will develop and recommend Regional and State Water Plans intended to provide for all "reasonable and beneficial uses" of water;
- Identification of Critical Water Planning Areas where the demand for water exceeds available resources;
- Development of a program that promotes voluntary water conservation and water use efficiency;
- Identification of "practical" alternatives, including structural and non-structural measures, that can be implemented to satisfy existing and future water uses;
- Establishment of limitations on PADEP authority to impose new regulations, or require metering of homeowner wells, or "to regulate ...any water withdrawal by any person."

The bill recognizes that there are many different "reasonable and beneficial uses" of Pennsylvania's waters, including agricultural, industrial, recreational, public water

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DEP Approves Landfill Expansion

Pioneer Crossing Landfill (PCL) in Birdsboro, Berks County, Pennsylvania, obtained the Commonwealth's first approval for a harms/benefits (H/B) analysis since the creation of this new regulatory requirement. The December 23, 2000, Municipal Waste Management regulations require landfill operators and would-be landfill operators to demonstrate that the benefits of a proposed landfill, including expansions, clearly outweigh the known and potential harms of the projects. To fulfill the environmental assessment requirements of a Major Permit Modification, an H/B analysis must be conducted.

ARM was retained by PCL to assist PCL's in-house team with H/B analysis and the preparation of its response to the Pennsylvania Department of Environmental Protection's (PADEP) comments. As a result of this response, the DEP determined that the environmental harms of this proposed expansion did not outweigh its benefits, and DEP issued a Major Permit Modification in May 2002. Consequently, PCL proceeded with construction of the first landfill cell of the expansion during

summer and fall of 2002. ARM was retained by PCL to conduct quality assurance monitoring, testing, and professional certification. DEP approved the certification and authorized use of the cell in October 2002.

DEP Regional Director Michael R. Steiner: "We have analyzed the benefits and harms of the proposed project ... It is our conclusion that Pioneer Crossing Landfill has demonstrated that the benefits clearly outweigh the harms associated with the proposed project."

ARM provides design and permitting support to several Pennsylvania landfills and has been involved with H/B analyses for several landfills that are in the review and evaluation process at DEP.

For more information, please contact Bill Tafuto at 717-533-8600 or wtafuto@armgroup.net

ARM Awarded Airport Contract

ARM Group Inc. (ARM) is one of four environmental consulting firms that has been selected to provide a broad range of environmental services to the Susquehanna Area Regional Airport Authority (SARAA) at both the Harrisburg International Airport (HIA) and Capital City Airport (CCA). ARM's environmental services will be part of an overall expansion planned for the two Central Pennsylvania airports in the upcoming years. SARAA awarded ARM this three year contract in October 2001 and authorized ARM to provide services beginning in December 2001.

ARM's initial projects for SARAA involved groundwater sampling and waste management. In March 2002, ARM began its first major project under this contract, aiding SARAA with the closure and demolition of the former Crawford Station power plant. Crawford Station was a coal-fired electric generation plant that operated from 1924 to 1977. This 65-acre facility is situated on the eastern end of HIA, where the expansion of airport facilities is slated to occur.

Crawford Station is considered a Special Industrial Area (SIA) with respect to Pennsylvania's Land Recycling and Environmental Remediation Standards Act of 1995 (Act 2). ARM completed a baseline investigation including a remediation plan for Crawford Station. We performed investigation tasks to characterize environmental conditions in the abandoned plant buildings and the surrounding property. SARAA and ARM will be working with the Pennsylvania Department of Environmental Protection (PADEP) to obtain a release of environmental liability for the property in order to facilitate the planned airport expansion.

ARM is pleased to be one of the lead environmental professionals engaged by SARAA to assist with further development of the airports that serve central Pennsylvania.

For additional information about Act 2 projects, contact ARM's airport contract manager and Senior Hydrogeologist, Greg Burgdorf at 717-533-8600 or gburgdorf@armgroup.net.

Ground Source Heating and Cooling - It Works and Saves Money

With the uncertainties in the energy market lately, and the threat of hostilities in the oil producing countries, owners and developers are beginning to consider alternative sources of heating and cooling energy. Compared to available alternatives, ground source heat pump technology has gained favor among commercial, industrial, and residential property owners, and architects alike. ARM is supporting its clients by assisting with the design and construction of the subsurface components of ground source heat pump systems. Heat pump systems make use of the earth's constant, moderate temperature to provide heating, cooling, and hot water for many different types of facilities. The heat pump process involves a closed loop system of pipes that contain circulating fluids, routed through a number of underground wells. The systems are operated in a manner that collects heat from the earth in the winter to provide heating, and reverses in the summer to carry excess heat back into the earth, while delivering hot water in both summer and winter. Although higher in cost for initial installation, a ground source heat pump system results in operation and maintenance costs that are lower than conventional fossil fuel-powered systems. Many times the break-even period is within 5 to 15 years. In 30-year life cycle cost analyses, ground source heat pump systems typically out perform conventional systems.

The advantage to developers, owners, and facility managers of ground source systems, compared to more traditional fossil fuel systems, is independence from having to purchase fossil fuels in an ever-fluctuating energy market. Additionally, ground source heat pump systems are integral elements of many "greener," or environmentally friendly building projects, as the heating and cooling process does not result in the generation of any "greenhouse gases" such as carbon dioxide.

A primary component of any commercial-scale ground source heat pump system is a continuous piping system with vertical loops installed within an appropriate number of deep wells. This series of wells is referred to as a well field. The design of these well fields (e.g. number of wells, depth of wells, locations) is dependent upon many factors. Foremost of these is the thermal conductivity of the earth materials in which the well field is constructed. Therefore, a geothermal conductivity test is imperative for the efficient and effective design of a ground source heating and cooling system. ARM completes geothermal conductivity tests by installing the test wells, completing detailed logs of each test well, and completing conductivity testing per industry-accepted practices.



"Installation of wells and loop piping for ground source heat pump system and geothermal test."

ARM's professional engineers and geologists have successfully designed heat pump systems for numerous facilities - from schools to retirement facilities. They impart added value to the design process by precisely siting test wells, and ultimately well fields, in areas more favorable to thermal conductance rather than less favorable areas. Our geologists use fracture trace analyses and well siting techniques to determine the best thermal transfer zones before installing test wells. This process typically results in lower capital costs for geothermal systems, because a more productive well means that fewer wells are necessary to achieve the required thermal exchange capacity of the system.

If you are interested in geothermal conductivity services offered by ARM, please contact James B. Pease, P.E. at (717) 533-8600 x21, or jpease@armgroup.net.

Are You Ready for Our Nation's New Storm Water Regulations?

Background

In 1990, the United States Environmental Protection Agency (EPA) promulgated Phase I of the Clean Water Act (CWA) storm water program, which relied on National Pollutant Discharge Elimination System (NPDES) permit coverage. Although the NPDES program and other programs instituted under the CWA have accomplished a great deal in cleaning our nation's water, the 1996 National Water Quality Inventory report to the U.S. Congress indicated that approximately 40% of U.S. water bodies remain impaired.

The next step in EPA's efforts to preserve, protect, and improve our Nation's water resources is the Storm Water Phase II Final Rule. The Phase II Rule imposes additional permitting requirements for: (1) small municipalities; (2) certain industrial activities; and (3) construction projects that disturb greater than 1 acre of land. March 10, 2003 is the deadline for submission of NPDES permit applications for small municipalities, and for permit coverage of small (1 to 5 acre) construction activities.

Municipalities

While Phase I of the storm water program required permit coverage for medium and large municipal separate storm sewer systems (MS4s), Phase II requires permitting of small MS4s located in urbanized areas (UAs). UAs are defined by the Bureau of Census as having a minimum population of 50,000 and a density of 1,000 persons per square mile. An MS4 is a conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels or storm drains. Small MS4s refer to systems that serve a population of less than 100,000 persons. Political subdivisions which operate MS4s and which may be affected by Phase II regulations include counties, townships, cities, and boroughs. In Pennsylvania, alone, the Phase II regulation is expected to affect approximately 700 MS4s. This regulation also allows storm water permitting of military bases, hospitals,

and college or university campuses that meet the population and density requirements of a UA.

Under the Phase II approach, operators of small MS4s may choose to apply for either a general or individual NPDES permit, or modified Phase I individual permit with a co-permittee option. The EPA is encouraging the use of general permits, which only require the submittal of a Notice of Intent (NOI) for a general permit. However, for all Phase II permit applications, including the NOI, the permittee must identify the means by which it will address six minimum control measures required by the Phase II regulations (see below).

Industrial Activities

There are no additional categories of industrial activity that require permitting as a result of the Phase II regulations. However, the Phase I no exposure exclusion has been expanded to encompass all of the 11 industrial categories identified under the Phase I regulations. To meet the no exposure exclusion, the facility must show that all of the industrial materials and activities at the given facility are protected

by a storm resistant shelter. This exclusion is only available on a facility wide basis; it does not apply to individual outfalls.

Small Construction Activities

Phase I NPDES regulations required construction activities disturbing five acres of land or more to obtain permits. The new regulations require permits when construction activities disturb between one acre and five acres of land. If construction activities disturb less than one acre of land, but are part of a larger, common plan of development or sale that would disturb one acre of land or more, the smaller disturbance must be included in the overall program permit. In Pennsylvania, the permitting requirement for less than 5 acres applies only to activities that include a point-source discharge.

"March 10, 2003 is the deadline for submission of MS4 Phase II NPDES permit applications and for NPDES permit coverage for small construction projects."

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Storm Water Phase II Minimum Control Measures Required for Inclusion in NPDES Permits

- 1) Public education and outreach;
- 2) Public involvement/participation;
- 3) Detection and elimination of illicit discharges;
- 4) Construction site runoff control;
- 5) Post-construction storm water management for new development and redevelopment; and
- 6) Pollution prevention/good housekeeping for municipal operations.

Well Traveled



ARM's geophysicists are certainly the most well traveled of our professionals. Most recently, two ARM geophysicists performed a Ground Penetrating Radar (GPR) survey on Ellis Island, New York Harbor. This work was performed for the United States Army Corps of Engineers (USACE) and the National Park Service (NPS). ARM was contracted to perform a subsurface evaluation. In addition, to the technical expertise required to conduct this survey, ARM's geophysicists were asked to organize their GPR work in a manner that would not interfere with tourist activities. The photograph (at left) shows geophysicist Bill Kosmer pulling a 400 megahertz GPR antenna along the ground surface at Ellis Island.

Other notable locations at which ARM geophysicists have performed technical services have included Kelly Air Force Base, San Antonio, Texas, Jefferson Proving Grounds, Madison, Indiana, Pole Mountain Target & Maneuvering Area, Pole Mountain, Wyoming, and a private manufacturing facility in Pelzer, South Carolina.

For more information about ARM's geophysical services contact Beth Williams at 717-533-8600 or bwilliams@armgroup.net.

Are You Ready for Our Nation's New Storm Water Regulations?

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Additional information regarding the new storm water regulations is presented at the EPA's website

(http://cfpub.epa.gov/npdes/stormwater/swphase2.cfm?program_id=6). For additional information or permitting support, please contact Steve Fulton of ARM at 717-533-

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supply, and in-stream uses such as fish and wildlife habitat. This acknowledgement is very crucial toward facilitating planning and implementation measures that are capable of meeting the needs of all. Pennsylvania has never had a statewide evaluation of the distribution, availability and use of its waters, and this planning bill is an excellent means of having state and local government agencies work cooperatively with scientists, engineers, educators, and users to make these

determinations. That's why ARM Group believes that the glass is half full, and that through wise and prudent planning efforts, Pennsylvania can remain a "water-rich" state. Through planning, our economy can flourish by accommodating growth of industry, recreation, and population. Maybe this way, we can make the glass "full to the brim."

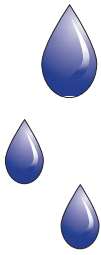
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Attention: Water Suppliers

Do you have a plan to protect your water supply? Whether the source of your water is groundwater or surface water, Pennsylvania Department of Environmental Protection (PADEP) grants are available to help communities or water authorities develop Source Water Assessment Programs (SWAPs), commonly referred to as wellhead protection plans (until recently, PADEP authorized plans were available only for groundwater systems). These plans provide an approach by which communities can evaluate potential sources of contamination that could adversely affect their public water supplies. They also provide, among other things, a tool that can be used to establish zones of protection around public water supply wells, springs, reservoirs, streams, etc. Interested communities may use SWAPs to develop

zoning districts or modify existing ordinances to help protect their water sources.

The hydrogeologists at ARM would be happy to further explain the preparation and use of SWAPs. We can also help communities or water authorities to apply for PADEP SWAP grants. Since the early 1990's, grants in the range of \$50,000 to \$100,000 have been available from PADEP to municipalities and water authorities as funding for source water/wellhead protection programs. For additional information about PADEP SWAP grants, or general information concerning Source Water Assessment Programs, please contact Steve Read at 717-533-8600, or sread@armgroup.net.