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GEO-TECHNOLOGY ASSOCIATES, INC.
Geotechnical and Environmental Consultants

from the ground UP

News on Land Use Throughout the Region

FALL 2006

Geophysical Services Added to Meet Client Demand

“Do you know what’s going on down under you...”

In recent years with the advent of powerful new technologies, the use of geophysical methods is rapidly expanding in the geotechnical, environmental and groundwater business service areas. GTA recognizes that geophysics is an essential addition to their philosophy of being a full-service geotechnical and environmental services company. Mr. W. Konrad Crist, P.G. recently joined the GTA team as a senior geophysicist operating out of the York, Pennsylvania office.

Geophysics is the use of physical properties (i.e., gravity, electricity, density, magnetic, electromagnetic, etc.) to remotely sense into the subsurface of the earth. Geophysical techniques are also known as “non-invasive, non-destructive” techniques because they



Terrain Conductivity Survey

rarely require that the ground be excavated or even disturbed. They are especially ideal at sites where no disturbance is allowed.

Geophysics is now routinely used, for example, for these types of environmental and engineering problems:

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Tax Increment Financing & Infrastructure Improvements

By: Miles & Stockbridge P.C.
Baltimore, Maryland

Tax Increment Financing (“TIF”) is a method to finance public infrastructure improvements for new development and re-development projects. A TIF District is created by the local government, as a specific geographic area, to provide a way to finance, on a tax-exempt basis, public improvements for the benefit of the residents or property owners of the TIF District. Infrastructure improvements may include roads, utilities, sewer and water systems, libraries and schools.

Tax increment financing provides the following advantages: (i) fixed rate long-term financing; (ii) up to 100% of permitted costs may be financed; (iii) debt service payments

begin only after completion of the financed improvements; (iv) interest on the debt is capitalized in the bond issue for the construction period; (v) the bond debt is non-recourse to the developers; and (vi) a secure and definite source of funds is available to complete the public improvements for the development.

Historically, local governments have either used real estate taxes to directly finance public improvements on a pay-as-you-go basis or, have issued general obligation bonds payable from tax revenues on all property within the local government’s geographic boundaries. TIF Districts avoid the economic and political problems of general tax increases

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Illustration prepared by Erick Hyne, Encore Arts

Erickson Foundation Turns to MRA to Make NorthBay a Reality

On the northern end of the Chesapeake Bay, in Elk Neck State Park, lies NorthBay. This unique facility is a new educational and community resource for students, educators and other groups across Maryland and the mid-Atlantic region.

NorthBay was created through a shared vision between the Erickson Foundation of Baltimore and the MD Department of Natural Resources (DNR). NorthBay was conceived as a place where children can get hands-on environmental science experience, while also learning leadership and social skills in a fun and challenging setting. NorthBay serves approximately 350-500 people weekly, providing experience and training in various activities including environmental awareness, natural resources conservation, team and confidence building, leadership training, and outdoor experiences and sports. The camp serves a wide range of public and private schools, religious groups, the Boy Scouts of America, the Girl Scouts of America, Young Life, and athletic associations.

MRA was brought on board early in the process to lead the permitting, land planning,

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GTA Opens Waldorf, MD Office



Apple Orchard

West Virginia: Pesticides Present Challenges During Redevelopment

Although “an apple a day keeps the doctor away,” the pesticides that previously kept apples (and other fruits) from being ruined by insects are causing serious headaches for developers these days. Due to their chemical properties, pesticides and their common components arsenic and lead, can remain in shallow soils for many years. Orchards subsequently developed for residential use can

present environmental challenges. Approximately 1.2 billion pounds of pesticides were applied to agricultural land, including orchards, in the U.S. between 1950 and 1975.

Recently, GTA has seen increasing land development in the eastern panhandle of West Virginia, which historically supports a large orchard industry. The first commercial orchard in the eastern panhandle of West Virginia was believed to have been a 16-acre orchard in Berkeley County (near Gerrardstown), planted in 1851. In the mid-1960s, Berkeley and Jefferson Counties supported approximately 8,000 acres of orchards. Due to economic factors, orchards have declined in this region since the 1970s. GTA has sampled sites where orchard activities ceased by 1960, yet elevated levels of arsenic and lead were found. If concentrations are high enough, some type of remediation (e.g., blending, capping) may be desirable.

The West Virginia Department of Environmental Protection (WVDEP), as well as most other states in the mid-Atlantic region, will accept former orchard sites into its Voluntary Remediation Program (VRP). The VRP provides an avenue for the landowner, or pro-

spective purchaser, to obtain a certification from the state that the contaminants at the site have been satisfactorily addressed. This “certification” may provide protection from future regulatory action. Another benefit of the VRP is that an entity can leave the program at any time, without penalty.

As of mid-August 2006, eight former orchard sites had entered the VRP, primarily due to contamination caused by past pesticide applications. The sites were entered into the VRP process due to a proposed change in land use from agricultural to residential. As more and more land in the eastern panhandle is converted to residential land use, the VRP will likely be seen as a useful mechanism to obtain a level of protection for redeveloping former orchard properties. Additionally, most other mid-Atlantic states have programs similar to the VRP that provide guidance for the cleanup of pesticide-contaminated sites. For more detailed information on the VRP program as it

may apply to your land development plans, please contact me at 703-478-0055.



*Andrew Hendricks, PG, LRS
Associate
GTA Sterling, VA office*

NorthBay

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and engineering services through the complex permit process necessary to enable construction of the largest environmental / leadership camp facility in the mid-Atlantic region. NorthBay provides exceptional access to large tracts of forest habitat, sensitive tidal and nontidal wetland areas and stream ecosystems in Elk Neck State Park with the added benefit of fronting directly on the Chesapeake Bay.

The sensitive features that make the facility an exceptional site for exposing children to the environment, important environmental issues facing the Chesapeake Bay and the adjacent ecosystems also created complex permitting and regulatory challenges for the project. MRA led the effort to minimize the footprint of the necessary infrastructure, employing low-impact/environmentally sensitive and innovative design techniques for the site design. Extensive coordination with the MDE, DNR,

Critical Area Commission, and the US Army Corps of Engineers was necessary to lead the project through the regulatory review process.

The end result was completion of a facility that provides unparalleled opportunities for hands-on environmental science experience, leadership and social skill development, while enhancing the existing habitat in Elk Neck State Park. The innovative design elements engineered by MRA are also an integral part of the education programs at NorthBay.

Students spend Monday through Friday of one school week at NorthBay. Along with their teachers and volunteer hosts, the area’s finest leaders and educators meet them for what will be one of the best weeks of their lives. Since the project has opened, over 12,000 Maryland students have experienced NorthBay. During the 2006 / 2007 school year, 12,000 more students will experience invaluable environmental and leadership opportunities.

The NorthBay project was honored in May 2006 with a National AIA Committee on Architecture of Education Excellence Award.

It’s always exciting to see a project to completion, but it was especially gratifying to see NorthBay come to fruition. The facility fits beautifully into its natural surroundings, and is environmentally sound. It’s satisfying



to know that MRA’s efforts will help the Maryland school systems and DNR educate thousands of young people about preserving the environment while learning leadership skills and an appreciation of the outdoors.



*Co-written by Matt Hombach
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Geophysics

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- Infrastructure (highways and bridges);
- Land Development (bedrock depth, sinkhole delineation);
- Groundwater (exploration and contaminant mapping);
- Geohazards (sinkholes, landslides, earthquake mitigation and collapse structure mapping);
- Urban (utility mapping, underground storage tank location);
- Geologic Mapping;
- Archeology;
- Forensics (i.e., illegal burials, etc.);
- Civil Engineering / Non-Destructive Testing (NDT);
- So-called “Brownfield” and Landfill Investigations;
- Unexploded Ordnance (UXO detection and characterization); and
- Dam Safety (leak detection, delineation and monitoring).



Terrain Conductivity Survey

Geophysics offers a window into the earth and delivers concrete and cost-effective benefits including:

- Non-destructive/Non-invasive – sites can be explored without disturbing the ground (except in the case of borehole geophysical methods where access is typically provided by previously drilled holes);
- Efficiency – large areas of the subsurface can be explored rapidly and at much closer sample spacings than borings or test pits;
- Comprehensiveness – multiple geophysical methods can be employed

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Tax Financing

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and/or the issuance of general obligation bonds. The tax increment financing utilizes the appreciation in value of land and buildings from the TIF District and the resulting incremental increase in property tax revenues in the TIF District, to pay debt service on bonds and to finance public infrastructure improvements.

Tax increment financing involves a number of steps. These include the local government creating a TIF District and a special revenue fund, and thereafter issuing tax-exempt special obligation bonds. The proceeds of the bonds are used to pay for the costs of the public improvements. As the bonds are tax-exempt obligations, the interest rate on the bonds is usually lower than the interest rate on conventional debt to pay for the public improvements and, therefore, the cost of financing the improvements is substantially reduced.

The bonds are special revenue bonds payable from the increases in property tax revenues attributable to land and buildings in the TIF District. This necessitates an evaluation of the anticipated improvements in the TIF District, and also in contiguous and nearby areas to the TIF District to determine historical growth and assessed valuation and anticipated future growth and development, considered in connection with any legal and/or statutory constraints upon the growth in the assessed valuation of land and improvements.

In many cases, if the local government also has authority to create special taxing districts, a special taxing district which is co-terminus with the TIF District is formed, and special taxes are levied upon the land and buildings within the special taxing district in the event the tax increment revenues are insufficient to pay the debt service on the bonds. Generally, special taxing districts may be created only upon the request of a specified percentage of property owners and/or the owners of a specified percentage of the assessed valuation of property within the proposed special taxing district.

In the event the debt service is not paid through the taxes assessed on property within the TIF District, the local government that collects the taxes may institute tax sale

News Briefs

Awards:

MRA recently received an Award of Excellence by NAIOP, MD Chapter, for efforts on two projects: Clark Turner Companies' Corporate Headquarters and The Shops at Monocacy.

New MRA & GTA Associates:

MRA has announced the promotion of Thomas C. Neugebauer, PE to Associate. MRA recently hired Marilee Tortorelli, RLA and David Locke, FASLA as Associates. G. Scot Gordon, PE joined GTA as an Associate to manage the new Waldorf, MD office.

foreclosure proceedings in order to pay the delinquent real estate taxes.

Although during the term of the bonds, the increase in tax revenues resulting from the increase in the value of the land and buildings within the TIF District are diverted to pay the principal and interest on the bonds. In the long term after retirement of the debt, the increased tax revenue will be available to the local government.

The local government's responsibilities include: creating the TIF District, issuing the bonds, levying and collecting real estate taxes, remitting the tax increment revenues to pay the debt service on the bonds and procuring and collecting delinquent real estate taxes. However, most of the procedures would be followed by local government in any event, and only the creation of the TIF District and issuance of the bonds would be additional responsibilities of the local government.



Miles & Stockbridge P.C. is one of the leading law firms headquartered in Baltimore/Washington/Northern Virginia region, serving both national and regional clients. For additional information or assistance in evaluating tax increment financing and special taxing districts, please contact John A. Stafford at 410.385.3424, Stephen C. Winter at 410.823.8124 or John R. Devine at 410.385.3409.



GTA Expands Reach in Southern MD with New Waldorf Office

GTA recently opened a new office location in Waldorf, Maryland. The new location allows GTA to better provide their established brand of geotechnical and environmental services for clients on residential, commercial, and institutional projects in Charles, St. Mary's, and Calvert Counties.

While the new Waldorf office started with 10 employees when it opened on September 1st, GTA plans to grow quickly in the area and add to its professional staff in the next year.

GTA's Waldorf office is managed by G. Scot Gordon, P.E., an Associate of the firm. Mr. Gordon has over 18 years of experience in the geotechnical and engineering field and is a registered Professional Engineer in Maryland, Colorado, and Texas.

Matthew D. Brown joins Mr. Gordon in Waldorf and manages the construction

observation and testing division. Matt has been with GTA for 11 years, and received a Bachelor of Science from the University of Maryland in 1994. Contact Info: GTA, 64 Industrial Park Drive, Waldorf, MD 20602

Phone: 301-638-3094 Fax: 301-638-3597

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*G. Scot Gordon, PE
Associate,
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GTA Waldorf, MD office*

- Proven – most geophysical techniques have been in use for at least 50 years, but new applications and powerful computer modeling have greatly improved their effectiveness.

Geophysical methods include:

- Electrical Resistivity & Conductivity;
- Ground Penetrating Radar (GPR);
- Gravity;
- Magnetometry;
- Seismic Refraction & Shear Wave;
- Very Low Frequency Radio (VLF); and
- Spontaneous Potential (SP).

Knowing when and what geophysics to use is essential to a successful outcome and may result in significant savings over more traditional site investigation methods.

In future issues, we will discuss specific uses of geophysics in greater detail.



*W. Konrad Crist, PG
Sr. Geologist
GTA York, PA office*

Geophysics

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resulting in greater accuracy and precision in evaluating complex subsurface problems;

- Cost-effective – large areas of a site can be evaluated at far less cost than excavation or even grid-drilling methods; and



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