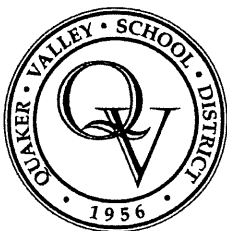


**Proposal for
Preliminary Engineering Services
Three Rivers Trust Property**

for
Quaker Valley School District

May 24, 2017



Quaker Valley School District
100 Leetsdale Industrial Drive
Suite B
Leetsdale, PA 15056
412-749-3600

Michael Baker
INTERNATIONAL

Michael Baker International
100 Airside Drive
Moon Township, PA 15108
(412) 269-6300



Scope of Work

PRELIMINARY GEOTECHNICAL ENGINEERING SERVICES

Geotechnically, this site is very complex related to the stratigraphic setting positioned within the Conemaugh Group, Glenshaw and Casselman Formations and specifically rebedded claystone units associated with these formations. These formations have a documented history and recognition for landsliding and other stability events. Recent, historic and potential stability considerations have been documented or observed on the site and the surrounding area and it is paramount that the Geotechnical program undertaken at this time develop enough information to better understand the current and potential stability disposition. Michael Baker International, Inc. (Michael Baker) Geotechnical Team members will work closely together with the other discipline team members to develop grading plans that utilize the following alternatives and items to consider in the plan development:

- (a) The best location anywhere on the entire property;
- (b) The area approximately west of the "maple" line as depicted on the historical documents provided by the Owner's Engineer; and
- (c) The portion of the property in Leet Township, both considering and excluding the aforementioned "maple" line.

While addressing these goals, consideration will be given to geotechnical items including site stability.

As described in the Site/Civil Engineering Services section of this RFP, each grading plan option will contain at least two (2) access roads capable of supporting and sustaining the anticipated school bus and other vehicle traffic transportation needs. The "target" developable acres are on the order of 50 usable acres as described in the same section. Michael Baker will take into consideration the cost effectiveness of the total area of grading and recommend a smaller usable area if there are significant cost savings, i.e., 40 acres or less instead of 50 acres.

The Quaker Valley School District (QVSD) has identified additional properties since the original RFP that could possibly be utilized to cost effectively achieve the necessary site size as well as the additional point of entrance/egress.

The grading plans will consider leaving enough space for detention ponds, rain gardens or other stormwater best management practices. Appropriate stormwater management will be extremely important, considering identified and historic slide prone areas. Stormwater will need to be controlled and outlet in locations that will not induce landslides. Commonly utilized BMP tools such as infiltration are likely inappropriate for this site since additional water introduced into the soil zone may activate slides.

The plans will also indicate the type of foundation the future building would need, i.e. shallow foundations, deep foundations, etc. Since the school configuration and loadings will not be accomplished under this RFP, foundation type will not be provided.

This particular site has significant changes in elevation (approximately 320 feet of vertical distance from high point to low point). Based on this elevation change, various stratigraphic layers, formations and units will be intercepted by grading operations. Each of these layers will exhibit differing engineering characteristics that could greatly affect the cost and performance associated with site development. In general, potential characteristics include:



- a) relative ease of excavation of both soil and bedrock layers (i.e., excavation requirements with respect to conventional earthmoving equipment vs. rock rippers and hoe rams vs. blasting);
- b) the potential reuse and suitability of excavated materials as engineered fill (i.e., cut material suitability for reuse vs. imported fill requirements);
- c) allowable cut and fill slope ratios given geologic layers at the site (i.e. detailed slope stability requirements including remediation of colluvium pockets and landslide-prone strata, prior apparent landslide zones, historic landslides, and the associated potential limitations on usable developed space and project cost);
- d) suitability of particular stratigraphic units to act as foundations for embankment toes or retaining walls and likelihood that some stratigraphic units may likely exhibit shallow or deep stability concerns
- e) groundwater effects, which can present logistical challenges during construction;
- f) suitability of particular stratigraphic units to interact with stormwater management facilities and bmp's; and
- g) the potential for expansive soil and/or bedrock (i.e., pyritic, marcasite and carbonaceous materials), which can severely limit building, pavement and utility location alternatives from both horizontal and vertical perspectives or incur significant costs if these layers must be removed, or otherwise specially addressed during design and construction.

As appropriate, these factors will be investigated, considered and addressed for all considered site grading plan alternatives during the due diligence period. The goal of the subsurface investigation will be to map out and delineate these stratigraphic units, then to determine their attributes that may positively or negatively impact development.

Michael Baker will consider the cost implications associated with these geotechnical considerations and will provide guidance to the overall cost estimating task.

Michael Baker will review the Gateway information provided and the limited test borings in the lower portion of the sandstone that appear to indicate that it may contain significant carbonaceous seams and will consider testing of this cores for expansive pyrite, if available. The bottom of the sandstone layer will be identified in proposed stratigraphic borings TB-1, 2 and 3. Based on the results of the testing, the preliminary investigation shall also determine whether the noted carbonaceous streaking in the lower sandstone is likely to cause material handling and use of material issue, with respect to site development logistics and costs, as well as other factors, for the aforementioned school development options.

Based on the depth of the stratigraphic borings (TB-1, TB-2 and TB-3) of 200 to 300 feet, Michael Baker will develop a stratigraphic profile that identifies all the stratigraphic units beneath the site, which may include but not be limited to: Morgantown sandstone, Wellersburg coal and clay, Birmingham Schenley red beds, Birmingham sandstone and shale, Duquesne coal, limestone and clay, Graton sandstone, Unnamed red beds, Ames limestone, Harlem coal, Pittsburgh red beds, Upper Saltsburg sandstone, Bakerstown coal and limestone, and Middle and Lower Saltsburg sandstones. In addition, types, depths, and thicknesses of soils encountered will be indicated of profile. Both high river terrace and colluvial deposits were observed during recent field views and further occurrence and delineation are anticipated. These materials will be sampled, tested and evaluated for material use to construct embankments.

The Preliminary Field Exploration Plan (FEP) herein contains 32 test borings to be drilled to the depths indicated on the plan. This equates to a total drilling footage of approximately 1880 feet. As such, and for comparison purposes, we have completed the Geotechnical Services Proposal Form based on the outlined scope contained



within the RFP. However, we are recommending a different and we believe more appropriate investigation approach as outlined below.

Based on review of this FEP, the site by our field views and our local experience with this landslide-prone geology, we believe that additional rock drilling is warranted in order to determine the top of rock beneath the proposed embankment foundations. Large sandstone "float block" boulders were observed in the surficial soils on the site. Refusal during soil drilling on a large boulder is possible and will result in an inaccurate top or bedrock correlation. The current termination criteria for many of the RFP outlined borings is refusal and therefore no bedrock coring. Misinterpreting the top of bedrock and more importantly the soil thickness yields any follow-on stability analyses to be inaccurate. Furthermore, coring of these test borings at the embankment toes allows further understanding of the adequacy of the bedrock to support the embankments and more correlation of the stratigraphy across the site. Important to understand in this geologic setting and these river and glacial lake influenced slopes is the fact that landslides are not just only initiated or found within the soil zone, but although not as common, they also occur as deep seated failures as large slump blocks well within bedrock. We are aware of two such failure mechanisms in the project vicinity and the subsurface investigation for this site needs to be managed to assess this potential occurrence. To accomplish this, we have included a recommended boring program which is based on the Michael Baker's grading alternative No. 2 and a more appropriate mix of soil and rock coring. This is provided as Attachment 1. Also included in this Attachment is an alternate Geotechnical Services Proposal Form which includes the costs for this recommended approach. The Attachment also includes the FEP Boring Plan and Michael Baker's Alternate Boring Plan. The Alternate Plan includes grouting of the bore holes which is standard practice for closure especially if the area may not be developed.

GEOTECHNICAL EXPLORATION AND EVALUATION

Michael Baker will furnish necessary labor, materials, equipment, drawings, sketches, calculations, report production, mailings, travel expenses, means and delivery; and perform the required work for completion of geotechnical explorations, investigation, analysis and report in generally accepted geotechnical engineering practice. Michael Baker will subcontract the drilling to Test Boring Services, Inc. (TBS), in Washington, Pa. In addition, Michael Baker will utilize our Open-End Geotechnical Laboratory Testing Firm Ackenheil Engineers (AE), Inc., in Pittsburgh, Pa., for Geotechnical Testing and for the Form of Sulfurs testing of the rock.

Michael Baker will develop cut and fill slopes recommendations based on the findings of the subsurface exploration program and testing.

The work shall be performed under the direct supervision of a professional (PA-licensed) engineer that specializes in geotechnical engineering and will act as the geotechnical engineer of record. The report will be signed and sealed by the same engineer. Four hard copies of the report and one electronic (pdf) copy on compact disk, along with drawing CADD files will be submitted to the QVSD.

SITE CONDITIONS

Michael Baker will be responsible for all field operations associated with the geotechnical exploration. Based on our site visit, we understand that there is a maple syrup gathering system in place at the site and will coordinate and take precautions to minimize impact. With the expanse of the operation on the east side of the site and the recommended test borings in the same area, the collection lines will be impacted to access the test boring locations. Once the test boring locations are field staked, a routing plan to access the borings can be developed to minimize impact. The RFP includes up to 40 hours of delay due to those surface obstructions and other access difficulties. The RFP also includes up to 40 hours of dozer work to facilitate access to the proposed test boring locations. The drilling contractor is anticipated to stage along the narrow ridge line near the recently moved stone farm house and all access to the borings is anticipated to be from this ridge line and existing trails and driveway along the slope.



TEST BORINGS

For the purposes of this RFP, the proposed quantity of test borings and their approximate location are shown on the enclosed FEP. The alternate and recommended quantity of test borings is shown in Attachment 1. Michael Baker will provide a professional surveyor to stake out the boring locations shown on the FEP and record the actual surface elevations at each proposed test boring location prior to drill rig mobilization.

The preliminary boring locations shown do not consider surface or subsurface restrictions, such as buried utilities. As such, the test boring locations may be adjusted once the PA-One-Call Utility Clearance is completed. Boring depths will need to be adjusted based on findings and conditions encountered. Once the exploration has been completed, Michael Baker will provide an as-drilled plan showing the actual drilled locations and elevations.

Michael Baker will provide full-time inspectors for drilling inspection. At a minimum, the inspector will be a PE, PG, or PennDOT Certified inspector with a minimum of 7 years of experience. The outlined hours provided with the RFP include a full time inspector for each rig but do not include a full time supervisor. For the Michael Baker recommended alternate and corresponding Geotechnical Services Proposal Form, we have included hours and costs for a full-time on-site drilling supervisor to provide oversight of the drilling operations and inspectors. The on-site drilling supervisor will be the Baker's On-Site Representative (OSR) and will be a licensed engineering (PE) or geology (PG) staff with at least 15 years of direct geotechnical experience using local geotechnical drilling techniques, sampling of soils and rock, and logging procedures to perform full-time oversight. Mr. John Lasko, P.G., is anticipated for this role and resumes are included for QVSD approval. John has extensive experience in this geologic setting, implementing complex subsurface investigations and identifying, avoiding and remediating landslide features. The OSR will direct the drilling and sampling program while the field subsurface exploration work is in progress. Michael Baker will inform the QVSD if initial soil and bedrock conditions dictate that additional depths or borings are advisable. No such additional test drilling shall be undertaken without QVSD approval.

Michael Baker will coordinate with TBS to complete the PA One Call System (POCS) Utility Clearance to field locate utilities prior to commencement of any field operations. Michael Baker and TBS will coordinate with the QVSD with respect to on-site utilities not covered by POCS. Michael Baker will have the discretion to offset borings due to lack of clarity regarding utility locations after discussions with the QVSD and input from POCS.

Storage of all testing samples, including field borings, shall be the responsibility of Michael Baker. Storage at a QVSD facility is preferred. Michael Baker will store the samples off site for a period of at least six months from final report submission. The samples may then be discarded unless specifically requested otherwise by the QVSD. Additional fees associated with storage or delivery to a facility of the QVSD's choosing would be negotiated at the time of their request.

Reasonable precautions will be taken to prevent damage to property, visible and concealed, however due to the nature of the site and the work to be completed, it should be understood that there will be an impact from drilling. As a minimum, the driller will utilize a rubber-tracked drill rig and traverse any lawn or landscaped area utilizing terra-mats to minimize impact. The driller shall maintain the site in a neat and orderly condition throughout the fieldwork. Upon completion of drilling and before demobilization of drilling equipment from the site, repair or replace to original condition, as much as practical, any property disturbed as the result of test boring operations. Final compensation for the work will be made based on the QVSD's acceptance of the site condition after drilling. At a minimum, all borings will be backfilled with cuttings upon completion. The driller shall then excavate the area around the top of each open borehole to an approximate one-foot deep square configuration so that a concrete patio stone can be placed to straddle the open bore hole. The soil shall then be placed and compacted to match the surrounding grade. If the test boring is located in a paved area, the vacated volume above the concrete patio stone shall be backfilled with compacted cold-patch asphaltic concrete. Extraneous soil cuttings shall be removed from the site or spread in an area acceptable to the QVSD.



LABORATORY TESTING

Refer to Geotechnical Services Proposal Form for the Cost Estimate for Preliminary Geotechnical Exploration for the minimum type and number of tests to be conducted.

Michael Baker recommends additional laboratory testing than listed in Geotechnical Services Proposal Form. Refer to Michael Baker's Geotechnical Alternate Services Proposal Form (Attachment 1), for the recommended type/number/costs of such tests and technical explanation separately attached to this RFP. If initially explored soil conditions indicate that additional laboratory testing may be advisable and beneficial to the decision making process, then Michael Baker will contact the QVSD with justification for authorization to proceed with such additional testing.

REPORTING

Michael Baker will prepare a Geotechnical Engineer Report (GER) outlining the preliminary geotechnical exploration, evaluation of grading plans, and preliminary recommendations. The GER will include a general review of the subsurface conditions with respect to the potential project and will include the following:

1. Test boring records/logs prepared in accordance with applicable ASTM standards and local practice including USCS classification of all soil layers shown on the records; 1880 Lineal feet will generate approximately 125 sheets for logs;
2. Laboratory test results;
3. Recommended foundation types (deep verses shallow). Since the overall scope is to evaluate and develop grading plan options and not develop a full site plan layout, providing preliminary foundation design parameters in different areas of the site based on the grading plan options would be premature at this point in time;
4. Anticipated floor slab types and preliminary design parameters (same comment as No. 3 above);
5. Subgrade preparation/enhancement considerations for pavements, floor slabs, fill/backfill areas, fill keyway/benching/toe support zones;
6. Soil and rock parameters to be used for design of cut and embankment slopes and preliminary wall evaluation;
7. Earthwork considerations including allowable cut/fill slope angles, suitability of cut materials for reuse, identification of unsuitable material, probable benching;
8. Preliminary drainage requirements, groundwater and underground seep/spring management/control;
9. Slope stability considerations and computer software analyses using GSTABL or similar approved software will be completed for each option proposed by the site/civil engineer. At this point in time, it is anticipated that six cross sections will be analyzed;
10. Pavement design and construction considerations; No CBR or moisture density testing is proposed in base proposal so no pavement design will be performed at this point in time;
11. Evaluations of historic and apparent on-going land sliding at the site and their potential effects on the proposed project;
12. Evaluations of potentially-expansive soil and rock, especially carbonaceous materials and their effects (i.e., to cost and constructability) on the project, as well as preliminary recommendations related to measures to address such strata/material;
13. An evaluation of landslide-prone strata, such as Redbed materials, at the site and their effect on proposed site development, as well as preliminary recommendations to address such strata as related to site development;



14. Excavation considerations, including discussions regarding permanent cut slopes and temporary slopes, such as for temporary excavations and as required for fill embankment keyway and benching, as well as issues related to the excavatability of the various soil and rock strata that may be potentially encountered based on the site/civil engineering grading plan options;
15. Preliminary geotechnical engineering evaluation of all site/civil grading plan options;
16. Coal mine review including Bureau of Min uation needed for Plancon E; and
17. Preliminary Utility considerations and recommendations.

The GER will include a review of pros, cons, and preliminary opinions of cost (order of magnitude) for the proposed grading plans developed. It should be understood that at this point of project development, the evaluations above will be a conceptual design level and are not suitable for final design. They will however set the basis for any follow-on evaluations should the QVSD move forward with this site.

Michael Baker will develop opinions of cost for the associated grading including the remediation of the colluvial deposits underlying the alignment(s), and retaining walls along the access road(s).

Michael Baker will perform conceptual retaining wall layout as required to develop an order of magnitude of cost related to each wall. The GER will outline recommendations for any additional testing or evaluation if the preliminary evaluation indicates additional testing or evaluation would be prudent, as part of either the preliminary or final design phases.

Michael Baker will provide four copies of the draft GER to the QVSD for review. Upon review and addressing the QVSDs comments, four copies of the final GER will be submitted.

POST-REPORT CONSULTING

Michael Baker will attend meetings as requested by the QVSD. The Geotechnical Services Proposal Form estimates 40 hours for this service as PE support as needed. Additional requested services would be provided at the hourly rate noted on that form.

GEOTECHNICAL SCHEDULE

Once authorization is provided, Michael Baker will immediately execute contract with TBS and drilling is anticipated to begin within 2 weeks. Based on the proposed footage in the FEP of 1880 lineal feet, the drilling duration is anticipated to be 16 working days with 4 drill rigs averaging 30 feet per day per rig. The Base Proposal estimated 8 calendar days to finish the drilling with 4 rigs, which would require each drill rig to average 59 lineal feet of drilling per day per rig, which based on our experience is unrealistic given the terrain and 3 deeper borings (200 to 300 feet). Therefore, Michael Baker has adjusted the Drilling Inspection hours in the Geotechnical Services Proposal Form for 4 inspectors, 11.5 hours per day for 16 working days.

Within ten days of completion of test drilling operations, the Michael Baker will provide a verbal assessment of the site conditions and findings to the QVSD.

Baker will deliver the plans within 100 calendar days of authorization. Baker also submit the written Geotechnical Engineering Report within 100 calendar days of initial authorization.

GEOTECHNICAL PROPOSAL

The Geotechnical Services Proposal Form lists all prices and proposal amounts requested for the Base Proposal per the FEP.



In Michael Baker’s opinion, the Base Proposal outlined in the RFP is not sufficient for the proposed project and additional work beyond the Base Proposal scope of work is required. As a result, Michael Baker has outlined the basis for this change above and prepared an alternate proposal using the “Geotechnical Services Proposal Form” format and clearly marked the proposal as a “Geotechnical Alternate Services Proposal Form.” Refer to form in Attachment 1.

CIVIL SITE PLANNING

The purpose of the Civil Site Planning work is to determine the site constraints and the ability to complete the development as desired given the results of the various investigations taking place on the Site. At the completion of the Geotechnical Exploration, Michael Baker will prepare a two (2) different Preliminary Site Grading Plans for each of the following conditions:

- The best location anywhere on the entire property;
- The area approximately west of the “maple” line as depicted on the historical documents provided by QVSD; and
- The portion of the property in Leet Township, both considering and excluding the aforementioned “maple” line.

All plans will show a minimum of two access roadways into the site, and will list the maximum buildable pad area and the earthwork cut and fill quantities generated by the grading. This buildable area will be developed based on the required “Chart of Spaces” provided by QVSD.

Chart of Spaces

Site Planning with all Facilities:	
Minimum Usable Acreage for Theoretical HS Campus	
• Future High School Building Area (210,000 S.F. - One Story)	4.82 Acres
• Future District Administration Area	0.30 Acres
• School and Admin. Supporting Infrastructure (200,000 S.F. - One Story)	15 Acres
• Practice Fields/Physical Education	3.8 Acres
• Campus Maintenance Facility	0.5 Acres
Subtotal	24.42 Acres
• Stadium (Home & Visitors Bleachers, Fieldhouse, Track & Field)	6.5 Acres
• Ballfields (Baseball and Softball)	8.5 Acres
• Tennis Courts	1.1 Acres
• Sports Parking Lots	3.8 Acres
• Transportation Garage/School Bus Parking Area	3.0 Acres
Subtotal	22.9 Acres
TOTAL (Minimum Useable Acreage)	47.32 Acres
Note: Pennsylvania Department of Education (PDE) Acreage Recommendation: Approx. 42 Acres (35 acres for HS 1700 students), current site is 34 acres and not all of it is usable.	

Michael Baker will prepare a Site Evaluation Report and associated drawings showing site information determined during the due diligence investigation. The following list shows items to be included, and the method of determination utilized:

- Zoning Regulations (current Property Zoning and potential Variances Required), Building and Parking Setbacks, Parking Space Requirements, Landscape and Adjacent Property Buffer Requirements, Lighting Requirement, Signage Requirement, Stormwater Management Regulations - Baker feels that a project of this importance to the local community requires a certain level of understanding and partnership by the regulatory agencies prior to actual submission of the plans as defined by the Ordinances. If the various municipalities or other agencies request major changes at the submission level, significant redesign costs may be incurred. Therefore, one of Michael Baker’s goals will be to obtain governmental agency direction as early as possible in the due diligence process. Any significant concerns of the various parties can then be addressed during the preparation of the Site Evaluation Report. To that end, Michael Baker will schedule and attend meetings with the various stakeholders as soon as possible during the due diligence process to gain their input. Michael Baker will also review the Zoning and Subdivision Ordinances of the municipalities for their specific requirements, and any possible waivers or variances that may be required.
- Overall Lay of Site and Surrounding Area, i.e. Hilly, Flat, etc. - Will be shown on the Site Evaluation drawings based on PASDA and previously prepared mapping.



- Existing Physical Structures Located - Will be shown on the Site Evaluation drawings based on PASDA and previously prepared mapping.
- Drainage Patterns Located - Will be shown on the Site Evaluation drawings based on PASDA and previously prepared mapping.
- Storm Drainage Systems Location - Baker will prepare a schematic layout for the storm drainage associated with proposed parking areas and building construction. The storm drainage system will be placed to convey stormwater runoff to stormwater management facilities to be designed for the site. The proposed grading plans will take into account space for detention ponds / stormwater management. It should be noted that a requirement of a National Pollutant Discharge Elimination System (NPDES) General Permit for the Discharge of Stormwater if for stormwater infiltration. Previous information related to the site show that infiltrating water into the surrounding soils may be detrimental to the proposed earthwork. Michael Baker will discuss with the approving agency (Allegheny County Conservation District, ACCD), if given the unique circumstances of the site the requirement for infiltration can be waived or reduced in magnitude.
- Sanitary Sewer Systems and Capacity - Conceptual sanitary sewers will be sized based on an anticipated Pennsylvania Department of Environmental Protection (PaDEP) Planning Module and Part II Permit. A sanitary sewer flow rate will be estimated based on discussions with the QVSD as to the anticipated capacity of the site. Michael Baker will contact the local Sewer Authority and Township officials to discuss the Planning Module procedures and to obtain guidance regarding the offsite capacity both the sewers and the treatment plant. The authority will also be asked to provide a "will serve" letter for the proposed school campus development.
- Domestic Water Systems and Capacity Location - Michael Baker will coordinate with the local Water Authority to determine potable water supply and fire protection requirements, however, Baker assumes the capacities of public facilities will be adequate for the proposed development and that on-site storage or booster pumps will not be necessary. Also, a hydrant flow test will be coordinated with the Authority if a recent test is not available. The authority will also be asked to provide a "will serve" letter for the proposed school campus development.
- Electric, Telephone, and Cable Capacity, Poles and Line Locations - Conduits or utility pole locations for electric, telephone, and cable service will be depicted on the Site Evaluation drawings. Michael Baker will not perform an electric or telephone service analysis or design. Michael Baker will coordinate with the electric and telephone companies to determine locations suitable for providing service to the site, and will verify with them that service can be provided. The utility company will also be asked to provide a "will serve" letter for the proposed school campus development.
- Gas Lines Capacity and Location - Natural gas distribution lines will also be depicted on the utility plans. Michael Baker will coordinate with the gas company to determine tie-in locations suitable for providing service. Michael Baker will provide estimated required capacity information (as discussed with the QVSD) to the gas company for their use in determining line sizing, etc. The utility company will also be asked to provide a "will serve" letter for the proposed school campus development.
- Roads Around and/or Through Site for Vehicles and Bus Traffic - Roadways providing access to the site building pads will be shown on the conceptual grading plans. Parking areas and internal roadways will not be shown on the plans. In order to determine bus access routing, Baker will utilize AutoTURN by Transoft Solutions. This program will show the movements possible by the largest truck/bus expected to need access to the new facility, and access roads can be adjusted accordingly. This program will also show the outside tire/truck edge lines, which can be plotted on the plans and used as an exhibit for public meetings.
- Nearest Traffic Signals - Will be shown on the Site Evaluation drawings based on our site visits.



- Site Distance Up and Down Roads for Access Into and From Site - Will be shown on the Site Evaluation drawings based on measurements from our site visits.
- Indications of Potential Wetlands - Will be shown on the Site Evaluation drawings based on our Wetlands Identification Investigation.
- Review of site topography and its potential effects on the planned development - Will be discussed in the Geotechnical Investigation portion of the Site Evaluation Report.
- Potential Permits Required for Development - Local, County, State and Federal - Michael Baker will summarize the permit requirements anticipated for the site once the various utilities and governmental agencies have been contacted. A listing of permits and their approximate time frames for approval will be presented.

WETLANDS IDENTIFICATION SERVICES

TASK 1 - FIELD RECONNAISSANCE AND INVENTORY INVESTIGATION PROCEDURES

It is Michael Baker's understanding that an on-site wetland delineation will be conducted on an approximate 129-acre study area (provided by the Three Rivers Trust) and the findings of that investigation will be compiled in a memorandum. Details regarding how Michael Baker will complete the tasks described in the RFP are identified below.

Prior to conducting the fieldwork, Michael Baker International will conduct an office desktop assessment of the study area using USGS mapping to evaluate topographic relief, drainage patterns, and subwatershed characteristics. Potential streams, tributaries, and other water bodies located within the study area will be identified. USFWS National Wetland Inventory (NWI) mapping for the study area will be reviewed to identify potential wetlands prior to entering the field. Additionally, the *Allegheny County, Pennsylvania Soil Survey* and *Hydric Soils List* will be reviewed to identify hydric soils and soils with hydric inclusions located within the study area, as wetlands can be associated with these soils.

Wetlands will be delineated using the methods described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0* (Technical Report EDRC/EL TR-12-9). This supplement is based on the principles of the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory, 1987). All wetlands within the study corridor will be classified according to the USFWS (United States Fish and Wildlife Service) *Classification of Wetlands and Deepwater Habitats for the United States* (Cowardin et al., 1979).

Plant classification for the site investigation will be determined by consulting the *National Wetland Plant List: 2016* (Lichvar, 2016).

The study area soils will be examined using a 16-inch spade. Soils will be classified according to the criteria outlined in the *Federal Manual* through the use of a *Munsell® Soil Color Chart* (Kollmorgen, 1994). In addition to the direct observation of soil saturation and inundation, hydrologic indicators such as buttressed root systems, wetland drainage patterns, leaf litter staining, etc. will also be used to determine the presence of wetland hydrology within the study area.

Information collected and documented during the field investigation will include dominant vegetation, soil characteristics, hydrology source, and any other pertinent notes regarding the wetland.

Streams have defined beds and banks and contain flowing or standing water for at least a portion of the year. In order to accurately determine the flow regimes (i.e., perennial, intermittent, and/or ephemeral) throughout the study area; Michael Baker will utilize the set of definitions outlined in the PADEP's *Policy and Procedure for*



Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers. Document Number 391-2000-014, dated April 12, 2008:

- Perennial Stream - a body of water in a channel that flows throughout a majority of the year in a defined channel and is capable, in the absence of pollution, drought or man-made stream disturbances, of supporting a benthic macroinvertebrate community that is composed of two or more recognizable taxonomic groups of organisms, large enough to be seen by the unaided eye and can be retained by a U.S. Standard No. 30 sieve (28 meshes per inch, 0.595 mm openings) and live at least part of their life cycles within or upon available substrates in a body of water or water transport system. A perennial stream can have Q7-10 flow of zero (PADEP 2008).
- Intermittent Stream - a reach of stream that flows only during wet periods of the year (30% - 90% of the time) and flows in a continuous well-defined channel. During dry periods, especially in summer months, intermittent streams may be reduced to a trickle of water which makes it appear dry, when in fact there is water flowing through the stream bottom or "substrate". This is usually caused by the seasonal changes of the local soil water table or during periods of long-term drought (PADEP 2008).
- Ephemeral Stream or "Wet Weather Stream" - A reach of stream that flows only during and for short periods following precipitation, and flows in low areas that may or may not have a well-defined channel. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Some commonly used names for ephemeral streams include: storm water channel, drain, swale, gully, hollow, saddle, and routinely and incorrectly as "dry streams". The term is often used interchangeably with intermittent stream but the difference is in length of time of continuous flow (less than one month per year for ephemeral streams). (PADEP 2008).

The methodologies described above are currently required for Section 401/404 permit submittal to the Pennsylvania Department of Environmental Protection for any Chapter 105 Water Obstruction and Encroachment Joint Permit Application. Physical habitat forms can be included to describe and score the functions and values of the aquatic resource per the EPA Rapid Bio-assessment, USACOE Regulatory Guidance.

TASK 2 - GPS SURVEY

Once the field biologist determined that a potential system is a jurisdictional resource, it will be identified and flagged using survey flagging. A mapping-grade, Trimble GEO-XH 6000 Series Global Positioning System (GPS) will be used to survey each aquatic resource boundary. All flagging will be removed after the boundary has been identified and surveyed.

TASK 3 - FINDING MEMORANDUM

Michael Baker will document their findings in a letter report. The report will include a description of the site, delineation methodologies applied, results, identification and mapping of jurisdictional waters and photograph location with orientation, and a conclusion that includes permitting and site development guidance and recommendations.

TASK 4 - CONSULTATION

Michael Baker's Environmental staff will be prepared to discuss and thoroughly articulate the finding of the investigation and address project objectives and strategy necessary to development of the site. Our project team is ready to start the project immediately and are committed to completing this project successfully, on time, on budget, and in a safe manner.



PHASE I - ENVIRONMENTAL SERVICES

Michael Baker will performed a Phase I Environmental Site Assessment (ESA) utilizing reasonably accessible records and within the time and budget constraints that have been established. This assessment will be performed in general conformance with the scope and limitations of ASTM Practice E 1527-13. A review to assess any potential environmental concerns will include an Environmental Data Resources, Inc. (EDR) report, along with an onsite investigation. It should be noted that information relating to facility operations, site conditions, and analytical data provided to Michael Baker by outside sources will be received in good faith and assumed to be accurate unless otherwise indicated. Based upon the information received in interviews, accessible public record review, historical data search, and site reconnaissance, Michael Baker will identify the most likely areas of significant environmental liability, if applicable. Michael Baker will give a reasonable and appropriate level of diligence in its scope. The report will also include:

- Digital photographs with descriptions
- Statement of Qualifications
- Conclusions concerning potential environmental liabilities using risk-based analysis

* A Phase I ESA is a preliminary assessment utilizing available public documents and observations to identify the potential for releases of hazardous substances or petroleum products. A Phase II ESA would be recommended for any observed or potential contamination. A Phase II ESA is an investigation which collects original samples of soil, groundwater or building materials to analyze for quantitative values of various contaminants and possibly estimated remediation costs. Due to the changing nature of regulatory requirements and other factors beyond our control, Michael Baker cannot guarantee or warrant any aspect of the work including any estimated remediation and/or compliance costs.

Michael Baker will use senior and mid-level personnel with extensive wetland experience to ensure the project is conducted to the highest potential.

We will assign Ms. Kim Bartos to the project. She has over 17 years of conducting comprehensive field investigations of the environmental conditions of aquatic habitats and providing expertise in the assessment of ecological impacts. She has worked in the regulatory community and in the private sector. Her work experience has allowed her to offer innovative and creative design options of wetland and stream impacts and mitigation based on her knowledge as both a regulator and consultant. She can offer both perspectives concerning the identification of the resources along with permitting recommendations. Ms. Bartos is a Professional Wetland Scientist (PWS) who received her certification from the Society of Wetland Scientists Certification Program. She also has received certificates for Wetland Certification Training from the U.S. Army Corps of Engineers. Her years of experience managing wetland and stream work make her the perfect environmental lead for this project.

Mr. Shane Stauffer, an Environmental Associate, will serve as part of the team and take part in field surveys, desktop reviews, and will assist in the composition of the report. He has received a certificate for Wetland Delineation from the U.S. Army Corps of Engineers which is a recognized wetland delineation training provider. Stauffer offers over 3 years of natural resource and environmental site investigation experience. Mr. Stauffer's experience includes wetland delineations, stream assessments, aquatic habitat assessments, macroinvertebrate studies, electrofishing surveys, mine surface subsidence investigations and category 3 and 4 dam safety inspections. Their resumes are included in Attachment 2.



SURVEY SERVICES

Michael Baker will perform Individual Boundary Surveys on the 13 Parcels and 1 alternate parcel as listed below (and on page 2 and 3 of the RFP for Preliminary Engineering Services for Potential High School Site Quaker Valley School District dated May 12th 2017).

- Parcel ID: 705-P-280 - 21 Little Sewickley Creek Road - Edgeworth Borough
- Parcel ID: 705-N-85 - Little Sewickley Creek Road - Leet Township and Leetsdale Borough
- Parcel ID: 705-N-90 - Little Sewickley Creek Road - Leet Township
- Parcel ID: 704-C-362 and 704-D-186 - 200 Camp Meeting Road - Leet Township
- Parcel ID: 704-D-126 - 210 Camp Meeting Road - Leet Township
- Parcel ID: 704-D-221 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-399 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-400 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-401 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-402 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-403 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-G-404 - Vacant land - Camp Meeting Road - Leet Township
- Parcel ID: 704-H-66-1 - Vacant land - Camp Meeting Road - Leet Township (alternate)

The Boundary Surveys will consist of all field work needed to produce a drawing that will be adhere to Local and State requirements required to be used for the transfer of land, and to meet the conditions set forth in the Pennsylvania Department of Education's PLANCON. All drawings will be sealed by a Professional Surveyor Licensed in the Commonwealth of Pennsylvania.

A Pennsylvania One-Call will be initiated to contact the appropriate utility companies that may have interest within and adjacent to this site to attempt to get existing utility lines marked by their respective owner/operators, and to request copies of any available reference drawings. The field survey will locate the utilities as field marked by the particular utility agency. All readily apparent storm and sanitary sewer manholes, inlets, etc. within the proposed site envelope will be located horizontally and vertically. Certain sanitary or storm sewer lines may have to be surveyed off of the subject property in order to determine future tie-ins. Invert elevations and pipe sizes will also be recorded for design purposes. These elevations will be as determined in the field or based upon utility agency "supplied" as-built drawings of their utility. The elevations of these particular items will be obtained on all accessible storm and sanitary sewer manholes that may directly affect the proposed site design. Baker will make every effort to coordinate and acquire the as-built plans of these utilities from the appropriate utility agency. However, Baker cannot guarantee that the impacting utility agency will physically locate and mark their utility line within 3 days from an official Pennsylvania One-Call notification. Baker will identify utilities to the best of our ability, however, utilities without surface features or identification may not be reflected on the plans. Findings will be shown and duly noted on the plans included in the report.

Boring locations determined during the Geotechnical Investigation will be surveyed and shown on the plans.

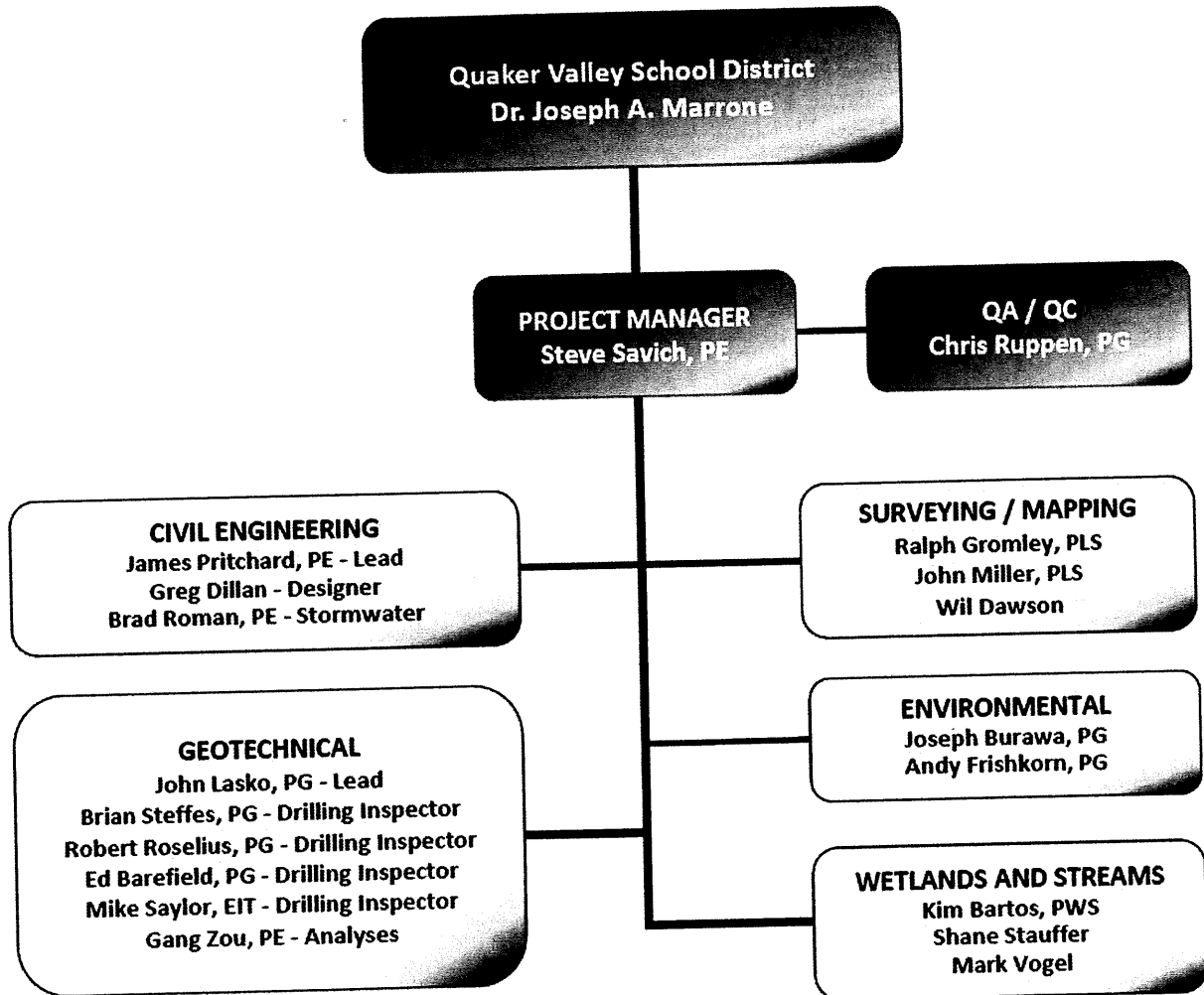
The Coordinate System will be based on NAD 83 PA South Horizontal and NAVD 88 for Vertical Datum.



OPINION OF PROBABLE CONSTRUCTION COSTS

Michael Baker will prepare an Engineer's Opinion of Probable Construction Costs for each conceptual grading plan included in the Site Evaluation Report. This will include conceptual earthwork, stormwater management, access road paving, and rough utilities to the building pad area. It will not include site specific construction or utility work. The unit costs will be based on reference material available at the time of preparation

PROJECT ORGANIZATION





BUSINESS PROPOSAL

Michael Baker proposes to complete the work presented in this proposal on an hourly rate not-to-exceed basis and will not exceed the total cost without written authorization from the QVSD. The estimated total cost is summarized in the table below:

Task	Task Estimated Cost	Total Estimated Cost
Wetland and Environmental Services		\$15,500.00
Boundary Surveying Services		\$54,500.00
Parcel ID: 705-P-280	\$7,700.00	
Parcel ID: 705-N-85	\$7,700.00	
Parcel ID: 705-N-90	\$4,000.00	
Parcel ID: 704-C-362 and 704-D-186	\$5,100.00	
Parcel ID: 704-D-126	\$4,000.00	
Parcel ID: 704-D-221	\$4,000.00	
Parcel ID: 704-G-399	\$4,000.00	
Parcel ID: 704-G-400	\$2,800.00	
Parcel ID: 704-G-401	\$2,800.00	
Parcel ID: 704-G-402	\$2,800.00	
Parcel ID: 704-G-403	\$2,800.00	
Parcel ID: 704-G-404	\$2,800.00	
Parcel ID: 704-H-66-1 (alternate)	\$4,000.00	
Survey Boring Locations / Topo / Utilities		\$22,800.00
Civil Site Planning		\$95,200.00
Total Costs including all Parcels (without Geotech) Geotechnical Services Proposal Form with pricing is on the next page and is in addition to this cost.		\$188,000.00

In no case will out of scope services be performed, or the maximum fee exceeded without prior written authorization by QVSD. This letter proposal is effective until December 31, 2017, at which time we reserve the right to make adjustments to the above fee.



GEOTECHNICAL SERVICES PROPOSAL FORM

Table below has been revised

Item Description	Estimated Unit Quantity	Unit Type	Unit Rate	Estimated Cost	Subtotal
Test Borings					
Mobilization Tack-Mounted Rig	4	LS	\$1,100.00	\$4,400.00	
Soil Drilling (3-FT SPT's)	915	LF	\$22.00	\$20,130.00	
Soil Drilling (5-FT SPT's)	0	LF	\$20.00	\$0.00	
Rock Coring	965	LF	\$24.00	\$23,160.00	
Rock Core Set-Up	8	LF	\$185.00	\$1,480.00	
Dozer Mobilization	1	LS	\$950.00	\$950.00	
Dozer Clearing	50	hours	\$120.00	\$6,000.00	
Drilling Inspection/Mgmt. (PE or PG)	736	rig-hours	\$118.00	\$86,848.00	
Difficult Moving/Water Hauling	50	hours	\$200.00	\$10,000.00	
Mileage	848	miles	\$0.55	\$466.40	
Estimated Total Cost For Test Boring Operations:					\$153,434.40
Laboratory Testing					
Water Content Test	110	each	\$5.00	\$550.00	
Atterberg Limits Test	24	each	\$30.00	\$720.00	
Grain Size Analysis	24	each	\$80.00	\$1,920.00	
Forms of Sulfur Test	12	each	\$100.00	\$1,200.00	
Triaxial Shear Test of Claystone Cores	6	each	\$1,000.00	\$6,000.00	
Estimated Total Cost For Laboratory Testing:					\$10,390.00
Geotechnical Engineering Services					
Geotechnical Analysis and Report	1	fixed fee	\$60,575.60	\$60,575.60	
PE Support As-Needed	40	hours	\$175.00	\$7,000.00	
Estimated Total Cost For Engineering Services:					\$67,575.60
Estimated Total:					\$231,400.00



HOURLY RATE TABLE

Classification	Rate
Technical Manager	\$175.00
Project Manager	\$155.00
Senior Geotechnical Engineer	\$142.00
Environmental Technical Manager	\$140.00
Senior Civil Engineer	\$132.00
Senior Designer	\$129.00
Geotechnical Engineer	\$120.00
Senior PE or PG 10+ Year Drilling Inspector	\$118.00
Civil Engineer	\$105.00
Designer	\$85.00
Civil Associate II	\$83.00
Civil Associate I	\$75.00
Environmental Associate	\$65.00

*Rates effective through December 31, 2017.
Additional labor classifications and rates are available based on specific task requirements.*

ASSUMPTIONS AND EXCLUSIONS

The Scope of Services presented herein contains our best evaluation of the tasks required to accomplish the QVSD's goals. However, unknown variables on the site may have a significant effect on the complexity of the project. Presented below are items that are specifically excluded from the scope of services and assumptions that could affect the scope and price of the project.

ASSUMPTIONS:

1. The various fee breakdowns shown in the Proposed Fee are provided under the assumption that one firm will do all of the various tasks. If the QVSD chooses to only award specific tasks to one firm, Baker's fees as presented will be required to be adjusted to reflect the loss of continuity.
2. All application and review fees, if necessary, will be paid by the QVSD.
3. Public / government agencies will be able to be contacted during the due diligence, i.e., the existence of a project will no longer be confidential. Michael Baker will, to the extent possible, preclude the specifics of the project and who the intended user will be.
4. Utility services and storm sewers can be connected to the public system within 100 feet of the site property, otherwise they will not be tied to the plans via survey. We will provide record information of utilities beyond 100 feet if required.

EXCLUSIONS:

1. Conceptual site layouts, internal parking areas, internal roadways and/or utilities, construction drawings
2. Permitting
3. Cultural Resource/Archeological Investigations



4. Permitting or studies related to traffic or vehicle access (Highway Occupancy Permit)
5. Site lighting and landscaping

Please note that the above assumptions and/or exclusions can be performed by Michael Baker under a scope change order if requested by the QVSD.

CORPORATE INFORMATION

Michael Baker International is a large firm working on a variety of complex projects at any given point in time. Through the normal course of business it can become involved in litigation or claims, not untypical for the work it performs. It is not anticipated that any such litigation would have an effect on the firm's ability to perform under this proposal. The firm's legal department may make certain non-confidential information regarding litigation or claims (if any) available upon specific written request.

REFERENCES:

Project: Starpointe Business Park
Client: Washington County Council on Economic Development
273 South Main Street
Washington, PA 15301
Mr. Daniel M. Reitz, Executive Director
(724) 225-8250

Project: Dick's Sporting Goods Corporate Headquarters
Client: Dick's Sporting Goods
345 Court Street
Coraopolis, PA 15108
Mr. George W. Goff III, Manager
(724) 273-3147

Project: Hopewell Warehouse and Laydown Yard
Client: CJ Betters Enterprises
3468 Brodhead Road
Monaca, PA 15061
Mr. Charles Betters, Owner
(724) 773-0444

Project: Airside Business Park
Client: Elmhurst Corporation
One Bigelow Square, Suite 630
Pittsburgh, PA 15219
Mr. Bill Hunt, President & CEO
(412) 281-8731

Project: Haywood Landslide Complex Remediation
Client: Rice Energy Inc.
2200 Rice Drive
Canonsburg, PA 15317
Mr. Kyle A. Shirey, Midstream Permitting Coordinator
(724) 271-7463



ATTACHMENT 1

ALTERNATE GEOTECHNICAL SERVICES APPROACH

**Corresponding Geotechnical Services Proposal Form
Original Test Boring Plan
Recommended Test Boring Plan**

**Preliminary Engineering Services
Three Rivers Trust Property
Quaker Valley School District**

ALTERNATE GEOTECHNICAL SERVICES PROPOSAL FORM

Table below has been revised

ITEM DESCRIPTION	ESTIMATED UNIT QUANTITY	UNIT TYPE	UNIT RATE	ESTIMATED COST	SUBTOTAL
TEST BORINGS					
Mobilization Tack-Mounted Rig	4	LS	\$1,100.00	\$4,400.00	\$292,376.60
Soil Drilling (3-FT SPT's)	1230	LF	\$22.00	\$27,060.00	
Soil Drilling (5-FT SPT's)	0	LF	\$20.00	\$0.00	
Rock Coring	1903	LF	\$24.00	\$45,672.00	
Rock Core Set-Up	43	LF	\$185.00	\$7,955.00	
Dozer Mobilization	1	LS	\$950.00	\$950.00	
Dozer Clearing	60	hours	\$120.00	\$7,200.00	
Drilling Inspection/Management (PE or PG)	1380	rig-hours	\$118.00	\$162,840.00	
Difficult Moving/Water Hauling	50	hours	\$200.00	\$10,000.00	
Shelby Tubes	8	each	\$150.00	\$1,200.00	
Unsampled Augering	210	LF	\$12.00	\$2,520.00	
Bulk Bag Samples	6	each	\$100.00	\$600.00	
Grout	2660	LF	\$8.00	\$21,280.00	
Mileage	1272	miles	\$0.55	\$699.60	
ESTIMATED TOTAL COST FOR TEST BORING OPERATIONS:					
LABORATORY TESTING					
Water Content Test	129	each	\$5.00	\$645.00	\$21,975.00
Atterberg Limits Test	57	each	\$30.00	\$1,710.00	
Grain Size Analysis	57	each	\$80.00	\$4,560.00	
Forms of Sulfur Test	12	each	\$100.00	\$1,200.00	
Triaxial Shear Test of Claystone Cores	6	each	\$1,000.00	\$6,000.00	
Standard Proctor - 3 point	6	each	\$110.00	\$660.00	
CBR - 1 point	6	each	\$200.00	\$1,200.00	
Direct shear	8	each	\$425.00	\$3,400.00	
Natural Density	8	each	\$25.00	\$200.00	
Unconfined Compressive Strength Rock	12	each	\$100.00	\$1,200.00	
Slake durability Index of Rock	12	each	\$100.00	\$1,200.00	
ESTIMATED TOTAL COST FOR LABORATORY TESTING:					
GEOTECHNICAL ENGINEERING SERVICES					
Geotechnical Analysis and Report	1	fixed fee	\$60,600.40	\$60,600.40	\$67,600.40
PE Support As-Needed	40	hours	\$175.00	\$7,000.00	
ESTIMATED TOTAL COST FOR ENGINEERING SERVICES:					
ESTIMATED GRAND TOTAL:					\$381,952.00



The Michael Baker Way

Michael Baker INTERNATIONAL

Focus on the customer...is first and foremost on the minds of all employees at Michael Baker International. The expectations are high, but so are the rewards - put the customer first and all the pieces begin to fit. Along with our standing strategies of maximize, optimize, innovate, and leverage, it is our dedicated focus on our clients that sustains our progress and creates value.

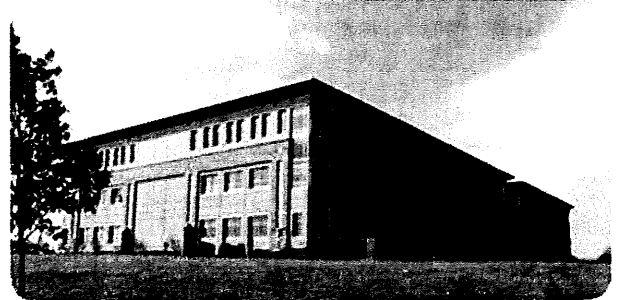
Michael Baker International (Michael Baker) has a proven track record in managing and executing complex, multi-disciplinary environmental, planning, geotechnical, and civil engineering projects for our clients. The business and management processes that Michael Baker employs every day on our projects will be implemented on this contract with the Quaker Valley School District (QVSD). Our personnel know how to assemble the right resources to provide exceptional, cost-effective services and solutions to our customers. We are ready, willing, and able to provide excellent engineering services and outstanding value to the QVSD.

All technical, professional, and support services required by the QVSD for this contract are available within the local Michael Baker organization, including broad and extensive experience in the technical areas specified by the QVSD for this project: civil engineering, environmental, surveying, planning, site development, and geotechnical services. It is Michael Baker's understanding that the work of this contract will require multiple disciplines, working very closely together, to evaluate the future potential of the project area for use as a new school campus.

All of Michael Baker's proposed work shall be accomplished in the most cost-efficient manner without sacrificing quality, and will remain consistent with sound engineering principles. Also, all disciplines will be staffed from our Moon Township office to ensure continuity and to provide local knowledge. This positions us less than 5 miles from the site which allows for very efficient field operations including environmental assessments, surveying, and geotechnical field investigations.

The selection of a highly skilled team, brought together in a cohesive and complementary project organization, is the first step in building quality into a project.

For this project, Michael Baker has assigned a single Project Manager (PM), Steven Savich, P.E., who will be the primary point-of-contact with the QVSD on all aspects of the project. The Michael Baker PM will not be removed from the project without the QVSD's prior knowledge and consent. All project



Michael Baker's Moon Township Office

correspondence will be approved and signed by the Michael Baker PM. Michael Baker will prepare and distribute in a timely manner all pertinent project correspondence such as telephone logs, meeting minutes, and reports.

The key to avoidance, early identification, and resolution of problems is timely and direct communication. Specifically, the key to early identification and resolution of problems under this contract will be timely communication between Michael Baker's Project Team and Project Manager as well as between Michael Baker and the QVSD.



Utilization of the aforementioned project management processes, as well as the Michael Baker internal project monitoring QA/QC program, will minimize potential problems and allow for early identification of potential problems or issues that could affect project performance. Working closely with Steve Savich, Chris Ruppen will serve as Michael Baker's QA Representative for this project. Potential problems could be related to issues such as budget, schedule, staffing, and/or changes in scope of work. Regular monitoring of budget, schedule, workload allocation, and progress will assist in tracking these potential concerns.

If a problem or issue arises, the Michael Baker PM will assess its potential impact on the project and identify possible solutions. These may include schedule revisions, re-allocation of staff or task assignments, assignment of supplemental staff and/or adjustments to budget or scope of work.

Similar to the work we are currently completing for QVSD, Michael Baker's Senior Project Manager, Chris Ruppen, P.G., will maintain routine communication with QVSD management representatives to assess "how we are doing" as well as to obtain a measure of overall satisfaction. These conversations will provide a number of benefits including:

- A method to effectively and promptly address concerns perceived by the QVSD as too sensitive and/or awkward to share directly with Michael Baker's Project or Program Manager.
- A new (and perhaps different) view of QVSD's requirements for the project may be gained.
- Corrective actions to improve project performance can be implemented rapidly and more effectively.

With regard to technical problems, we are capable and prepared to provide the QVSD with the most complex engineering designs and technologies, however, we pledge that we will consistently strive to choose the least complex and most economical solution to the problem at hand while being protective of public health and the environment. Similar to our current work, *Michael Baker is dedicated to providing the best possible service and to being an advocate for QVSD's best interests.*



Qualifications and Experience

OVERVIEW OF MICHAEL BAKER INTERNATIONAL

Michael Baker International was founded in 1940 as a civil engineering and surveying firm. During the 1980s, Michael Baker launched an acquisition strategy to expand from our core engineering capabilities into a full service firm with the ability to provide a range of design, build, and operate services to meet our clients' needs.

Today, with nearly 7,000 employees in over 90 offices in the United States and abroad, Michael Baker successfully serves the Facilities, Civil, Environmental, Transportation, and Energy markets. Our core belief is that a project's challenges are not obstacles, but rather, invitations to innovate. And, by consistently solving our clients' most complex problems, we have evolved into a leading engineering and energy management firm.

As Michael Baker prepares for the future, we are developing a business model and culture that embraces our values, provides for a challenging work environment, and fulfills the expectations of clients, employees and shareholders alike. The following is a brief description of our services:

FACILITIES provides program and construction management, planning, architecture, and engineering design for educational, aviation, industrial, commercial, and institutional facilities. The group's expertise includes complete facility



construction, from design through facility asset management. Representative projects include: design/build services for the Institute of Scientific Research in Fairmount, WV; design of U.S. Army Reserve Centers; program management services for West Virginia University; and construction management services for municipal projects.

ENVIRONMENTAL provides hazardous waste, air quality, process safety, and remediation services. This group's capabilities include a broad range of environmental regulatory compliance services, and remedial action design, implementation, and monitoring. Representative projects include evaluation of hazardous waste technologies for the U.S. EPA; waste/disposal studies worldwide for the U.S. Department of Energy; and comprehensive environmental investigation and design for the U.S. Navy-Atlantic Division, CLEAN Program.



CIVIL (INFRASTRUCTURE) provides civil and water resources engineering, master planning, commercial, residential, and industrial site development, and geotechnical services, including surveying, mapping and LiDAR services. This unit is the most diverse of our five operating groups. Private sector work primarily involves, developers, electric, gas, oil, and coal companies. Representative projects include large land development projects, fiber optic cable routes for AT&T; civil engineering for Trans-Alaska Oil Pipeline; and acting as technical consultant for FEMA's National Flood Insurance Program.

TRANSPORTATION provides services for the planning, engineering, construction, and construction management of highways, streets, bridges, aviation, transit and rail facilities. Representative projects include acting as engineering consultant to the Pennsylvania Turnpike Commission since 1957; engineering design for the Pittsburgh International Airport; and design and construction of major highways in Pennsylvania, West Virginia, and North Carolina.





CUSTOMER COMMITMENT

Customer satisfaction is a driving force at Michael Baker. Our success at keeping customers happy can be directly attributed to our ability to be innovative and embrace new concepts. For example, we use both formal and informal partnering methods to address and resolve project issues before they become problems. In addition, our practice of working in tandem with our clients as a project team has enabled us to develop strong customer relationships, as well as meet seemingly impossible schedules and budgets. This approach will be critical on this project due to the schedule and site constraints.

These project teams function like small businesses, with open communication between the client, project manager, and other team members. We rely on advanced technology and creative solutions to complete a project, and can provide a full-service delivery system, or individual, specialized services, depending on our clients' needs. As a result, we enjoy an exceptionally high rate of repeat business.

THE NEXT 75 YEARS

Through the years, Michael Baker has earned the reputation of being a provider of diverse services for a wide variety of markets and industries. Our people, values, leadership and most importantly, our vision, have made us one of the leading engineering and consulting services firms in the nation, consistently ranked in the Engineering News Record (ENR) Top 50 Design Firms. Michael Baker's professionals are ready to meet the challenges of any project, and we pride ourselves in our ability to deliver results.

With past successes in mind, we are poised to take on the future as we continue to hone our mission of providing top quality professional services without losing sight of our commitment to customers and employees, workplace safety, open and honest communication, innovation, and teamwork.

CIVIL OVERVIEW

MISSION

To reduce the cost of providing civil engineering services for our clients while improving compliance with applicable regulations - two objectives that can

only be accomplished on a consistent basis with imaginative and cross-disciplinary solutions. To provide objective problem solving by furnishing unbiased information and analysis that puts client problems into perspective.



ORGANIZATION

Michael Baker International has provided civil engineering services to local, county, state, and federal government for over sixty years. These services are provided from multiple locations by four primary groups of professionals, comprising the Civil Engineering Practice, who interact on a daily basis to address the needs of our clients. Included among Michael Baker's major local clients are numerous developers; the Pittsburgh Water and Sewer Authority (PWSA), the Allegheny County Sanitary Authority (ALCOSAN), the City of Pittsburgh, Allegheny County Department of Public Works and the Pennsylvania Department of Transportation.

The **GENERAL CIVIL ENGINEERING GROUP** is staffed primarily with civil engineers, civil associates, and designers. These professionals evaluate, design, and manage the construction of grading operations, roads, sanitary sewers, traffic signalization, storm sewers, stormwater management facilities, and parks and recreation facilities. They plan road maintenance and rehabilitation programs, conduct reviews of subdivision and land development plans, and conduct watershed analyses.



The **WASTEWATER ENGINEERING GROUP** is staffed primarily with civil, chemical and environmental engineers, many are also licensed wastewater treatment plant operators. These professionals evaluate, design, and manage the construction or rehabilitation of wastewater conveyance systems and pump stations. These professionals perform inflow/infiltration investigations, SSO and CSO control plans, provide hydraulic network modeling, perform treatability studies, prepare cost estimates, negotiate permits and variances, design treatment systems, and troubleshoot treatment plants with compliance or cost problems. They have saved



millions of dollars in avoided capital costs and reduced operating costs for numerous sanitary authorities.

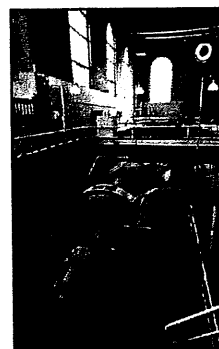
A dedicated team of professionals has been established to deal specifically with the CSO / SSO issues facing the communities within the ALCOSAN service area. Michael Baker is one of the primary consultants guiding PWSA and ALCOSAN towards compliance with regulatory agencies.

Far too many of our competitors, particularly in today's world of turnkey treatment facilities, see a new treatment plant as being the preferred solution to all water quality problems. The most economical solutions, however, often lie outside the realm of capital projects, and can be achieved with existing infrastructure. The Municipal Engineering Practice is widely recognized for their ability to find innovative solutions, such as:

- stormwater runoff reduction using on-site groundwater infiltration. Benefits include: reduced illegal SSO and CSO discharges; reduced stream channel deterioration; recharge groundwater levels to sustain natural systems; stream baseflow maintenance; and reduced flooding. Our solutions allow for retrofits in older communities and offer environmentally sensitive designs for newer, growing communities;
- roadway evaluation and maintenance project programming, budgeting and cost control services for clients;
- permit variances;
- coordinate multi-agency permits for capital improvement projects funded by either developers or municipalities; allowing for more efficient construction scheduling and better use of available municipal dollars;
- altered operational practices; or,
- simple process or piping changes.

These solutions are often not obvious to consultants with experience limited to mechanical design - and the latter solutions are not likely to be offered by firms with sister companies that sell process equipment.

The Michael Baker team has helped many clients avoid unwarranted capital projects and their associated costs. By way of just a few examples, MUNICIPAL ENGINEERING PRACTICE professionals have:



- increased NPDES limits and improved compliance with techniques such as regional low flow analyses and toxicity reduction evaluations;
- eliminated the perceived need for cooling towers with successful thermal variance demonstrations;
- secured water quality certifications for large earthmoving projects in sensitive watersheds;
- obtained critical dredge and fill permits using state-of-the-art computer modeling and innovative wetlands mitigation techniques;
- facilitated third party acceptance of projects erroneously perceived to be ecologically undesirable by incorporating aquatic habitat improvements into the design;
- found practical avenues for wastewater reuse and water conservation;
- improved effluent and finished water quality with simple changes to treatment systems and programs;
- satisfied permit conditions with Best Management Practice plans;
- discovered innovative ways of treating difficult wastes with bench scale studies;
- substantially improved compliance with recommendations from operational audits; and,
- saved substantial operational dollars with audit findings that led to reductions in treatment chemical use and solid waste generation.

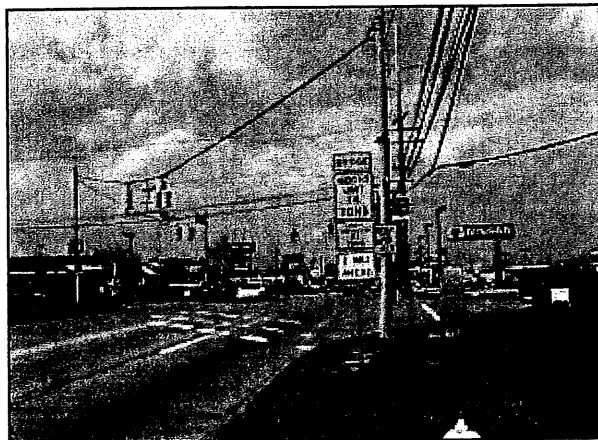
New water and wastewater treatment facilities, water distribution, and sewage conveyance systems sometimes are inevitable and necessary. Serviced populations grow beyond design capacity.



Unlike many of our competitors, Michael Baker is not allied with manufacturers or vendors of process equipment, proprietary process technology, or water treatment chemicals. Our project managers function exclusively as your advocate, which is why you retain an engineer in the first place. This objectivity creates essential credibility with third parties - during permit negotiations, presentations to stakeholders, non-compliance investigations, and construction management.



MICHAEL BAKER'S TRAFFIC GROUP applies expertise, knowledge, and dedication to evaluating, testing, and resolving transportation issues throughout the United States. Our expertise includes a wide range of projects encompassing design elements and planning elements. We provide traffic services to a



diverse range of clients in Pennsylvania, New Jersey, Maryland, Virginia, West Virginia, Florida, Mississippi, Arizona, Illinois, and elsewhere. Our clients have included state departments of transportation, municipal and county governments, planning agencies, transit authorities, and private developers.

Our Traffic Group has designed traffic signals for isolated and interconnected operations, signing and pavement marking plans for major urban arterials and rural highways, and maintenance and protection of traffic plans for complex urban reconstruction projects as well as simple maintenance and inspection operations. The variety of locations, complexities, and traffic operations that we have

been involved in allows us to maintain creativity, innovation, and acute problem solving skills.

The planning activities of the Traffic Section include traffic impact studies, corridor studies, and long-range planning activities. These studies encompass the evaluation of current and future traffic conditions, intersection and route safety evaluations, and geometric evaluations. Our past projects have been truly multimodal, encompassing more than just highway operations. We have participated in Intelligent Transportation Systems planning, bus, and rail crossing operations.

BUILDINGS OVERVIEW

The Michael Baker Facilities group provides complete planning, architectural, engineering and construction management services that can be tailored to suit our clients' diverse needs. We employ a team of highly skilled architects and engineers who specialize in the commercial, higher education, aviation, transit, military and government sectors. This team environment encourages an exchange of ideas that adds value in both the design and building phases of a project, especially when it comes to resource allocation due to the demands of tight production schedules.



Michael Baker excels at delivering complex and demanding projects in both the private and public sectors. And, we are meticulous when it comes to the details that can reduce budgets and improve schedules. Consequently, our construction management and program management services save our clients both time and money.



Throughout our history, we have developed an impressive list of new and renovation projects in the following markets:



Aviation

- Terminals and Hangars
- Cargo and Support Buildings
- Ice Wolf Deicing System

Education

- Colleges and Universities
- K-12

Commercial

- Office Parks and Buildings
- Cargo/Warehouse Facilities
- Retail and Recreation

Transit

- Parking Structures
- Maintenance Facilities
- Bus, Rail, and Train Stations

Military Facilities

- Base Operations
- Readiness Centers
- Family Housing
- Vehicle Maintenance

Government Facilities

- Research and Development
- Industrial Park

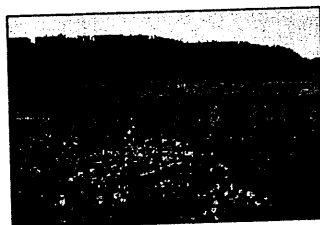
Regional

- Correctional Facilities
- Hospitality / Entertainment

ENVIRONMENTAL OVERVIEW

HELPING PUBLIC AND PRIVATE SECTOR CLIENTS FIND SOLUTIONS TO THEIR ENVIRONMENTAL CHALLENGES

Like all industries, the environmental market is evolving. The success of Environmental, Health and Safety (EH&S) programs are no longer measured on the sole basis of regulatory compliance. Companies are forced to meet rigorous production and financial goals, while showing the utmost responsibility for their employees, communities and the environment. As the marketplace has matured, so too have the Environmental Services at Michael Baker. We are dedicated to providing our clients with integrated



solutions that positively affect the bottom-line while reducing risk and future environmental liabilities.

MICHAEL BAKER AND YOUR EH&S CHALLENGES

We listen to our clients. Then, we use a team-building approach to promote the exchange of critical information, clarify requirements and bring about a seamless delivery of solutions. Michael Baker cultivates effective communication, which is critical to the success of any project. Michael Baker has a demonstrated record of forming project teams that blend the resources of our parent company, our clients, preferred subcontractors and regulatory agencies. We have been formally recognized for our teamwork and partnering initiatives with awards from both public and private sector clients.

Whether the challenge is site restoration or strategic regulatory analysis, we become a partner in our customer's business, uncovering process-driven solutions that drive down costs. We also employ environmental management information systems that simplify data storage and interpretation. Michael Baker can turn this data into useful information that can be relied upon for critical decision-making.

OUR CLIENTS MATTER

At Michael Baker, our clients come first. We are dedicated to identifying and responding rapidly to our needs. Our employees respect their client colleagues and honor commitments. Michael Baker serves as a steadfast advocate of our clients and participates in issues that involve our clients' businesses. We are routinely retained by clients to provide comments on proposed regulations. We interpret the effect of regulations, understand their implications and prepare our clients for the future.

GIS ENVIRONMENTAL PROGRAMS

Today, Michael Baker is using a number of methods and technologies to advance projects and control costs. One way is through the use of Geographic Information Systems (GIS) to manage, analyze and present the large quantity of information that is generated during environmental programs. GIS enables our clients to make more informed and timely decisions in support of EH&S objectives.



RESPONDING TO TECHNOLOGY

The future is always defined by technology. But technology for technology's sake is meaningless. Through the prudent application of technology to address specific environmental challenges, the advantages are truly realized.

We manage resources in the best interest of the client and establish formal partnering relationships to maximize our efforts. Our internal systems are dedicated to supporting the efforts of our project managers. Michael Baker's planning and programming capabilities allow us to balance our technical skills with our client's financial resources to achieve project goals.

ENVIRONMENTAL GUIDING PRINCIPLES

- Respond to change
- Provide proactive, integrated solutions
- Act as responsible citizens
- Maximize our clients' return on investment
- Build effective teams
- Focus on relentless commitment to client service
- Honor commitments
- Use technology prudently
- Prepare for the future

LISTING OF ENVIRONMENTAL SERVICES

- Air Quality Management
- Asbestos and Lead Paint Management
- Facility Audit and Environmental Compliance
- Compliance Programs
- Geographic Information Systems (GIS)
- NEPA Compliance
- Occupational Health and Safety
- Pollution Prevention / Waste Minimization
- RCRA Corrective Action Programs
- Remedial Action Design
- Risk Assessment

- Solid and Hazardous Waste Site Investigations
- Petroleum Storage Tank Management
- Wastewater and Groundwater Treatment
- Wetlands Delineation and Replacement Design

GIT BASE MAPPING OVERVIEW

MICHAEL BAKER HAS MAPPED MILLIONS OF SQUARE MILES OF THE EARTH'S SURFACE

Quality base mapping and data development represent an important part of the total investment your organization makes when implementing and maintaining a geographic information system (GIS). Michael Baker's Geographic Information Technology (GIT) Group has over 60 years of proven company experience providing base mapping expertise to meet your specific needs. Our commitment to quality and customer focus combined with our attention to the details specific to your project, sets us apart from the remainder of the mapping industry. We understand your mapping project is the cornerstone to the integrity of your GIS data, from the spatial aspect, and provide the tailored solution to your unique and important base-mapping project.

ANALYTICAL AERIAL TRIANGULATION

Our in-house capability provides "Fully Analytical Aerial Triangulation" (FAAT) techniques to calculate control points, in addition to field control, to determine the aerial control network and perform accurate photo adjustment.

PLANIMETRIC MAPPING

Michael Baker offers conventional and softcopy photogram-metric mapping capabilities to provide the most reliable method for producing accurate land base mapping. Utilizing our softcopy photogrammetry workstations and first order stereo plotters we have the capacity to perform your base mapping project.





AERIAL FILM / PHOTO SCANNING

Michael Baker creates high-resolution scanned aerial images using our in-house ZI Imaging PhotoScan-TD scanner. This scanner is capable of producing resolutions up to 7 microns (3628 DPI).

DIGITAL ORTHOPHOTOS

Utilizing the analytical aerial triangulation solution, field control points, and scanned aerial images or digital aerial camera images, Michael Baker applies effective aerial photo adjustments through cubic convolution methods to produce fully rectified images. All industry standard image formats are supported.

DIGITAL TERRAIN MODELING

Michael Baker creates digital terrain models (DTMs) by stereo digitizing photo mass points, breaklines, edge of water and all major slope breaks. Index and intermediate contour lines are delineated from the accurate DTM. In addition, with the evolution of LiDAR as a viable means of acquiring low-cost terrain data, Michael Baker has integrated the technology into our production workflows, demonstrating our commitment to continuous improvement of project delivery.



GIT SURVEYING OVERVIEW

MICHAEL BAKER HAS PROVIDED HIGH CALIBER SURVEYING SERVICES FOR OVER HALF A CENTURY

Since our beginning in 1940, Michael Baker has been providing premier surveying services to our clients throughout the USA and abroad. Our licensed and professional land surveyors and professional engineers can provide you with the right solution for your needs. Michael Baker provides accurate field surveys using a variety of techniques customized for the unique needs of your survey.

BOUNDARY SURVEYS

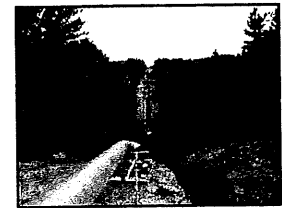
We provide our customers with the survey expertise needed for boundary surveys, including both public lands and metes & bounds areas. Additional services related to our land survey solutions include:

- Public Records Research
- Title Reports

- Rights Research
- Legal Descriptions
- Field Evidence Reconnaissance/Recovery
- Closed Loop Field Traverses
- Features Field Location
- Contours Plan Preparation
- Subdivision Surveys
- ALTA/ACSM Land Title Survey

GEODETC SURVEYS

We know how to acquire the control points that form the foundation for accurate mapping projects and GIS databases. Our surveyors are equipped with the highest quality and most accurate dual frequency GPS receivers to provide you with solutions that utilize the best technological means to rapidly collect the required measurements needed for proper network establishment.



FIELD SURVEYS

Michael Baker utilizes the latest, state-of-the art surveying equipment available on the market today to perform field surveys:

- Large Development Projects
- Property Surveys
- Pipelines
- Oil & Gas Wells and Pipelines
- Electric Power Systems
- Water Infrastructure and Pipelines
- Wastewater Facilities and Pipelines
- Telecommunications Infrastructure
- Route Alignments
- Magnetic Location/Tracing



ENGINEERING / CONSTRUCTION SURVEYS

Robotic and reflectorless total stations, GPS RTK receivers, onboard data collectors, and construction stake out software are used to provide stake out services for:

- Highways
- Water Lines
- Buildings/ Structures
- Pipelines
- Railroads
- Sewers
- Power Lines
- Subdivisions

GPS SURVEYS

Utilizing light, portable GPS receivers, Michael Baker field personnel accurately collect geographically referenced positions that can readily be output to the most popular GIS software formats. Michael Baker applies GPS technology to the following applications:

- Geodetic and Photogrammetric Control
- Field Data Collection
- Network Adjustment Analysis
- Commercial Development Site Control
- Hydrographic Surveys

HYDROGRAPHIC SURVEYS

Conventional control surveys are used in tandem with sophisticated fathometer equipment interfaced directly to GPS to perform hydrographic surveys on various inland waterway, river, stream and coastal projects.

In addition to providing GPS survey services, Michael Baker markets its patented GeoLink® GPS/GIS mapping software for GPS data collection applications.



GeoLink®'s user friendly, open GPS architecture, expandability, and robust design make it the premier data collection software available on the market. For over two decades, the patented GeoLink Mapping System has been the state-of-the-art GPS/GIS field mapping, asset management, and mobile computing application.

FIELD MAPPING SOFTWARE SOLUTIONS

Michael Baker developed the patented GeoLink® technology to provide our customers with the most advanced technology for field mapping and asset inventory projects. GeoLink®, enables enterprise-wide Global Positioning System (GPS) and Geographic Information System (GIS) use in a single, open systems environment. With GeoLink Mapping to Manage™ solutions, organizations can efficiently create geographic databases, update existing databases, and use GIS datasets for field operations such as maintenance and verification. GeoLink® is the tool of choice for building and manipulating GIS feature databases consisting of descriptive attributes attached to GPS derived spatial coordinates.

GeoLink® is available as a standard Core version for GPS/GIS data collection, and live map display, or with add-on expansion modules, including: GeoPhotoTM; Raster; Sketching; eXternal Data SourceTM (XDS), Laser XDS, DMI XDS, Aerial Sketchmapping, Methane Gas Survey, and PowerTrakTM vehicle tracking (AVL), for increased GPS/GIS data collection and management capabilities.

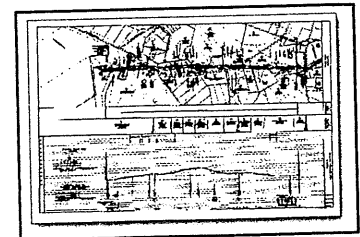
REMOTE SENSING

Utilizing digital image processing techniques, remotely detecting and delineating geographic information supports many applications including biological assessments related to federally funded transportation engineering projects, facilities planning, floodplain determination, disaster damage assessment, military master planning, and NEPA environmental permitting studies.

PLAN AND PROFILE SHEETS

Michael Baker creates Plan and Profile sheets to allow better visualization of the ground surface on a map. The Plan portion of the map displays all

physical features of the earth's surface. The Plan and Profile view allows the customer to easily determine the horizontal and vertical position for their area of interest.



Plan and Profile Sheet



WEB SERVICES

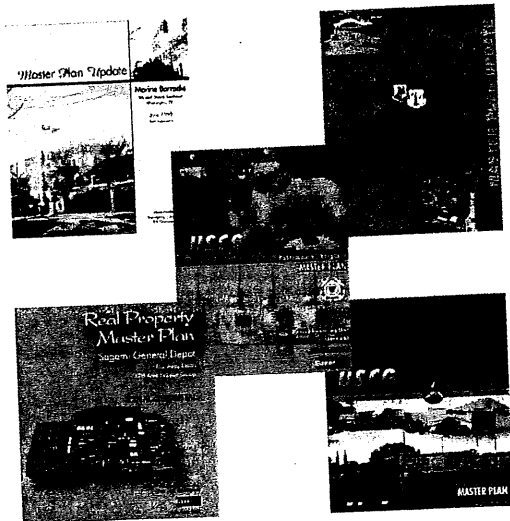
In order to distribute valuable GIS data to as wide an audience as possible, Michael Baker deploys the geographic information to the web, making the spatial data conveniently available to virtually anyone with a standard browser. When sensitive or confidential data is incorporated, security measures are implemented.

MICHAEL BAKER'S GIT SERVICES

- Geospatial-IT Consulting
- Client Support
- Mapping
- Asset Management
- System Integration
- Data Acquisition and Conversion
- 3D, Web & Multimedia

MASTER PLANNING OVERVIEW

Michael Baker has over 30 years of Master Planning experience for the Department of Defense, particularly for the Army. This experience includes Real Property Master Plans in accordance with the requirements of AR 210-20, Master Planning for Army Installations; TB ENG 353, Installation Master Plan Preparation; AR 415-15, Army MILCON Program Development and Execution; and other Army and DoD military regulations and guidelines associated with master planning and project programming.



More importantly, Michael Baker understands that the "face" of Army master planning has changed significantly over the past five years. We are moving away from the encyclopedic volumes that sit on a shelf to more realistic and streamlined plans including low cost Real Property Master Plans (RPMPs), Summary Development Plans (SDPs), and General Plans.

Where Michael Baker really excels is in how we go about preparing a master plan. We approach this work by combining planning knowledge and experience with technology to fully integrate and leverage technology in every aspect of the plan and the planning process. Using technologies like GIS, web-enabled databases, high-end graphics, and 3D visualizations, we build upon the Army's traditional overlay approach, while improving our ability to "visualize" land uses, site constraints, functional use relationships, utilities, transportation/circulation, and future development opportunities

When complete, the plan is useful and easy to update as a fully automated electronic medium that includes CADD, GIS, database, visualization, and web technologies. Michael Baker uses these technologies to prepare planning documents faster, better, and cheaper, recognizing that these elements can be applied, integrated, and used in Army Installation Master Planners' and Engineers' day-to-day duties. The Michael Baker Master Plan hallmark is its usefulness, flexibility, and ability to be updated on a daily basis if need be.

Michael Baker also incorporates the requirements of the many Federal, State and local statutes and regulations into our master planning preparation process, including NEPA, Clean Air Act, Clean Water Act, Archeological & Historic Preservation Act to name a few. Michael Baker also considers the many Executive Orders, such as 11990 (Protection of Wetlands) and military regulations, such as the Army Integrated Training & Management System (ITAMS) and AF Regulation 126-1 (Conservation & Planning of Natural Resources).

We also work on master plan components separately or in various combinations for other military services including Air Force, Navy, and Coast Guard. As a result, our experience in this area is



extremely broad and varied. Some of our current and recent master planning and mobilization /contingency master plan successes include:

- Camp Zama Real Property Master Plan, USARPAC,USAG-J, US Army, Japan, GSA
- Sagami Depot Real Property Master Plan, USARPAC, USAG-J, US Army, Japan, Japan COE
- Sagamihara Housing Area Real Property Master Plan, USARPAC, USAG-J, US Army, Japan, GSA
- Golf Course Master Plan (GCMP) for Camp Zama, Japan GSA
- Yokohama North Dock Real Property Master Plan, Japan, Japan COE
- Master Planning Services, Louisville District COE
- Master Planning Support Services, Fort Worth COE (Reselection)
- Comprehensive Real Property Master Plan, Aberdeen Proving Ground (Reselection Baltimore COE)
- Comprehensive Real Property Master Plan, Aberdeen Proving Ground, Baltimore COE. (1st Contract)
- Master Planning Services, 98th ASG, Base Support Battalions (BSB), Europe District, COE
- Master Plan (Near-Term Facilities Support Plan) for Air Station Borinquen, Aguadilla, Puerto Rico, U.S. Coast Guard
- Multiple Master Planning Activities at Support Center Elizabeth City, NC, U.S. Coast Guard
- Master Plan for Aviation Training Center, Mobile, AL, U.S. Coast Guard
- Master Plan for Integrated Support Command, Portsmouth, VA, U.S. Coast Guard
- Master Plan for Group Portland, Portland, ME, U.S. Coast Guard
- Delaware Air National Guard Base General Plan, National Guard Bureau
- Hanscom Air Force Base General Plan, MA, Air Force
- 8th & I Marine Barracks Master Plan Update, EFA Chesapeake

- Arlington Service Center Master Plan, Defense Information Systems Agency, EFA Chesapeake

CULTURAL RESOURCES OVERVIEW

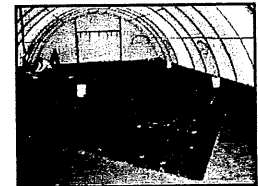
ARCHAEOLOGY AND HISTORIC PRESERVATION

Federal mandates such as the National Historic Preservation Act (NHPA) of 1966 and the National Environmental Policy Act (NEPA) of 1969 as well as state and oftentimes, local regulations require



planners to consider the effects of federally-funded or permitted projects on archaeological and historic properties. Since 1992, Michael Baker's Cultural Resources Section has skillfully and efficiently guided clients through the complex maze of NHPA Section 106 requirements and the NEPA regulatory process.

With staff located in Pittsburgh, Pennsylvania; Charleston, West Virginia; Cleveland, Ohio; White Hall, Arkansas; Austin, Texas; and Phoenix, Arizona, our highly trained, full-time specialists in prehistoric and historic archaeology, historic preservation, architectural history, and preservation planning are uniquely qualified to meet all of your cultural resources needs. Our depth and breadth of experience gives us the ability to efficiently adapt to any size task and consistently provide a wide range of services. Our key personnel meet appropriate professional standards as outlined in Archaeology and Historic Preservation: Secretary of the Interiors Standards and Guidelines, Federal Register, Volume 48, No. 190, September 29, 1983, Pt. IV.



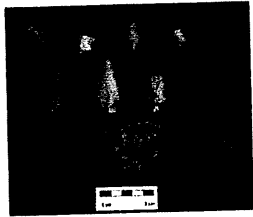
From massive, multi-state highway corridors to small-scale development projects, we pride ourselves in our range of experience. Our staff has expertise conducting archaeological and historic preservation projects in such diverse locations as Maine, Vermont, New York, Connecticut, Pennsylvania, New Jersey, Maryland, Virginia, West



Virginia, Ohio, Kentucky, Indiana, Michigan, Arkansas, Louisiana, Mississippi, Alabama, Florida, Minnesota, North Dakota, Montana, Idaho, Texas, Utah, Arizona, California, Washington, Alaska, and Puerto Rico.

OUR EXPERIENCE

Michael Baker has performed a diverse array of cultural resource services for a wide spectrum of clientele and has worked in partnership with a number of federal, state, and private organizations. Our experience includes various United States Government agencies such as the U.S. Department of Homeland Security US-VISIT as well as the U.S.

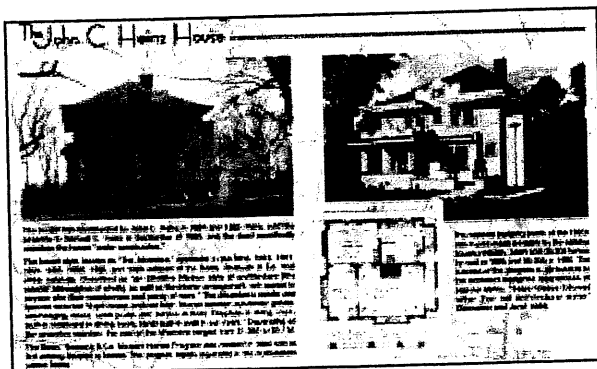


Coast Guard, the U.S. Naval Security Group, the U.S. Army Corps of Engineers, U.S. Department of Transportation-FHWA, the USDA Forest Service, and the U.S. Department of the

Interior-National Park Service as well as State Departments of Transportation, State Historic Preservation Offices, non-profit organizations, private sector companies and institutions, public utility companies, regional and international airport authorities, among others. We are familiar with the planning and design needs of these agencies and are accustomed to working in close coordination with them under tight fiscal policies.

OUR COMMITMENT

Michael Baker is committed to being an innovative leader in cultural resource services. We strive for excellence while at the same time providing the highest value to our clients. The Cultural Resources team looks forward to a future of continued service to our clients, both old and new.



LISTING OF CULTURAL RESOURCES SERVICES

- Early Coordination
➤ Section 106 Compliance
➤ NEPA Compliance
➤ Predictive Modeling
➤ Land-Use Histories
➤ Historical & Archival Research
➤ Land-Use Histories
➤ Historic Architectural Studies
➤ HABS/HAER Recordation
➤ Archaeological Survey
➤ Archaeological Evaluation
➤ Archaeological Mitigation
➤ Artifact Analyses & Curation
➤ Statistical Analyses
➤ Determinations of National Register Eligibility
➤ National Register Nominations
➤ Cultural Resource
➤ Management Plans
➤ Programmatic Agreements
➤ Memoranda of Agreement
➤ Public Outreach

NATURAL RESOURCES AND WETLANDS OVERVIEW

QUALIFICATIONS

Michael Baker's team of environmental specialists provides full-service, in-house professional services that include wetland delineation and investigation, farmland



assessments, environmental agency coordination, habitat evaluation, federal and state environmental permitting, and stream and terrestrial mitigation planning and design. Michael Baker's environmental professionals have successfully completed projects in all geographic regions around the country. This team of highly-qualified professionals includes scientists, engineers, and planners work side-by-side



to perform environmental investigations, impact assessments, and permitting. By teaming the engineering professionals with the natural resource professionals, the project approach to the design process is streamlined, effective, and expedited with a design that minimizes impact on resources. This collaborative and iterative approach is focused on reducing permitting and mitigation time and money.

WETLANDS

Michael Baker has extensive experience providing professional wetland services, ranging from the identification, delineation and functional



assessment of wetlands to Section 404/401 and state permitting to wetland/ stream mitigation designs. Michael Baker is well versed in water quality and habitat assessments utilizing the Environmental Protection Agency's (EPA) Rapid BioAssessment Protocol. Michael Baker's team has extensive experience working

on wetland projects throughout the United States and uses that knowledge to provide cost-efficient wetland solutions that complement and perhaps enhance the natural environment.

Michael Baker provides all the necessary aspects for mitigation design including alternatives analysis and reports on hydrology; erosion and sedimentation control; monitoring program; nursery stock selection and planting specifications; habitat evaluation; and fish and wildlife utilization.

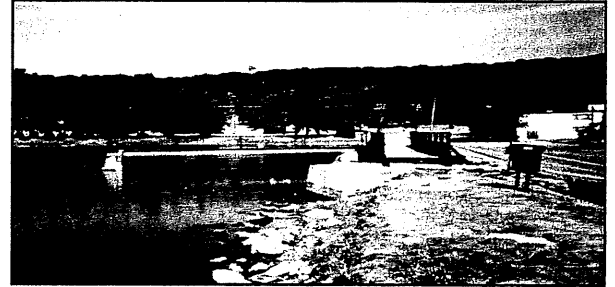
THREATENED AND ENDANGERED SPECIES

To address the requirements of the Endangered Species Act of 1973, Michael Baker has maintained a staff of qualified and experienced environmental scientists who conduct such investigations and have prepared Section 7 Biological Assessments and completed Section Consultation for endangered species.

HABITAT EVALUATION

In concert with Threatened and Endangered Species evaluation, Michael Baker has experienced Species

evaluation, Michael Baker has experienced and qualified biologists trained in the use of Habitat Evaluation Procedures (HEP). Michael Baker's environmental scientists are able to combine the concepts of cost/benefit analyses to evaluate the incremental changes that occur as habitat units are planned and created to offset losses resulting from

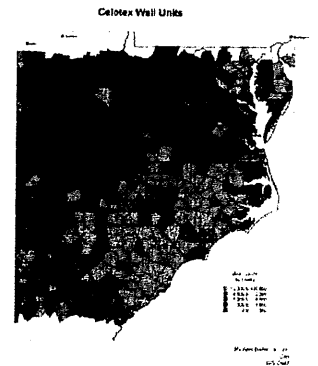


project implementation. The cost/benefit analyses can then be used to optimize the value received from expenditures given a specific set of goals and guidelines developed by the HEP analyses.

FARMLANDS

The Farmland Protection Policy Act of 1981, as administered by the USDA and many state and local efforts, protect productive farmlands and ensure their economic viability of agriculture. Because of our experience with many federally-funded projects including highways and airports construction/improvements projects, Michael Baker has performed analysis of potential impacts that would result from converting farmland to non-agricultural uses. Michael Baker has rated the impact on protected farmlands by filing the Farmland Conversion Impact Rating Form (form AD-1006) with the local

Natural Resources Conservation Service's (NRCS's) prepared Farmland Assessment Reports for review and approval by the Agricultural Lands Condemnation Approval Board (ALCAB).



TOOLS OF EFFECTIVENESS

Michael Baker is a leader in the application of Geographic Information System (GIS) technology to environmental studies. By constructing a detailed



resource database and tying the data to project mapping, Michael Baker is able to cost effectively address the numerous "what if" scenarios that are critical to addressing agency and public concerns and conducting an effective environmental assessment.

Michael Baker has reduced errors by utilizing Global Positioning Systems (GPS) to locate field data into the GIS. In addition to reducing the likelihood of errors, this technology reduces CADD drafting time.

LISTING OF ENVIRONMENTAL SERVICES

- Wetland Delineation and Investigation
- Farmland Assessments
- Environmental Agency Coordination
- Habitat Evaluation
- Federal and State Environmental Permitting
- Stream and Terrestrial Mitigation Planning and Design

FEDERAL, LOCAL GOVERNMENT, AND PRIVATE SECTOR PLANNING

MICHAEL BAKER HELPS YOU PLAN FOR THE FUTURE

Michael Baker provides diverse planning services that integrate traditional planning techniques with innovative geographic information systems and 3-D imaging tools. Master planning services provide a sound framework for future facilities at all levels of development.

Michael Baker provides clients with plans that focus on consolidation opportunities, expansion areas, environmental and operational constraints and intergovernmental coordination opportunities. The development of these opportunities is a result of a collaborative planning process with stakeholder involvement to ensure the articulation of a future vision.

The most up-to-date Geographic Information Systems and 3-D Rendering capabilities provide clients with Master Planning results articulated in graphic form in conjunction with a traditional planning "book". Michael Baker can provide "3-D Flyovers" which allow clients to glimpse into the future of their facility.

MULTI-DISCIPLINARY APPROACH

At Michael Baker we utilize professionals with a vast array of technical expertise ranging from Certified Urban Planners, Landscape Architects and Technology Specialists. In addition, we leverage expertise company-wide to provide quality engineering, architectural, and transportation solutions in support of all Master Plan elements.

Michael Baker continuously improves our work processes and ensures the successful completion of even the most challenging projects. We are committed to meet and exceed mission requirements of our clients.

Our Federal Planning services have assisted the U.S. Navy, U.S. Army, U.S. Air Force and the Air National Guard to develop visions and infrastructure allocation plans for the future. Committed to excellence, integrity, and resourcefulness, Michael Baker's team is prepared to help our clients focus on efficient utilization of DOD resources.

LISTING OF SERVICES

- Comprehensive / Real Property Master Planning
- Visioning
- Strategic Planning
- Existing Condition Analysis
- Facility Utilization
- Installation Design Guides
- Priority Improvement Projects
- Landscape Architecture
- Privatization
- DD Form 1391 Preparation
- Community and Housing Plans
- Traffic and Parking Analysis
- ATFP Planning
- GIS and Mapping
- Web Site Development
- Economic Analysis
- Cost Estimating
- 3-D Visualization



Steven Savich, P.E.

Project Manager

General Qualifications

Mr. Savich's 20 years of experience has included performing a wide variety of projects in multiple states and countless municipalities. He has worked in many areas of Civil Engineering practice with his primary areas of experience being focused in Land Development and Planning, and Municipal Services. He has managed projects and designed improvements and infrastructure for urban redevelopment, industrial parks and sites, residential subdivisions, commercial development, military/U.S. Government, local streets, and educational facilities. In addition to Land Development experience, he has designed and directed a number of transportation projects varying from interstate routes to local streets including various traffic calming techniques. He has also performed municipal engineering designs that included water distribution extensions, sewer modeling/design, drainage studies and flood abatement designs. In all areas of his experience, he has been involved in every aspect of the design and construction document preparation as well as management of design teams and project management. Mr. Savich has also been involved in the oversight of the construction phase of projects. He has experience with coordinating the review of project submittals, answering Requests for Information, and resolving construction related issues to ensure proper conformance to the design intent.

Years with Michael Baker: 8

Years with Other Firms: 12

Education

M.S., 2003, Civil Engineering,
Youngstown State University

B.S., 1995, Civil Engineering,
Youngstown State University

Licenses/Certifications

Professional Engineer, Ohio 2000

Professional Engineer, Pennsylvania,
2005

Professional Engineer, Virginia, 2006

Professional Engineer, Oklahoma, 2007

Experience

Addison Terrace Redevelopment, Pittsburgh Pennsylvania, KBK Enterprises. Project Manager. Serving as Project Manager for Michael Baker as part of a multi-firm, multi-disciplinary team tasked with creating a new redevelopment plan for the Addison Terrace Public Housing site in Pittsburgh. The property is 40 acres overall with a total of 26 acres developable due to severe grade change. The site is part of a larger community referred to as the Hill District. The team convened on the project site for a three day design charrette that resulted in a preliminary master plan for the overall development. The plan seeks to re-integrate the project site into the neighborhood by extension of the street grid into the property. The plan also focused on residential scale within the community by creating a mix of housing types and densities with all units creating a defined sense of public and private space.

Michael Baker's role in the team is that of Site and Infrastructure Engineer. Michael Baker is responsible for providing the site layout, grading and infrastructure design. Michael Baker examined the existing utility infrastructure and developed a conceptual strategy to provide service to the new neighborhood street network. The project will construct several thousand linear feet of new water, sewer and roadways to recreate the neighborhood for nearly 200 new housing units.

Garfield Heights Redevelopment, Pittsburgh Pennsylvania. KBK Enterprises. Project Manager. Served as the Project Manager for this multi-phase public housing redevelopment within the City of Pittsburgh. Michael Baker provided full site development and public infrastructure services for the project and was a member of the Project Planning Team that developed a new master plan for the overall form and design standards to be used throughout the phases of development. The project scope is to develop up to 250 housing units on approximately 100 acres of rolling to severely sloped terrain in Pittsburgh's Garfield Neighborhood.

In each phase, Michael Baker was responsible for site preparation, a site design package and public infrastructure design/rehabilitation. The site preparation plans covered the demolition, rough grading and erosion and



sediment control for the entire site. The site design components consisted of site layout, grading, paving, utility and storm water collection and management. Additional design and permitting responsibilities included NPDES permitting, erosion and sediment control permitting, as well as design approvals from Pittsburgh Water and Sewer Authority, Allegheny County Health Department Plumbing Division and the City of Pittsburgh Planning Department. Non-design work functions included various project meetings and reviews conducted with the Housing Authority, developer and City agencies to coordinate all aspects of design. After design and permitting, Michael Baker has been retained for construction phase services to ensure the project is constructed in accordance with the approved design drawings.

Starpointe Mixed-Use Development Master Plan, Washington County, Pennsylvania. *Fourth River Development LLC.* Engineer. Provided technical design assistance to the overall project team. Work included conceptual infrastructure design, design reviews and outline specification preparation. Michael Baker teamed with LaQuatra Bonci Associates to form a multi-disciplinary team that developed a master plan for the re-use of over 1,000 acres of vacant brownfield land in Washington County, Pennsylvania. The design for this project incorporates an ecologically friendly approach to the development of a mixed-use business, industrial, and commercial center. The project attempt to mitigate the impacts of the development through the use of low impact design elements and ecologically sensitive site planning. The project involved the preparation of a "Smart Growth" mixed use master development plan for the 1200 acre site.

Mount Joy Main Street and Station Area Planning, Mount Joy Borough, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Technical Lead. Responsibilities included directing a team of engineers in the development of design documents from preliminary options through final construction documents. Mr. Savich also assisted the project manager in the presentation of the design at the public involvement meeting conducted at the site. Under an open-end agreement to provide support for the Keystone Corridor, Michael Baker developed a revitalization plan for the area surrounding the Mount Joy Station, a passenger rail station on the Keystone Corridor. Michael Baker's services included background research, a field investigation, stakeholder interviews, a wayfinding analysis, a market opportunities study, a design charrette, website development, conceptual design, and an implementation plan. Construction documents included demolition, site development, grading and drainage, utility and landscape plans.

Federal Street Redevelopment, Youngstown, Ohio (previous employment). *City of Youngstown.* Civil Engineering Project Manager. Responsible for managing the planning, engineering design and permitting for the redevelopment of the Federal Street corridor. The central business district corridor had been converted to a pedestrian plaza 26 years prior to the project. With the life cycle of the plaza improvements up and in need of significant repair, the City of Youngstown wanted to explore alternatives for the Federal Street right of way. Initial planning efforts were performed to establish several alternatives ranging from rehabilitating the plaza to a traffic circle. The initial alternates all involved reopening the street to traffic. Public involvement meetings were held to introduce the alternates to the public and the stakeholders and to provide a forum for public input. At the conclusion of the process, a specific plan was developed that met the needs of the City and was responsive to the public input. The resulting project reestablished vehicular traffic and add angled on street parking to much of the central business district. The project involved accommodating several constraints related to the mid-rise buildings located on either side of the roadway and the numerous utilities within the project limits. The success of the project can be measured in the numerous businesses opened after the completion of the project. The project responsibilities included site planning and alternate development, site demolition plan and coordination, full roadway construction plan development and public meeting presentation.



James O. Pritchard, P.E., Project Manager
Lead Civil Engineer

General Qualifications

Mr. Pritchard has a broad range of technical and managerial experience in commercial site design, stormwater management, storm drainage design, potable water system analysis and design, erosion and sedimentation control, grading and roadway design, culvert analyses, hydrologic and hydraulic studies, and municipal representation. He currently serves as a Project Manager in Michael Baker's Moon Township office and is responsible for engineering projects in the region.

Years with Michael Baker: 21

Years with Other Firms: 9

Education

M.B.A., 1997, Business Administration,
Robert Morris University

B.S., 1987, Civil Engineering, The
Pennsylvania State University

Licenses/Certifications

Professional Engineer, Pennsylvania,
1992, PE042613E

Experience

Moon High School and Middle School Campus, Moon Township, Pennsylvania. *Eckles Architecture.* Project Manager. Responsible for all site aspects of a new Elementary School and High School Improvements. Michael Baker was retained by Eckles Architecture and Engineering, in conjunction with the Moon Township School District, to prepare the design drawings for a renovated High School and Middle School combined campus. The site is located between University Boulevard and Beaver Grade Road in Moon Township, Allegheny County, Pennsylvania. Site engineering items included design/supervision of the parking areas, utility layout, storm sewer system, stormwater management, grading, erosion control, specifications, local government site approvals and variances, and construction administration for site items.

Pine-Richland Upper Elementary School, Richland Township, Pennsylvania. *Pine-Richland School District.* Project Manager. Responsibilities included acting as Project Manager for the project during the final closeout of the design, and providing construction phase services. The Upper Elementary School includes grades 4 through 6 and was designed to harmoniously blend in with the existing surroundings to create an on-site, outdoor science lab environment. The stormwater management pond was designed as a "wet" pond to facilitate the growth of wetland vegetation and small aquatic animals. This project included the preparation of an Existing Conditions Plan, Site Plan, Horizontal Control Plan, Grading and Storm Drainage Plan, Utility and Paving Plan, Soil Erosion and Sedimentation Control Plan, written Technical Specifications and other miscellaneous Bid Documents as required for both approvals and construction. Michael Baker also completed the PennDOT road widening and traffic signalization for the access driveway.

Burgettstown Middle / High School Campus, Smith Township, Pennsylvania. *Eckles Architecture and the Burgettstown Area School District.* Project Manager. Responsible for all site aspects of improvements as required for the construction of additions to the existing school facility (approximately 55,000 square feet of new structures and approximately 120,000 square feet of additional paving). Items included design and/or supervision of the parking areas, utility layout, storm sewer system, grading, erosion control and NPDES Permit, PaDEP Sanitary Sewage Planning Module Exemption, PaDOT Highway Occupancy Permit, specifications, local government site approvals and variances, and bid and construction phase services.

Hopewell Business and Industrial Park Phase II, Commerce Way, Hopewell, Pennsylvania. *Beaver County Corporation for Economic Development.* Project Manager. Responsible for all site aspects to create a "pad-ready" site development. Items include design/supervision of the grading, utility layout, storm sewer system, stormwater management, erosion control, specifications, and local government site approvals. The Beaver County Corporation for Economic Development (BCCED) desired to proceed with mass grading operations to extend an on-going Business and Industrial Park project to an area behind a recently constructed cul-de-sac



(Commerce Way) and “pad-ready” development sites. Michael Baker designed the mass grading to be performed in such a way as to allow for the future extension of Commerce Drive and adjacent building pads. Michael Baker’s responsibilities included a Survey Update, preparation of Grading Plans and NPDES Permitting, Bid Phase Services, and Construction Inspection.

Lincoln Park Performing Arts Center, Borough of Midland, Pennsylvania. *Castlebrook Development Group and the Midland Borough School District.* Project Manager. Responsible for the development of a three-story Theater/School complex. The project consists of the development of approximately 1.7 acres to be used for a 750 seat performing arts theater, a 150 seat performance studio, classrooms, specialty studios, and offices. Duties include conceptual, preliminary and final site design; utility design and relocation; grading; stormwater management; parking, loading, and access roadway design; erosion and sedimentation control; etc., as well as coordination of the permitting and approval process through the Borough and the Pennsylvania Department of Environmental Protection.

On-Call Engineering. *Beaver County Corporation for Economic Development.* Project Manager. Responsible for providing on-call engineering services to the BCCED. Contracted to provide on call miscellaneous services.

Rochester Riverfront Master Site Plan, Rochester, Pennsylvania. *Klavon Design Assoc., Inc.* Project Manager. Studied several aspects of the current riverfront area, along with the master planning for future facilities. Michael Baker was retained by Klavon Design Assoc., Inc. to assist with a Master Planning process for the Rochester Riverfront area. Michael Baker studied the following issues during this project: traffic, parking requirements for the proposed facilities, wharf improvements, public boat launch, property lines and road rights-of-way, existing shorelines, topographic mapping of site, wetland investigation, utility investigation, and attended public and committee meetings.

South Post Conceptual Facility Planning Services, Fort Drum, New York. *U.S. Army Corps of Engineers, New York District.* Task Manager. Provided conceptual facility planning services for the development of a comprehensive plan of construction options to replace deficient structures in the South Post area of Fort Drum, New York. Responsibilities included the layout of the civil engineering aspects including utilities, runoff, roadways, and parking areas.

Starpointe Mixed-Use Development Master Plan, Washington County, Pennsylvania. *Fourth River Development LLC.* Project Manager. Responsibilities included design of the conceptual site plans, grading, roadway layout, and presenting the plans at various public meetings. Michael Baker teamed with another firm to form a multi-disciplinary team that developed a master plan for the re-use of over 1,000 acres of vacant brownfield land in Washington County, Pennsylvania. The design for this project incorporates an ecologically friendly approach to the development of a mixed-use business, industrial, and commercial center. The project attempt to mitigate the impacts of the development through the use of low impact design elements and ecologically sensitive site planning. The project involved the preparation of a “Smart Growth” mixed use master development plan for the 1200 acre site.

Flex Office/Warehouse Buildings, Airside Business Park, Moon Township, Pennsylvania. *Airside Business Park, L.P.* Civil Engineer. Responsible for site design, utilities, storm sewer design, stormwater management, erosion and sedimentation control, permitting, site work specifications, and municipal approvals. Airside Business Park was planned around an office and warehouse market mix at Pittsburgh International Airport. Michael Baker designed the business park to contain three 63,000-square-foot Flex Buildings with 80% office and 20% warehouse space, in addition to two three-story office buildings. In 2006, rather than constructing a third flex office/warehouse building, the owner elected to alter the plans for the business park and construct a third office building similar to the two existing ones. The Flex Buildings were designed for visibility from Business Route 60, with warehouse truck traffic sequestered behind the buildings. Both the flex and office buildings are precast



architectural concrete with metal accents at entrance canopies, compatible with a nearby international airport terminal.

The Pointe at North Fayette Commercial Park Development, North Fayette, Pennsylvania. *Forest City Development and the Edward J. DeBartolo Corporation (working as Metro Property Developers).* Lead Civil Engineer. During the 10-year project, Michael Baker provided a wide range of preliminary studies, permitting, conceptual site layout, final engineering design, and construction-phase services to facilitate development of the property. Duties included conceptual, preliminary and final site design, utility design, stormwater management, NPDES permitting for erosion and sedimentation control, technical specifications, and the coordination of the permitting and approval process through the Municipality and various State agencies for the development of a 175-acre commercial/retail park. Performed the same duties for each of the individual tenants of the commercial park as listed below:

- Wal-Mart; 128,500 square feet, 22.4 acres
- Sam's Club; 111,700 square feet, 18.0 acres
- Home Depot; 131,600 square feet, 21.5 acres
- Best Buy; 47,800 square feet, 13.5 acres
- Petsmart; 26,000 square feet, 8.9 acres
- "Strip Type" Shopping Mall; 159,500 square feet, 19.1 acres
- Restaurant Center including 4 Restaurants and a Mellon Bank; 8.24 acres
- Candlewood Hotel; 123 rooms; 2.9 acres
- "Strip Type" Shopping Mall; 31,500 square feet, 4.3 acres
- "Strip Type" Shopping Mall; 42,000 square feet, 13.8 acres
- Firestone/Bridgestone Auto Service Center; 7,700 square feet, 2.3 acres
- Target Store; 123,000 square feet, 18.0 acres
- Goodyear Store/Commercial storefronts; 7,000/8,000 square feet, 1.6 acres.

The Mall at Robinson Commercial Development, Robinson Township, Pennsylvania. *Forest City Enterprises, Inc.* Civil Engineer. Responsible for site design, utilities, storm sewer design, stormwater management, roadways, erosion and sedimentation control, permitting, site work specifications, and municipal approvals. Robinson Mall, a state-of-the-art, 1.2 million-square-foot regional mall, is located in Robinson Township, a suburb of Pittsburgh, Pennsylvania. Its anchors include Macy's (formerly Kaufmann's), Sears, and JCPenney department stores and a Dick's Sporting Goods store. This \$130,000,000 construction project is centered in the fastest growing corridor in the region. During this multi-year project, Michael Baker provided a wide range of engineering studies, permitting, conceptual site layout, final engineering design, and construction-phase services to facilitate development of the property.

Bessemer Court at Station Square Commercial Development, Pittsburgh, Pennsylvania. *Forest City Enterprises, Inc.* Project Manager. Responsible for site design, utilities, storm sewer design, walkways, erosion and sedimentation control, permitting, site work specifications, and construction management. The centerpiece of Station Square's new development, Bessemer Court, is a riverfront restaurant and festival venue. It features 57,000 square feet of retail, restaurant, and entertainment venues overlooking the best views of downtown Pittsburgh. The plaza features cafe-style seating, trees, and park benches, forming the backdrop for street theater, jugglers, live entertainment, and pushcart retailers. It also is home to a 100-foot, state-of-the-art water fountain (40-60 foot sprays) with multi-colored lights and dancing waters set to music.

Dick's Sporting Goods Corporate Headquarters, Pittsburgh International Airport (PIT), Pittsburgh, Pennsylvania. *Horizon Properties.* Task Manager. Responsible for all site civil engineering for the development. Michael Baker performed complete site design; environmental permitting; traffic forecasting and highway permitting; surveying; geotechnical investigations; access roadway design; taxiway and ramp design; and construction phase support



services to develop a 670,000-square-foot (116-acre parcel) corporate headquarters campus for Dick's Sporting Goods near the Pittsburgh International Airport. The site was Master Planned to allow for expansion to both 1,000,000-square-feet and 2,000,000-square-feet.

Consulting Engineering Services, Pennsylvania. Various Municipalities. Engineer. Duties including reviewing Subdivision and site construction plans, attending Planning Commission and Township Supervisors meetings; inspecting newly-constructed public facilities; and assisting in the design, specification and inspection of various projects for municipalities, including:

- Moon Township, Allegheny County
- Independence Township, Beaver County
- Greene Township, Beaver County
- Center Township, Beaver County
- Borough of Edgeworth, Allegheny County
- Hanover Township, Beaver County
- Vanport Township, Beaver County
- Robinson Township, Allegheny County
- Scott Township, Allegheny County

Various Public Improvement Projects, Pennsylvania. Engineer. Assisted in the design, specification, and inspection of various projects (water, storm, sanitary, recreation, etc.); attended bid openings; calculated bid tabulations; reviewed shop drawings; and prepared reports for the public entities listed below:

- Borough of Monaca, Beaver County
- Monaca School District, Borough of Monaca, Beaver County
- Martinsburg Municipal Authority, Borough of Martinsburg, Blair County
- Borough of Duncansville, Blair County
- Hopewell School District, Hopewell Township, Beaver County
- Union City Municipal Authority, Borough of Union City, Erie County
- Borough of Linesville, Crawford County
- Roaring Spring Municipal Authority, Borough of Roaring Spring, Blair County

Presentations

Presented at the 14th Annual Business of Brownfield Conference, April 17, 2009. The title of the presentation was "Starpointe Business Park". Fellow presenters were Ms. Sally Flinn, Fourth River Development LLC, Ms. Patrice Hanulak, RLA, LaQuatra Bonci Associates, Inc., and Mr. Dan Reitz, Washington County Council on Economic Development.



John D. Lasko, P.G.
Geotechnical Analysis

General Qualifications

Mr. Lasko's background encompasses a variety of geotechnical projects. His experience includes project task management, test boring layout, drilling inspection, geotechnical interpretation of subsurface geology, construction inspection and related project field work.

Experience

David L. Lawrence Convention Center Infrastructure, Pittsburgh, Pennsylvania. *Sports and Exhibition Authority of Pittsburgh and Allegheny County.* Geologist. Responsible for providing test boring inspection for site-specific subsurface investigation for recently constructed anchored tangent pipe pile retaining wall supporting 10th Street beneath the convention center. Michael Baker provided construction management and inspection services for the reconstruction of the transportation infrastructure associated with the construction of the David L. Lawrence Convention Center. The multiphased work included the renovation of major roadways and construction of new bridges and retaining walls.

Starpointe Mixed-Use Development Master Plan, Washington County, Pennsylvania. *Fourth River Development LLC.* Senior Geologist. Michael Baker teamed with another firm to form a multi-disciplinary team that developed a master plan for the re-use of over 1,000 acres of vacant brownfield land in Washington County, Pennsylvania. Participated in design charrette using the establish coal limits and other available information to prepare a preliminary grading plan. The design for this project incorporates an ecologically friendly approach to the development of a mixed-use business, industrial, and commercial center. The project attempt to mitigate the impacts of the development through the use of low impact design elements and ecologically sensitive site planning. The project involved the preparation of a "Smart Growth" mixed use master development plan for the 1200 acre site.

Airport (Southern) Expressway Project Management Services, Allegheny County, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Geologist. Responsible for performing site reconnaissance and assisted in boring layout and inspection of existing water tank related to mine subsidence. Tasks included test boring inspection, well installation in mine, and field pH readings on water samples. As Inspector, responsible for inspection of drilling operations and environmental borings in accordance with Pennsylvania Department of Transportation Standard Specifications. Supervised installation of standpipe piezometers in deep mines and soil to monitor groundwater levels. Tasks also included measuring extended water levels and conducting field pH measurements on samples from deep mine piezometers. Michael Baker provided construction management and preliminary design services for the construction of a 7.5-mile long, four to six lane expressway providing direct access between Pittsburgh and the Pittsburgh International Airport. The project, designed by five final design consultants and constructed in six sections by four different contractors, includes five interchanges, extensive wetlands mitigation and the relocation of an abandoned landfill. During construction, abandoned surface and underground coal mines were intercepted, requiring special handling of acid mine drainage, coal and coal refuse.

Years with Michael Baker: 26

Years with Other Firms: 1

Education

M.S., 1989, Earth Science and Geology,
California University of Pennsylvania

B.S., 1985, Geology, Juniata College

Coursework, General Arts and Sciences,
Saint Vincent College

Coursework, Geotechnical Engineering,
Geneva College

Licenses/Certifications

Professional Geologist, Pennsylvania,
1995

OSHA 8-Hour HAZWOPER Refresher
Training, Pennsylvania, 1990

PENNDOT Inspector, Level I,
Pennsylvania, 1999

PENNDOT Inspector, Level 2,
Pennsylvania, 1999



Facilities Planning and Preliminary Design Services for Stream Removal Projects, Pittsburgh, Pennsylvania. *Allegheny County Sanitary (ALCOSAN) Authority.* Senior Geologist. Provided assessment of landslide remediation for existing inlet to combination sewer in Millvale Borough. Also provided alternates and cost estimate design memorandum. The objectives of the project are to develop a well thought out evaluation process with municipal understanding and buy-in, which results in the selection of an affordable, constructible, Stream Removal alternative for the Fifth Street and Freid and Reineman stream inflow project sites. The project involves site evaluations, environmental assessment, GPS surveys, sewer system mapping, flow monitoring, hydraulic and hydrologic analysis, development of site alternatives and a feasibility study of selected alternative solutions. Community education and municipal buy-in are critical to the project success.

Findlay Township Municipal Engineering Services, 1998 - 2012, Clinton, Pennsylvania. *Findlay, Township of.* Senior Geologist. Responsible for providing geotechnical review services, including geotechnical review of project submissions for site grading and building permits in accordance with township development ordinances, and field view of landslides. Also performed investigation and monitoring for the Camp Meeting Road Landslide. Michael Baker is the retained municipal engineer for Findlay Township and has maintained a relationship with the Township since 1998. As the Township's municipal engineer, Michael Baker has provided on-call, as-requested consulting engineering services to support the operations of the Township.

Lawrence Paint Building Demolition, Near Station Square (Duquesne Incline), Pittsburgh, Pennsylvania. *Forest City Enterprises, Inc.* Senior Geologist. Assisted with geotechnical services to support the acquisition of a PENNDOT Highway Occupancy Permit for the demolition of an existing four-story building immediately adjacent to the roadway. Tasks included subsurface investigation and analysis to provide information on the existing building foundation, which partially supports state roadway. Michael Baker was retained by Forest City Development to investigate the stability of the Lawrence Paint Building foundation wall which supported State Route 0837 near the Station Square Complex in Pittsburgh, Pennsylvania. Michael Baker conducted a detailed field reconnaissance, office investigation, and a series of test borings to determine the geologic conditions, wall dimensions and properties of the massive stone and concrete foundation wall. Coordinating with the demolition contractor, Michael Baker developed a work plan, obtained a Highway Occupancy Permit and provided a traffic control plan for the demolition.

Liberty Interchange Final Design, Pittsburgh, Pennsylvania. *Allegheny, County of (Dept. Eng./Const.).* Geologist. Responsible for performing field and office coordination for subsurface investigation. Tasks included supervising field activities, development boring plan layout, compiling field data, performing slope evaluation, performing rockfall hazard evaluation, and preparing preliminary report and providing roadway recommendations and special provisions. Michael Baker provided environmental, traffic engineering, and preliminary and final design services to improve an at-grade intersection at the South Portal of the Liberty Tunnels in Pittsburgh. The design provided grade-separated controlled access along S.R. 0051 (Saw Mill Run Boulevard) and consisted of roadway improvements to seven intersecting streets. It included design of 3,500 feet of connector roads, two bridges, two box culverts, five walls, drainage, and lighting.

Montour Church Road Extension Preliminary Engineering and Environmental Assessment, North Fayette Township, Pennsylvania. *North Fayette Transportation & Business Improvement.* Senior Geologist. Responsible for providing cut slope recommendations. Michael Baker provided Preliminary Engineering and Environmental Clearance services for the proposed Montour Church Road Connector in Fayette Township, Allegheny County, Pennsylvania. The Montour Church Road Connector will provide a new access point to U.S. Route 22/30 from the Pointe and from Robinson Towne Center as well as Port Authority's proposed Intermodal Park and Ride Facility.

North Shore Connector Construction Support Services, Pittsburgh, Pennsylvania. *Port Authority of Allegheny County.* Senior Geologist. Responsible for leading field investigation for collecting independent soil samples to assist client with evaluation of subsurface conditions encountered in light rail transit system tunnel project.



Coordinated with geotechnical laboratory for testing of samples obtained. Prepared test pit logs, sonic boring logs and Standard drilling logs to support and document the evaluation. The Port Authority of Allegheny County constructed the North Shore Connector Project, which involved a major extension of its light rail transit (LRT) facility from downtown Pittsburgh, through a tunnel under the Allegheny River, to the North Shore area of the city, where the sports arenas and other attractions are located. The construction contractor's cement usage in the jet grouting process was incurring significant overruns. Michael Baker provided an independent evaluation of the subsurface conditions and the jet grouting operation, including soil borings, rock coring, and soil classifications, and provided recommendations for reducing cement usage in the jet grouting operation.

Planning, Engineering, Architectural, and Project Management Services, Allegheny and Westmoreland Counties, Pennsylvania. *Port Authority of Allegheny County.* Senior Geologist. Responsibility for performing preliminary geotechnical engineering for Pennsylvania High Speed Maglev Project Corridors Study. Tasks included review of available topographic, geology, and mining maps; previous geotechnical studies; erosion susceptibility of soils; field reconnaissance; mineral resource investigation; mining and related conditions; slope stability and landslide-related features; groundwater conditions; and preliminary structure foundation evaluation. In addition, a Geographical Information System (GIS) database was established for the project, which involved general geology, mining and landslide susceptibility. An alignment cut slope viability study was performed as part of the engineering support for the environmental impact studies. Michael Baker developed the concepts for a high-speed magnetic levitation (maglev) transportation system in Pennsylvania. The undertaking involved a preliminary engineering study of four alternative alignments for a 54-mile demonstration project that will connect the Pittsburgh International Airport, downtown Pittsburgh, and two suburban station locations east of the city. Michael Baker's role included developing the preliminary design for the guideway and stations, developing cost estimates, preparing an environmental overview, and managing the ridership estimate. The 54-mile system will be the first link in an envisioned regional and national system connecting the Midwest to the East Coast.

Raccoon Creek Streambank Stabilization, Beaver County, Pennsylvania. *Allegheny County Airport Authority.* Senior Geologist. Provided construction consultation for landslide repair. Michael Baker planned, designed, and monitored construction for a streambank restoration project along two reaches of Raccoon Creek near Pittsburgh, Pennsylvania. The project restores 1,400 feet of highly unstable and severely eroded streambank, reduces sediment loading, provides stream shading, and increases wildlife habitat.

West Busway, Pittsburgh, Pennsylvania. *Port Authority of Allegheny County.* Geologist. Responsible for performance of field and office coordination during subsurface investigation. Project covered 8.2-mile corridor and included five miles of retaining walls, 30 bridges and two tunnels. Tasks included field activities supervision; boring plan layout, field data compilation, test boring logging procedures training and review, test boring log review, field reconnaissance, stratigraphic cross-section development and geotechnical report preparation. Supervised drilling procedures, involving borehole camera work and angle hole drilling, in a 200-year-old brick-lined 2,500-foot tunnel. Developed stratigraphic profiles for tunnel and assisted in report preparation. Assisted in slope analysis and provided slope remediation recommendations. Provided technical coordination in reconnaissance and geologic mapping, oblique aerial photography, historical information review, rockfall risk assessment model development, and slope remediation measures for more than two miles of slope averaging 200 feet in height. Participated in development of final geotechnical roadway design recommendations for entire alignment. Performed rockfall protection study for a railroad within the corridor. Performed construction inspection during slope remediation contract and provided construction consultation services. Michael Baker served as the General Architectural and Engineering Consultant, providing Program Management, Design Services, and Construction Phase Services for the West Busway, a five-mile, two-lane buses only roadway. The Busway runs from Carnegie to downtown Pittsburgh and includes an interchange with the Parkway West (Interstate 376), a rehabilitated and widened railroad tunnel, six stations, and four park-n-ride lots adjacent to the facility. The total project budget was \$326 million.



Brian E. Steffes, P.G., PMP, CQM
Sr. Geologist/Project Manager

General Qualifications

Mr. Steffes is a professional geologist with an extensive and varied background in environmental and geotechnical investigations. His drilling experience includes direct-push, hollow stem, mud and air rotary and sonic techniques for soil logging/sampling and water sample acquisition. He has experience with USGS, AASHTO, PENNDOT and WVDOT classification systems. He has worked extensively throughout Pennsylvania, West Virginia and Ohio, and also has experience in Nebraska, South Dakota, N. Carolina, Illinois, Puerto Rico, Jamaica and Iraq. His environmental experience includes a wide range of industrial and residential settings, from residential heating oil tanks to chemical weapons disposal facilities, and also including jet fuel spills, hazardous and municipal regulated and unregulated landfills, solvent spills, and chemical releases. His geotechnical experience includes drilling and data acquisition for highway alignments, landslide investigations and landfill and dam evaluations.

Experience

Appalachian Corridor H, Appalachian Highlands Region, Tucker County, West Virginia. *WVDOT.* Geologist. Logged roadway alignment boreholes for approximately 16 miles of new roadway through Monongahela National Forest. Over 700 core borings were drilled, approximately 47,000 lineal feet of drillings and over 1200 geotechnical laboratory tests were conducted, including over 1000 acid bearing rock tests.

Environmental and Hazardous Waste Services for Hastings Superfund Site, Hastings, Nebraska. *Carmeuse North America.* Project Manager/Geologist. Supervised groundwater investigations using DPT and SP-15 samplers to collect groundwater samples to depths of 220 ft bgs. Supervised the installation of nested monitoring well networks using auger, mud rotary and sonic drilling methods. Conducted soil vapor sampling using DPT and summa canisters. Designed and installed a replacement SVE system, using a novel well grouping technique that allows use of a smaller system that still satisfied design parameters and saved over \$275K in capital costs.

Bear Creek Chemical Sites, NWRO, Butler and Armstrong Counties, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Geologist. Supervised drilling using HSA and sonic methods, monitoring well construction, and groundwater sampling for an investigation of four unregulated industrial waste disposal sites.

ALCOA MSA, Maypen, Jamaica. *ALCOA.* Geologist. Responsible for conducting an inspection and logging services for geotechnical drilling at an active aluminum refinery.

Haywood M3 Slip Remediation, Bentleyville, Pennsylvania. *Rice Energy.* Geologist. Conducted geotechnical investigation of ground slip at oil pipeline. Drilled soil borings for piezometer and inclinometer installations.

Geotechnical Investigations and Topographic Surveying, COBs Speicher, Adder, and Al Asad, Iraq. *U.S. Army Corps of Engineers.* Geologist. Deployed twice to Iraq to conduct geotechnical drilling program. Secured and negotiated Third-Country National subcontractors to excavate test pits for sampling. Successfully completed program.

Years with Baker: 28
Years with Other Firms: 5

Education

B.S., 1982, Geology, Edinboro
University of Pennsylvania

Master's Certificate, 2009, Project
Management, University of Pittsburgh,
Katz Graduate School of Business

Licenses/Certifications

Professional Geologist, Pennsylvania,
1994

OSHA 40-Hour HAZWOPER
Certification, 1988

OSHA 8-Hour HAZWOPER Refresher
Training, 2017

Project Management Professional
(PMP), 2009

Construction Quality Management for
Contractors, 2017



Edward H. Barefield, P.G.
Engineering Geologist

General Qualifications

Mr. Barefield is an engineering geologist within the geotechnical unit at Michael Baker. His geotechnical experience includes drilling inspection and subcontract administration/coordination, laboratory testing interpretations and subcontract administration/coordination, subsurface geology geotechnical interpretation, detailed soil and rock slope stability analyses, structure foundation analysis and design, mine subsidence evaluations, aerial and satellite photograph interpretation, field geology reconnaissance and sampling, geotechnical literature review, drilling and laboratory testing program preparation and execution, and geotechnical report preparation and reviews.

Experience

S.R. 0119, Sec. 465 - Three Bridges Project, Indiana County, Pennsylvania. *Pennsylvania Department of Transportation, District 10-0.* Geologist II. Acting as geotechnical discipline lead, responsible to develop Structure Foundation Report and Roadway Geotechnical Engineering Report for roadway improvements and bridge replacement project. Collaborated with other team members and project disciplines to obtain final geotechnical design approvals, and resolve issues arising during the design process, while meeting client time and quality requirements for the submission.

For the Structure Foundation Report, analysis and design activities directly performed included SPT blow count corrections for hammer efficiency and effective overburden pressure, development of geotechnical subsurface profile design models, development of foundation design and temporary shoring geotechnical parameters (including development of rock mass shear strength parameters), calculation of factored downdrag loads on the integral abutment pile foundations using Nordlund and Meyerhof methods, lateral analysis of pile foundations using LPILE software, and circular slope stability analysis to design a rock toe bench at the base of the proposed integral abutment slope in soft ground conditions. The LPILE analysis was performed in an iterative manner, coordinating closely with project bridge engineers, to analyze the behavior of the piles with the given loads and overturning moments induced from the bridge superstructure, including consideration for unsupported lengths due to scour effects. Requirements for predrilling past soft claystone layers were also considered in the pile design, and checks were performed to assess the risk of ground support loss from abandoned underground coal mining. For the Roadway Geotechnical Engineering Report, analysis and design activities directly performed included calculation of total and time rate of consolidation settlement for roadway embankment fills being placed over soft, wet ground conditions, and resultant development of settlement monitoring specifications. Also performed alternatives analysis and cost comparison between a rock embankment slope, a reinforced soil slope, and a precast T-wall, which ultimately lead to the design of a 1.5H:1V rock embankment slope with toe bench that was incorporated into the project plans set.

Air Shaft Site, Greene County, Pennsylvania. *Confidential Client.* Geologist II. For a proposed coal mine air shaft site, worked independently under senior personnel to first geotechnically characterize the largely-sloping, landslide-prone project site, and secondly to perform geotechnical analysis and design for the earthwork proposed to build the site. Performed geotechnical field reconnaissance to identify portions of the slope

Years with Michael Baker: 12

Years with Other Firms: 0

Education

M.S., 2004, Engineering Geology,
Kent State University

B.S., 2002, Geology,
Youngstown State University

Licenses/Certifications

Certified PennDOT Drilling Inspector
#182-07, Pennsylvania, 2006

Professional Geologist, Pennsylvania,
2010

Professional Geologist, Kentucky, 2015

Professional Geologist, Nebraska, 2016

Professional Geologist, Indiana, 2016

OSHA 8-Hour HAZWOPER Refresher
Training, 2017



exhibiting characteristics with potential to cause problems for design and construction of the proposed facility. Developed subsurface drilling exploration and laboratory testing program to support geotechnical design and analysis. Presented the findings of the reconnaissance drilling and laboratory testing as a preliminary findings memorandum to the client. Also developed preliminary earthwork recommendations related to topsoil removal and placement, compaction of embankment fill materials, use of air shaft cuttings material for embankments, cut slope construction issues, and recommended inspection of earthwork.

Developed subsurface geotechnical design models for critical proposed slope configurations, and performed slope stability analysis using GSTABL software (modified Bishop method). Analysis was performed to evaluate the global stability of proposed cut slopes and side-hill embankment fills. Based on the results of the stability analyses, designed an embankment benching detail for implementation during construction, and also developed construction details to control anticipated excessive hillside seepage, and for repair of any landslides induced during cut slope construction. Stability analyses work also involved the development of geotechnical design parameters for the various soil and weak rock strata based on boring data and laboratory shear strength and classification testing.

Somerset Lake Dam, Somerset County, Pennsylvania. *PA Department of General Services.* Geologist I. Responsible for field oversight for installation of vibrating wire piezometers to monitor pressure head within an embankment dam and the dam foundation subgrade. The work involved having a technical understanding of the scientific theory behind the operation of the instrumentation (i.e. correlation between groundwater pressure head and vibrating wire frequency measurements, calibrated by barometric pressure), as well as technical knowledge on installation of surface hardware for proper performance of the underground instruments. Back in the office, developed calculation spreadsheets to automatically convert raw piezometer readings obtained by field personnel into pressure head data ready for use in seepage and slope stability analyses. Also performed calculations using Hvorslev method to reduce falling head slug test data performed in the dam embankment into usable hydraulic conductivity information to be used for further analytical work by others.

E01543 WO#2-Stone Arch Bridge. *Pennsylvania Department of Transportation, District 4-0.* Geologist I. Performed test boring inspection for geotechnical subsurface investigation at proposed bridge culvert replacement site. Responsibilities included ensuring that roadway MPT was properly set up and maintained during drilling activities, soil and rock sample management, and development of laboratory testing schedule upon completion of test drilling.

Overland Conveyor - Phases I & II, Washington County, Pennsylvania. *Confidential Client.* Geologist I. Working as part of the geotechnical project team, worked to design geotechnical earthwork details for a linear overland coal conveyor belt project crossing varied, landslide-prone terrain. Direct technical work performed involved assisting senior personnel in development of the subsurface exploration drilling program to characterize the areas impacted by the proposed earthwork needed to construct the conveyor. Once the design test borings were completed, evaluated the boring findings against the proposed earthwork, and developed a laboratory testing program to provide information for development of geotechnical design parameters for design of the project. Laboratory testing selection involved independent judgment to select appropriate tests, such as Soil classification, Atterberg Limits, and undisturbed and remolded direct shear strength testing, to provide information for geotechnical analysis. Shear strength testing planning involved identifying appropriate loading conditions for the test to simulate the anticipated loads induced by the proposed project earthwork embankments.

Additional project work directly performed involved review of project earthwork plans to identify critical areas to use as design cases for geotechnical analysis. This work required judgment to identify weak soil and rock zones from the boring information, and where those areas coincided with significant site earthwork. Also exercised independent judgment in selection of conservative geotechnical design parameters to use for analysis and design. Performed slope stability analysis using GSTABL software (modified Bishop method) on major side-hill and valley



crossing embankment fill placement areas, and select cuts in weak rock (claystone, clayshale, etc.). Where inadequate slope stability was identified for embankment fills, designed toe benches to be constructed from rock available at the site, and dimensioned the toe bench using GSTABL to achieve a target minimum Factor of Safety. Where proposed cut slope configurations indicated unacceptable Factor of Safety for slope stability, designed new cut slope configuration (e.g. flattening, benching) to achieve the target minimum Factor of Safety. Based on the analytical results, designed and detailed construction details for embankment benching, rock toe benches, toe drainage galleries, seepage interceptor drains, and valley fill embankment details, all of which were presented in Final Geotechnical Engineering Reports to the client.

An additional aspect of direct involvement on this project involved the exploration of an identified inactive landslide along the conveyor alignment. This landslide was geotechnically characterized by test borings and laboratory testing, and a landslide mitigation detail developed for use by the contractor during construction.

Barbados Geotechnical Engineering Services, Barbados. *Drill Tech Caribbean, Inc.* Civil Associate II. Responsible for oversight and inspection in the field of geotechnical test borings advanced through near shore beach deposits and coralline rock formations. Assisted on-site structural engineer, in correspondence with Michael Baker's project manager, in selecting termination depths for several on-site test borings.

I-376 Signing Redesignation – Monroeville to Fort Pitt Bridge, Allegheny County, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Civil Associate II. Provided test boring inspection and MPT oversight for overhead sign foundation design test boring.

Replacement Design for the S.R. 158, Section B00 and B01 Bridges over Little Neshannock Creek, New Wilmington, Pennsylvania. *Pennsylvania Department of Transportation, District 1-0.* Civil Associate II. Responsible for performing initial geotechnical site reconnaissance, performing field test boring inspection and coordination of MPT on drilling site. Developed laboratory testing program and facilitated completion of laboratory testing with subcontractor. Prepared Preliminary geotechnical engineering report with foundation type alternative recommendations to the client with the assistance of the lead project geotechnical engineer.

Embankment Stability of Treatment Ponds, Confidential Project, Indiana County, Pennsylvania. *Confidential Client.* Civil Associate II. Under the supervision of a licensed professional engineer, responsible for preparing drilling and lab testing subcontracts, dam inspection, and field boring oversight and log preparation. Performed static and seismic condition global stability analyses and prepared geotechnical engineering report to client regarding stability of embankment dams relative to MSHA and USACOE criteria. Oversaw surveying services in the field to determine as built condition of the embankment dams under study. The project involved evaluation for embankment stability of existing water treatment ponds.

S.R. 28, Sections A09/10 Phase II, Environmental, Pittsburgh, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Civil Associate II. Responsible for field geotechnical test boring inspection, development of wall design geologic cross sections, development of design loads using global stability analyses to be used for retaining wall design based on various slope failure scenarios. Developed rockfall models at critical roadway sections and performed sensitivity analyses of various rockfall catchment ditch alternatives. Developed cost estimates for various rockfall treatment alternatives to support Pre-Final Geotechnical Engineering Report. Assisted in preparation of Pre-Final Geotechnical Engineering Report.

Becks Run Road Landslide, Pittsburgh, Allegheny County, Pennsylvania. *Pittsburgh Development Group II L.P.* Civil Associate I. Performed detailed field reconnaissance, geologic mapping, and data collection on a landslide that destroyed part of a home and property. Prepared a findings report to the owner of property on which the slide occurred.



Michael J. Saylor, E.I.T.
Civil Associate

General Qualifications

Mr. Saylor is a civil associate with Michael Baker International and is a certified PennDOT drilling inspector. He has been responsible for developing and executing subsurface investigation programs, assisting in the design, development, and overseeing of landslide remediation projects, and design of site best management practices and erosion and sediment control plans among his wide breadth of project experience. Mr. Saylor has experience working in a variety of locations and adapting design and methods to suit the needs of a specific location. As part of his efforts Mr. Saylor has developed project specific workbooks, developed geotechnical design and recommendation reports, conducted slope stability and mine subsidence analyses, and has conducted considerable field work in sampling sediments, subsurface soils, groundwater, and surface water. Prior to coming to Michael Baker, he served as a laboratory technician testing a variety of soils and aggregates in accordance with AASHTO and ASTM standards providing valuable foundation of experience in working with soils.

Years with Michael Baker: 5

Education

B.S., 2012, Civil Engineering, Case Western Reserve University

Graduate Studies, Civil Engineering, Geotechnical, University of Pittsburgh

Licenses/Certifications

Engineer-In-Training, Ohio, 2012

Certified PADI Scuba Diver, 2008

OSHA 40-Hour HAZWOPER Certification, 2012, 13192

PEC Safety Certification, 1969, PEC100635714

PennDOT Drilling Inspector, Pennsylvania, 2015, 385-15

Experience

Rice Haywood to M3 Landslide. *Rice Energy, LP.* Civil Associate. Responsibilities included serving as Michael Baker's primary field representative, and dictating design and addressing encountered conditions with field engineering decisions as worked progressed in the remediation effort. As field representative Mr. Saylor worked directly with the contractor to ensure the design and engineering principles were performed to provide long term stability, and was responsible for making field adjustments as conditions required. Mr. Saylor coordinated site documentation with overseeing a survey crew and provided daily reports to all pertinent parties. This remediation effort saw the use of a specialty application in using cement and lime to treat the on-site soil to provide stability. Mr. Saylor worked with his supervisor and colleagues to develop the rational and rate of application of the cement and lime mixing process.

Rice Pettit Landslide. *Rice Energy, LP.* Civil Associate. Michael Baker was contracted to provide emergency remediation services as a landslide developed within an active pipeline right-of-way. Mr. Saylor coordinated with a drilling contractor to do an initial assessment of the landslide under the expedited project conditions. He served as the primary Michael Baker field representative for the duration of the project and oversaw the initial subsurface investigation to provide temporary stability measures, oversaw the secondary subsurface investigation to determine permanent stability measures, and oversaw the construction and remediation efforts. As part of the temporary and permanent remediation efforts Mr. Saylor drafted the initial proposal, performed field reconnaissance, coordinated with a survey crew to document the extents of the landslide, oversaw a drill crew and logged soil and rock samples during subsurface investigations, oversaw the installation of 4 inclinometers and 8 piezometers, conducted weekly inclinometer and piezometer monitoring over a 3-month period, drafted the initial and final geotechnical report, developed CAD drawings and details in conjunction with a CAD designer, developed the remediation design in conjunction with his supervisor and colleagues, and provided daily reports to vested parties.



Chevron Hicks Well Pad Site. *Chevron USA, Inc.* Civil Associate. Michael Baker was responsible for developing a large well pad in West Virginia to meet the requirements of an oil and gas client. Mr. Saylor was responsible for coordinating and performing the subsurface investigation with a competent drilling contractor, culminating in a geotechnical findings, and recommendation of report. On-site, Mr. Saylor logged the soil and rock encountered in the field, selected pertinent samples for laboratory testing, and conducted bearing capacity and settlement calculations. Additionally, Mr. Saylor coordinated the slope stability analysis and roadway design with fellow associates and engineers.

Chevron Sinay Well Pad Site. *Chevron USA, Inc.* Civil Associate. Mr. Saylor was responsible for coordinating and performing the subsurface investigation with a competent drilling contractor and developing a geotechnical findings and recommendation report for a well pad in southwestern Pennsylvania. In the field, Mr. Saylor oversaw the subsurface investigation activities with the drilling contractor and recorded soil and rock encountered. As part of the geotechnical findings and recommendations report Mr. Saylor performed bearing capacity and settlement calculations, and conducted the slope stability analysis of the site embankments.

Colliers Sportsman's Club Highwall Reclamation, Brooke County, West Virginia. *West Virginia Department of Environmental Protection.* Civil Associate. As part of an approximate 50-foot highwall reclamation project, Mr. Saylor provided subsurface investigation oversight of the drilling operations on site and recorded the soil and rock encountered. Mr. Saylor saw the installation of 3 piezometers to monitor groundwater fluctuations and possible groundwater in open mine voids. In addition to the subsurface investigation activities, Mr. Saylor provided a preliminary grading concept, developed the erosion and sediment control plans, and designed the water conveyance structures.

Geotechnical Investigation of Sinkholes Along an Existing Pipeline in Indianola PA. *Buckeye Pipeline Company.* Civil Associate. Mr. Saylor was tasked with investigating and remediating sinkholes that had developed along a pipeline right-of-way. Mr. Saylor oversaw a test pit subsurface investigation program to determine the cause of the sinkholes and worked with the contractor to remediate the holes. Mr. Saylor developed a findings and recommendation report to service the client in the event of future events similar to that experienced at the site.

USS LTO Slope Stability. Confidential Steel Client. Civil Associate. Responsible for developing multiple options to address an embankment failure caused by erosion at the toe of the slope. Mr. Saylor developed four unique options for consideration in conjunction with his project manager for the client to review. Mr. Saylor developed workbooks and CAD drawings in conjunction with the work.

Rehabilitation of the Canonsburg Lake Dam, Peters and North Strabane Townships, Pennsylvania. *Pennsylvania Fish & Boat Commission.* Civil Associate. Responsibilities included sampling soil and sediment from the lake and a peninsula in the upper part of the lake. Material was tested for the soil's CBR value through the use of a dynamic cone penetrometer. Mr. Saylor utilized the information in the design of an aggregate access roadway.

Rice CP to Kryptonite. *Rice Energy, LP.* Civil Associate. Responsible for overseeing a drilling program and drilling contractor, identifying and classifying soil and rock sampled, building an understanding of geologic conditions through a literature review, and performing site reconnaissance on local geologic features to develop an understanding of the subsurface conditions that would be encountered during an HDD operation. Additionally, Mr. Saylor was responsible for a final report detailing the investigation findings and providing clear summary profiles for bidding contractors that were developed as part of the overall HDD Investigation program.



Gang Zuo, P.E., Ph.D.
Geotechnical Analysis

General Qualifications

Dr. Zuo's background encompasses a variety of geotechnical projects. His experience includes geotechnical design and analysis for deep foundation, slope stability, retaining wall, pavement design, and dam stability.

Experience

J&L Tunnel Design-Build Roof Reconstruction. Project Engineer. Performed stability analysis of the tunnel walls for existing and proposed conditions. Michael Baker provided comprehensive engineering services for the design-build reconstruction of 1,700 feet of the roof as part of the National Gateway Clearance Improvement Program. Michael Baker's services included final design and construction support services, including field surveys, geotechnical investigations, structural design, erosion and sedimentation control, maintenance and protection of traffic, drainage design, landscaping, electrical and site lighting design, utility coordination, permitting, and stakeholder coordination.

Engineering and Permitting Services for Rutherford Intermodal Facility Expansion. Project Engineer. Performed reinforced soil slope design and pavement design. Michael Baker provided fast-track engineering and permitting services and coordinated with the environmental consultant responsible for preparing the environmental clearance document to expand the Rutherford intermodal freight facility, a critically important mid-Atlantic intermodal hub and part of the railroad's 2,500-mile Crescent Corridor initiative to establish a high-speed freight rail route between the Gulf of Mexico and the United States.

Somerset Lake Dam Renovations. Project Engineer. Performed dam stability analysis. Michael Baker is providing engineering services for the Somerset Lake Dam, owned by the Pennsylvania Fish and Boat Commission (PFBC), to ensure compliance with Pennsylvania Department of Environmental Protection regulations. Somerset Lake Dam was constructed in 1956 and creates Somerset Lake, which is a heavily used recreational facility. Michael Baker's tasks include reviewing drawings and reports; field-inspecting all elements, including spillways and gatehouse structures; performing a hydrologic and hydraulic analysis; performing a topographical survey, geotechnical investigation, and structural analysis to evaluate current conditions; identifying and analyzing rehabilitation alternatives; and providing construction management services.

Historic Winona Bridge over the Mississippi River. Project Engineer. Performed FB-MultiPier analysis to study the capacity of existing and proposed retrofit options for river piers, including the effects of barge impact capacity, loss of support from some of the existing timber piles, and scour. Michael Baker was the prime design consultant for rehabilitation and reconstruction of the historic Winona Bridge to carry Trunk Highway 43 over the Mississippi River. Constructed in 1941, the original bridge is a two-lane, 2,291-foot-long truss structure with a main span of 450 feet. The three-span cantilever through truss structure is being retrofit with numerous members being strengthened in order to remove the existing load posting, provide internal redundancy to the existing fracture critical members, and extend the bridge's life by 50 years. Additionally, the existing timber pile river pier foundations were investigated to verify structural and geotechnical capacity as well as the effects of scour of barge impacts. The bridge is eligible for the National Register of Historic Places, extensive coordination occurred with the Project Historian in order to ensure compliance with Section 106 of the National Historic Preservation Act of 1966, the client's Cultural Resources unit, and the State Historic Preservation Office.

Years with Michael Baker: 11
Years with Other Firms: 3
Education Ph.D., 2003, Geotechnical Engineering, University of Tennessee, Knoxville B.S., 1995, Civil Engineering, Tongji University, China
Licenses/Certifications Professional Engineer: Ohio, 2005; Pennsylvania, 2008; Kentucky, 2010; Indiana, 2016



Provide Technical Soil Reports for NOV-06 Levees & Fronting Protection @ 3 Pump Stations. Project Engineer. Performed slope stability analyses using both Method of Planes and Spencer's Method to determine the stability of existing T-Wall at Pump Station and calculate unbalanced lateral load for piles supporting T-Wall. Performed pile capacity calculation. Michael Baker prepared two Geotechnical Soils Reports incorporating geotechnical data and geotechnical analysis required for detailed design provided by the New Orleans District Corps of Engineers. The first report was for the levees of Reach NOV - 06 in Plaquemines Parish, Louisiana. The second report was for the Fronting Protection (T-Walls and I-Walls) at Hayes, Gainard Woods, and Sunrise Pump Stations. These reports included the results of the investigation, description of work, assumptions, conclusions, recommendations, stability analysis, seepage analysis, pile capacities, plotted soil borings, shear and wet density plots, and plates with results of analyses.

Kentucky Lake and Lake Barkley Replacement Bridges. Project Engineer. Reviewed geotechnical information. Performed analyses of pile group under lateral loads. Michael Baker is providing engineering services for the replacement of the U.S. 68/KY 80 bridges over Kentucky Lake and Lake Barkley in the Land between the Lakes National Recreation Area. Michael Baker's services include project management, a bridge-type study, surveys and mapping, roadway alignments, pavement design, drainage design, maintenance-of-traffic plans, cost and quantity estimates, right-of-way plans, permit coordination, utility coordination, agency and stakeholder coordination, public involvement, environmental compliance support, and preliminary and final design.

S.R. 28, East Ohio Street Improvement Project. Project Engineer. Evaluated subsurface conditions. Developed geotechnical parameters. Performed global stability analysis. Prepared structural foundation report. Michael Baker provided comprehensive engineering and environmental services to upgrade a 2-mile, four-lane section of S.R. 28 between the Chestnut Street Ramps and the Millvale Interchange to a limited-access expressway. The project included the addition of median barrier on S.R. 28, a grade-separated interchange at 31st Street, and new southbound on and off ramps at 40th Street to allow continuous mainline flow. Project challenges included minimizing hillside impacts, maintaining railroad capacity, constructing within a tight corridor, and accommodating historic structures, while enhancing safety, improving traffic flow, and coordinating with multiple stakeholders with diverse needs. Michael Baker's services included project management; environmental compliance services; value engineering; roadway, bridge, interchange, retaining wall, and multiuse trail design; utility coordination and relocation design; stormwater management design; aesthetic design; complex construction sequencing and traffic control plans; intelligent transportation system design; and construction consultation.



Christopher A. Ruppen, P.G.
Geotechnical Project Manager

General Qualifications

Mr. Ruppen is a geologist performing in the role of technical manager, with overall responsibility for managing Michael Baker's Oil & Gas Geotechnical Unit. He has experience on a wide variety of geotechnical projects, from initial site investigation, through design and into construction consultation and support. His vast geotechnical and geologic experience, combined with his knowledge of geohazard identification and delineation, gives him a unique understanding of the processes that influence design projects. He has worked on numerous landslide investigation projects including:

- Identification of landslide prone areas through desktop studies
- Assessment of various types of mapping to delineate potential slide prone areas
- Geotechnical reconnaissance aimed at identification of slide prone areas and evaluation and field mapping of existing landslides, many of which occurring as an emergency response
- Subsurface Investigations to further characterize landslides and to develop parameters and a basis for remediation
- Design to remediate landslide that threaten infrastructure or the environment

His application of this experience to engineering projects makes him a valued member of Michael Baker's Geotechnical team. Because of his experience, Mr. Ruppen often acts in a Quality Assurance role or a mentoring role of younger Geotechnical staff, and has also managed major projects from preliminary design through construction.

Experience

Engineering Services to Remediate Landslide Caused by Abandoned Mine Activity, McDowell County, West Virginia. WVDEP - Office of AML&R. Michael Baker provided field investigation, engineering services, and construction support to remediate a landslide on private property caused by drainage from abandoned mine portals. Michael Baker provided conceptual, preliminary, and final design documents for remedial drainage measures and provided support during construction.

Geotechnical Investigation of the Wheeling Army Reserve Center, Wheeling, West Virginia. Mellon Stuart Construction, Inc. Geologist. Responsible for overseeing the subsurface investigation, the slope stability analyses and the construction consultation. A 300'-long landslide occurred along the access road embankment for the Wheeling Army Reserve Center in Wheeling, West Virginia. Michael Baker was retained to conduct a geotechnical investigation, prepare a remediation design and provide construction management for the emergency repair of the landslide. The geologic site conditions proved to be difficult due to previous strip mining activities at the site.

Years with Michael Baker: 30

Years with Other Firms: 1

Education

Master's Certificate, 2005, Project Management, University of Pittsburgh, Katz Graduate School of Business

B.S., 1984, Conservation, Kent State University

B.S., 1984, Geology, Kent State University

Licenses/Certifications

Professional Geologist, Pennsylvania, 1995, PG001573G

First Aid/CPR Training, 2015

OSHA 40-Hour HAZWOPER Certification

OSHA 8-Hour HAZWOPER



Parkway View Drive Landslide, Robinson Township, Pennsylvania. *Township of Robinson.* Supervisor. Responsible for overall investigation of the landslide. The Township of Robinson retained Michael Baker to investigate the cause, and provide options for remediation, of the approximately 300-foot-long landslide at the east side of Parkway View Drive in Robinson Township, Allegheny County, Pennsylvania. The slide, with a scarp up to about 18 ft. high, has encroached into Parkway View Drive, closing one lane, and is threatening Glass Run Road, east of and below the slide mass.

Landslide Investigation impacting Water Tank, Wellsville, Ohio. *Southern Columbiana Regional Water District.* Geologist. Conducted geologic field reconnaissance to determine extent of landslide and likelihood that landslide would impact the integrity of the water tank. A landslide in Southern Columbiana County was impacting on the Regional Water District's 1,000,000-gallon water tank. Michael Baker was dispatched to assess the slide condition and threat posed to the water tank.

Ft. Martin Power Station Slide Investigation and Remediation, Monongalia County, West Virginia. *Allegheny Power System.* Four separate slope failures occurred near an access road at the Fort Martin Power Station as the result of heavy rain, poor drainage, and the presence of unstable spoil above the roadway. Michael Baker made a site reconnaissance, conducted an investigation, designed improvements for drainage and provided recommendations for slope stabilization. Riehl Park Landslide Repair, Riehl Park, Wabash Street, Castle Shannon, Pennsylvania. Castle Shannon Borough. Project Manager. Provide overall supervision for the investigation of two landslides following a hurricane. Michael Baker was retained by Castle Shannon Borough to investigate the cause and recommend a repair design for a 100-foot wide landslide at the entrance to Riehl Park, Allegheny County, Pennsylvania. The landslide encroached onto the park entrance road and threatened park facilities at the head of the slope. Upon completion of the subsurface investigation, a precast concrete module wall with site regrading was recommended to stabilize the landslide.

Glen Mitchell Road Landslide and Roadway Stabilization Projects, Aleppo Township and, Sewickley Heights Borough, Pennsylvania. *Allegheny County Department of Public Works.* Project Manager. Managed geotechnical services, including investigation of the landslide and construction documents for emergency remediation. A landslide ruptured 100 feet of pavement along Glen Mitchell Road in Aleppo Township forcing Allegheny County to close the road for safety. Michael Baker was retained to investigate the landslide and provide construction documents for the emergency remediation of the 200-foot-long landslide.

Friend Landslide, Jefferson County, Ohio. *Ohio Department of Natural Resources.* Michael Baker designed an eighty-foot long soldier pile and lagging retaining wall in order to stabilize a landslide on a former coal mine access road. The finished retaining wall was sixteen feet high and backfilled with commercial bottom ash for the strength and lightweight properties. A series of underdrains were designed to quickly remove groundwater upslope of the proposed wall.

Big Hollow Mine Dump Reclamation, Mullins, West Virginia. *West Virginia Department of Environmental Protection.* Michael Baker was responsible for design and preparation of construction plans and specifications for the reclamation of three severely eroded, unstable refuse piles on steep hillside slopes. The sites covered approximately 20 acres.

Worthington Avenue Landslide, Jefferson Hills Borough, Allegheny County, Pennsylvania. *Allegheny County Department of Public Works.* Project Manager. Supervised the investigation of the subsurface conditions and provided construction consultation for a landslide impacting the westbound lane. Michael Baker was retained to provide plans and specifications for remediation of a 500-foot long landslide located along Worthington Avenue. The landslide complex damaged two existing timber crib walls and closed the westbound lane on Worthington Avenue.



Cumberland Mine, Waynesburg, Pennsylvania. *Cumberland Coal Resources, LP. Supervisor.* Supervised the field reconnaissance of proposed building and access road; mapping of ancient landslides; development of boring and laboratory testing plans; and coordination of drilling operations. Michael Baker has been assisting Cumberland Mine personnel with mine permitting and design since approximately 1980. The various projects performed by Michael Baker typically required a full range of services beginning with mine site characterization and surface facility design, continuing through preparation of required permit applications and coordination with regulatory agency(s), to preparation of required construction documents. Michael Baker also developed topographic mapping needed for design and permitting.

Geotechnical Open-End Services, Allegheny County, Pennsylvania. *Allegheny County Department of Public Works. Project Manager.* Led Michael Baker's team to assist the County with the Emergency Response. Provided field support to help determine appropriate remedial solutions to stabilize failures. Responsible for various projects throughout Allegheny County including Pitcairn Road Stabilization, Glen Mitchell Road Landslide Stabilization, New England Road Retaining Wall Replacement and Reconstruction, Broughton-Cochran Mills Road Rockslope and Retaining Wall Reconstruction, Pine Creek Dam Inspection, North Park Lake Civil Projects, North Park Lake Trail Alternative Analysis, Greensprings Road Stabilization, Hope Hollow Road Retaining Wall Stabilization, Deer Lakes Lake #1 Dam Improvements, Turtle Creek Flood Control Project Base Map Development and miscellaneous on-call support to respond to the Department's needs. Services included surveying, mapping, emergency response, permitting, analysis, design, preparation of construction plans and specifications and construction support. Michael Baker was retained by the County in 2002 to provide on-call Geotechnical support to address Geotechnical impacts to the County's aging infrastructure. Geotechnical services provided under this contract included emergency response, landslide remediation, addressing lateral support issues, retaining wall failures, drainage improvements, flood facility studies, dam inspections, dam rehabilitation, roadway subgrade evaluations, subsurface investigations, laboratory testing and construction support.

Open-End Abandoned Mine Land Reclamation Projects, Various Locations, Ohio. *Ohio Department of Natural Resources. Supervisor.* Responsible for the investigation of various abandoned mine land problems including mine subsidence and subsidence induced landslides. Michael Baker provided engineering support to address reclamation needs associated with abandoned mine lands and acid mine drainage. Michael Baker investigated several project areas, including Barberton and Mount Eaton Subsidence, Friend Landslide, Columbia Portland Cement Subsidence, and Sheriden Road, to help solve abandoned mine land issues and assist in addressing safety and environmental issues impacting the state of Ohio as a result of historic mining. Michael Baker conducted literature reviews, compiled and analyzed past subsurface investigations, developed and inspected drilling programs to confirm suspected workings, and inspected borehole camera investigations in mine openings encountered in drilling to determine mine conditions and directions, as feasible. Following analysis, Michael Baker developed consistent and justifiable subsidence risk evaluation procedures to render objective evaluations of the relative subsidence risk for the areas of concern.

Multiple Port Authority Contracts, Pittsburgh, Pennsylvania. *Port Authority of Allegheny County. Task Manager.* Managed the geotechnical engineering for the extensive reconnaissance on steep slopes for slope evaluation. Also managed the slope study and the final report on the findings of the investigation. Michael Baker provided architectural and engineering consulting services to the Port Authority of Allegheny County under an open-ended General, Architectural, and Engineering Contract. Tasks consisted of a full range of planning, architecture, and engineering design activities (concept/preliminary/final design, construction documents and bidding/construction support), feasibility studies, system planning projects, and cost analysis to maintain functions and operations of Port Authority facilities and supporting a fleet of approximately 800 buses and 150 light rail vehicles.



Ralph Gromley, P.L.S., PSM

Survey Manager

General Qualifications

Mr. Gromley is a Professional Land Surveyor licensed in the states of Pennsylvania, Ohio and Florida. Mr. Gromley is responsible for supervising Michael Baker's multiple survey crews from our Moon Township office that are currently working on various oil and gas right of way surveys. He has several years of boundary and easement experience including subdivision plats with right of way and easement dedication, condominium plats that include the preparation of easements for the right of way for both public and private and public and private utility corridors. His experience with government entity work includes the preparation of easement dedications for the use of public utility corridors. Mr. Gromley supervises all field work performed including public and private record research to determine the existence of existing boundary and easement lines and determining the new easements on the ground.

Experience

Surveying Services for Natural Gas Lines, Washington County and Green County, Pennsylvania. *Vista Gathering, LLC.* Surveyor. Pennsylvania Boundary surveying, responsible for reviewing survey information. Michael Baker provided surveying services for new natural gas pipelines ranging in length from one mile to nine miles throughout Southwestern Pennsylvania. Services included routing; re-routing; preliminary topographic surveys locating obstructions, property evidence, proposed route as indicated by land agents, woodland, utility, road, stream, and railroad crossings; and tying of the resultant mapping into the state plane coordinate system and vertical datum by the use of OPUS to generate the alignment sheets. Michael Baker also provided construction stake-out surveys, including preliminary centerline for property owner review and constructability walk; final stakeout for construction, including right-of-way and LOD; development of as-builts; and downloading and processing of data for submittal to and upload to client-specific geo-referenced GIS software.

Williams Midstream - Surveys. *Williams Midstream.* Surveyor in Charge. Responsible for supervising all deed and boundary work to determine the location of the right of way for new gas pipelines. During the construction phase of the projects he was in charge of the survey crews during LOD staking an as-built construction. Under an existing Master Service Agreement, Michael Baker provided surveying services for well over 100 new natural gas pipelines in various lengths throughout south western and eastern Pennsylvania. Services included routing; re-routing; preliminary topographic surveys locating obstructions, property evidence, proposed route as indicated by land agents, woodland, utility, road, stream, and railroad crossings; and tying of the resultant mapping into the state plane coordinate system and vertical datum by the use of OPUS to generate the alignment sheets. Michael Baker also provided construction stake-out surveys, including preliminary centerline for property owner review and constructability walk; final stakeout for construction, including right-of-way and LOD; development of as-builts; and downloading and processing of data for submittal to and upload to client-specific geo-referenced GIS software.

Rice Energy. *Rice Energy, LP.* Surveyor in Charge. Responsible for supervising all deed and boundary work to determine the location of the right of way for new gas pipelines. During the construction phase of the projects he was in charge of the survey crews during LOD staking an as-built construction. Under an existing Master Service

Years with Michael Baker: 2

Years with Other Firms: 31

Licenses/Certifications

Licensed Surveyor, Pennsylvania, 2011, SU075308

Professional Surveyor and Mapper, Florida, 2007, LS 6605

Land Surveyor, Ohio, 1992, 7431

ACI Concrete Field Testing Technician - Grade 1, 01181657

First Aid/CPR Training, 2015

OSHA 10-Hour Safety Training, 2015

NS Roadway Worker Protection Certification, 2015

PennDOT Concrete Field Testing Technician, Pennsylvania, 2013, 556763



Agreement, Michael Baker provided surveying services environmental compliance services numerous locations throughout south western Pennsylvania. Services included routing; re-routing; preliminary topographic surveys locating obstructions, property evidence, proposed route as indicated by land agents, woodland, utility, road, stream, and railroad crossings; and tying of the resultant mapping into the state plane coordinate system and vertical datum by the use of OPUS to generate the alignment sheets. Michael Baker also provided construction stake-out surveys, including preliminary centerline for property owner review and constructability walk; final stakeout for construction, including right-of-way and LOD; development of as-builts; and downloading and processing of data for submittal to and upload to client-specific geo-referenced GIS software.

General Architect and Engineering Services Contract, U.S. and its Territories. *U.S. Coast Guard, CEU Cleveland.* Surveyor. Responsibilities included all the field surveying for this project to include complete Topographic Survey which included 3D Scanning of a 4+ acre site in Georgia. Michael Baker is providing services under a U.S. Department of Homeland Security \$50 million, 10-year indefinite delivery-indefinite quantity general architect and engineering contract for work at U.S. Coast Guard facilities within the U.S. and its territories. The scope of the contract includes modifications and renovations to existing structures as well as new construction. Facility types and applications include space planning, light commercial buildings and their mechanical and electrical systems, site utilities, waterfront facilities, dredging, structural inspections, and runways.

General Engineering Consulting Services, Beaver County, Pennsylvania. *Brady's Run Sanitary Authority (Formerly Chippewa Township Sanitary Authority).* Surveyor. Reviewed easements for new sewer lines. Michael Baker provided general engineering consulting services from 2007 to support the ongoing operations of the sanitary sewerage system, including collection, conveyance, pumping, and treatment components. Michael Baker's services included field surveying; design engineering; preparation of bid packages; on-site construction monitoring services; review of development plan submissions; assistance with preparation of the annual operating budget and the annual review of the authority's user charge system; preparation of special studies and reports; attendance at board meetings, work sessions, and other meetings; preparation of permit and grant applications for projects; and geographic information system services.

Buckeye Lake Dam Improvements, Fairfield County, Ohio. *Ohio Department of Natural Resources.* Surveyor. Surveyor in Charge of Topographic Survey for Bathometric for Lake. Used Sonomite Depth Finder and GPS. Michael Baker provided engineering services to bring Buckeye Lake Dam into compliance with current regulations. Michael Baker's services included a site assessment, permitting, final design, and construction administration.

E02721, WO4, S.R. 422 Culvert Replacement Preliminary Design, Indiana County, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Surveyor. Reviewed pre-design survey. Michael Baker provided engineering services for the replacement of two bridges on S.R. 422 over Curry Run and a tributary to Curry Run, and evaluated the need for a turning lane at the Cunningham Road intersection. Michael Baker's services included project management; alternatives development and evaluation; a Level 1B categorical exclusion; surveying; preliminary stream relocation, drainage, and stormwater management design; preliminary cross sections, horizontal and vertical geometry; typical sections; preliminary pavement and subbase types; a preliminary geotechnical investigation; right-of-way investigation; preliminary type, size, and location studies; preliminary maintenance and protection of traffic plan; a safety review submission; and coordination with utilities throughout the design process.



John A. Miller, P.L.S.
Senior Surveyor

General Qualifications

Mr. Miller is a seasoned Licensed Surveyor with over forty years of experience. He has managed and directed crews for various survey projects including control surveys for aerial mapping, as-built surveys, property surveys, subdivision and land development surveys, topographic surveys for sewer and water projects, and construction stakeouts. Mr. Miller has managed projects from initial client contact to completion, prepared cost estimates for projects, performed court house research, deed plotting, boundary line resolution, plotted and reduced field data, managed subdivision layout and erosion sedimentation plans, prepared Highway Occupancy Permits and DEP planning modules, prepared agency applications and obtained approvals, attended municipal meetings, prepared legal descriptions, created plans using computer aided drafting, and volume calculations for landfill air space.

Years with Michael Baker: 15
Years with Other Firms: 30

Degrees

A.S., 1972, Civil Engineering
Technology, Williamsport Area
Community College

Licenses/Certifications

First Aid/CPR Training, 2017
OSHA 10-Hour Construction Outreach
Training, 2015
e-RAILSAFE Certification, 2014, 40904
NS Roadway Worker Protection
Certification, 2015
Professional Land Surveyor,
Pennsylvania, 1984, SU033614E

Experience

Historic Marine Barracks Washington Building 8 Renovation, Marine Barracks Washington, Washington, D.C.U.S. Navy NAVFAC Washington. Surveyor. Topographic and 3D laser scanning of existing facilities at the Historic Marine Barracks at Washington DC. By the use of the 3D laser scanner the historic nature of the building was recorded. Michael Baker provided design, engineering, and historic preservation services for the renovation of Building 8, a 47,000-square-foot historic structure constructed between 1903 and 1906 that is part of the U.S. Marine Corps Barracks and Commandant's House National Historic Landmark Site. The project included a sensitive phased renovation with integration of existing communications and networks running through the building from other sections of the campus to the Commandants House at the north end of the site. The scope of the renovation work addressed structural modifications to reflect space requirements; mechanical, electrical, and plumbing systems upgrade; communication system upgrade; fire protection system and life safety review and upgrade; Americans with Disabilities Act (ADA) analysis and compliance; and anti-terrorism/force protection (AT/FP) compliance to the maximum extent practicable. The procurement documents required integration of sustainability design into the renovation work, and the building is expected to meet a LEED®Silver certification.

On-Call Contract for Engineering Services, Various Locations within Allegheny County, Pennsylvania. Allegheny County Department of Public Works. Surveyor. Directed survey crew in gathering survey data needed for the design of a culvert replacement on Cochran Mill Road for the Allegheny County Department of Public Works. Michael Baker has been providing on-call engineering services for a variety of roadway, traffic, and parks projects under an indefinite delivery-indefinite quantity contract since 2009. Work orders are issued for specific projects and services. Assignments include providing a CADD operator to work in the client's office on an as-needed basis; overseeing surveying services to gather data for the design of road paving and reconstruction projects; developing designs for the relocation of county and local roads to accommodate an industrial plant expansion; designing a boat launch at North Park Lake; conducting a traffic need study on several roads; and performing a comparison of stream alignment over a period of years, using historical aerial photography.



Design of Tactical Equipment Maintenance Facility and Equipment Concentration Site Warehouse, Fort McCoy, Wisconsin. *U.S. Army Corps of Engineers, Louisville District.* Surveyor. Responsible for directing survey crew for the location and topographic survey to determine drainage patterns at Fort McCoy. Processed survey data and created base drawing. Michael Baker was the designer of record for the design-bid-build delivery of an approximately 58,000-square-foot, two-story modified large Tactical Equipment Maintenance Facility (TEMF) and an approximately 44,000-square-foot, one-story Equipment Concentration Site Warehouse, along with 30 acres of gravel hardstand designated for organizational parking. Tasks were performed under an indefinite quantity-indefinite delivery engineering agreement. Both structures were designed to achieve LEED® Silver certification and the TEMF warehouse has achieved certification. Michael Baker's services included architecture, surveys, environmental investigation, geotechnical oversight, all site and building engineering, cost estimating, value engineering, and LEED® certification administration.

Consulting Engineer Services, Moon Township, Pennsylvania. *Moon Township.* Surveyor. Directed survey crew for various surveys for Moon Township Park. This included the establishment of several project benchmarks for proposed projects and an ALTA survey. Michael Baker is serving as the consulting engineer for the township during 2016. Michael Baker's services include design engineering, general and on-site inspection services during construction, surveying, municipal separate storm sewer system permit reporting, environmental and geotechnical services, project reviews, grant application preparation, and other miscellaneous engineering services that are required to support the operations of the township.

Non-Michael Baker Project Experience

Property Survey of 1500 Acres, Centre County, Pennsylvania. *Krislund Camp.* Surveyor. Property survey of 1,500 acres of mountain land in Centre County, PA. Performed reconciliation and located existing stone piles in rugged, rocky, mountain condition by static and RTK GPS with Topcon Hyper GA and with Topcon GTS-603 total station. Reduced survey data and boundary line resolution. Set corners on new subdivision line, blaze, painted and flagged property lines.

Property Survey of 800 Acres, Centre County, Pennsylvania. *Aquilas Peachey.* Surveyor. Property survey of 800 acres of mountain land in Centre County, PA. to be transferred to the Pennsylvania Game Commission. Performed reconciliation and located existing stone piles in rugged, rocky, mountain condition by static and RTK GPS with Topcon Hyper GA and with Topcon GTS-603 total station. Reduced survey data and boundary line resolution. Set corners on new subdivision line, blaze, painted and flagged property lines.



William Dawson
Spread Lead / Senior Surveyor

General Qualifications

Mr. Dawson has considerable experience on diverse types of survey projects. He is skilled in the operation of electronic total stations, dual frequency GPS equipment, RTK GPS, submeter GPS and digital/conventional levels. During field operations his responsibilities include data collection, feature coding, line codes and note taking. He has worked throughout many states including Pennsylvania, Ohio, New York, New Jersey, West Virginia, Virginia, Maryland, Delaware, Mississippi, Louisiana and others.

Experience

Dominion - Microwave and Radio Towers, Pennsylvania, West Virginia, and, Ohio. *Dominion Transmission, Inc.* Instrumentman. Performed GPS control and conventional topographic site surveys. The project involved developing a wireless synchronous optical network ring for the company's communications network of Dominion Transmission's natural gas pipeline network in Pennsylvania, Ohio, and West Virginia. Approximately 25 tower facilities were involved.

On-Site Pipeline Design Services, Metro Cleveland Area, Ohio. *Dominion East Ohio.* Surveyor. Responsible for a detailed corridor survey using Leica conventional and GPS equipment. Provided on-site pipeline design and CADD services to augment Dominion East Ohio's existing in-house engineering staff. Michael Baker's personnel worked as members of DEO's project teams on various types of natural gas distribution systems in the metro Cleveland, Ohio area. Field reviews of the proposed designs were done to verify the feasibility of the proposed designs.

Cardinal Pipeline Survey, Kenova, West Virginia, to Columbus, Ohio. *Marathon Pipe Line (Formerly Marathon Ashland Petroleum LLC).* Instrumentman. Responsible for performing field to finish construction stakeout, as-built surveys and geographical information system data collection for a 14", 149 mile pipeline. Michael Baker performed the field survey to finish construction stakeout, as-built surveys, and geographical information system data collection for a 14-inch, 149-mile-long petroleum pipeline. The 149-mile-long pipeline was the largest pipeline construction project in Ohio history. The pipeline will supply 80,000 barrels of petroleum and other liquid products per day to refineries in Columbus, Ohio.

GPS Data Collection, Pennsylvania and Ohio. *NiSource Corporate Services Company.* Party Chief. Responsible for gas line locating using Trimble GPS paired with a spar locator (Pennsylvania); Responsible for day-to-day assignments of field crews and tracking of field crew progress. Also responsible for maintaining all field equipment (Ohio).

Millennium Pipeline Project, Westchester County, New York. *Columbia Gas Transmission Corporation.* Instrumentman. Performed a conventional and GPS Pathfinder line survey. The Millennium Pipeline Project is a proposed 450 mile long 24" diameter natural gas transmission line proposed to bring gas across Lake Erie from Canada. The gas will then travel westerly across the entire southern portion of the State of New York.

<p>Years with Michael Baker: 24 Years with Other Firms: 2</p> <p>Licenses/Certifications CPR Certified, 2017</p> <p>Instrument Proficiency Data Collectors</p> <p>GPS</p> <p>Leica Disto - Pro (Handheld EDM)</p> <p>Leica GS 15</p> <p>Leica TCRA 1101 Total Station</p> <p>Leica TCRM 1103 - Motorized w/Reflectorless Total Station</p> <p>Leica Viva GNSS Receiver</p> <p>Levels</p> <p>Optical Plummet</p> <p>Pentax SC-5 Data Collector</p> <p>Radio Frequency Line Locators</p> <p>Topcon GTS 2B Total Station</p> <p>Topcon GTS 3B Total Station</p>
--



Homestead Pipeline Project, Southeastern West Virginia & Virginia. *Columbia Gas Transmission Corporation.* Instrumentman. Performed extensive conventional and GPS line surveys. Michael Baker performed extensive submeter GPS and conventional surveys for six separate segments totaling approximately 48 miles of existing pipeline corridors scattered between Southeastern West Virginia and Virginia. This included initial magnetic line locating and marking of existing pipelines, slope stationing of affected portions, location of all pertinent corridor features, fences, markers, property line evidence, detailed road and stream crossing profiles, foreign pipeline crossings, etc. As this corridor survey was completed, the data was processed, plotted into dereferenced digital photogrammetric mapping with contours for plan/profile sheets in typical Columbia Gas CAD Standards (MicroStation format). All affected property line and landowner roddages were established from field surveys and noted on the final plans for right-of-way acquisition purposes, along with construction staging areas, etc. In addition, Michael Baker performed detailed site plan surveys for four existing compressor station sites for use in future equipment layouts, etc. plus considerable road and stream crossing permit plats.

Miscellaneous Surveying and Mapping Projects, Various Locations. *Columbia Gas Transmission Corporation.* Instrumentman. Performed various pipeline surveys. Over the past nine years, Michael Baker has performed well over 120 miles of extensive gas line surveys and mapping projects throughout the Columbia Gas System. Michael Baker located an existing gas line in the field and provided a boundary and topographic survey of the subject parcel of land, also showing the gas line on the plat. A field crew used line-locating and GPS and/or conventional total station equipment to mark and locate the existing gas line in the field and collect topographic features and boundary evidence. The boundary of the parcel was calculated in the office, and the field crew set missing corners in the field. An exhibit drawing was provided to the client boundaries, topography, improvements, and the gas line.

Telecommunication Surveys and Mapping in Pipeline Corridors, New York, Pennsylvania, Maryland, Ohio, and West Virginia. *Columbia Transmission Communication Corp.* Instrumentman. Completed various GPS and conventional survey projects. Over 2 years (1999 - 2000), Michael Baker has performed considerable field surveys (GPS and conventional) and related CAD route mapping for the following network projects involving proposed telecommunications lines in existing gas pipeline corridors over a total of 840 miles.

Pipeline #1278 Replacement Project, Easton to Weber Road, Quakertown to Hellertown, in Northeastern, Pennsylvania. *Columbia Gas Transmission Corporation.* Instrumentman. Responsibilities as a survey crew team member include detailed pipeline corridor surveys by marking existing gas pipelines within the corridor with magnetic locators in advance of all GPS surveys. Also performed submeter accuracy GPS surveys, locating all pertinent features within the existing pipeline corridor. Conventional surveys w/ electronic total stations were also utilized as necessary where more detail was required. This project consists of extensive surveying, mapping, engineering, and geotechnical support for replacing an existing pipeline "in the same original ditch location" from Easton to Weber Road – approximately 43 miles, and from Quakertown to Hellertown – approximately 11 miles. Following coordination of right-of-way records and survey permissions, Michael Baker mobilized multiple field crews to the site near Easton, Pennsylvania.

Surveying and Photogrammetric Mapping Services, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Instrumentman. Responsible for performing first, second and third order conventional surveys, high construction staking, and GPS surveys on numerous projects during Michael Baker's long standing professional relationship with PennDOT on an as-needed basis assigned by work orders. Michael Baker provided surveying and mapping services for transportation projects continuously since 1986, through a series of nine open-end contracts. Michael Baker's services included aerial photography; first-, second-, and third-order conventional surveys; highway construction staking; global positioning system surveys; analytical aerotriangulation; digital topographic mapping; and digital orthophotos on an as-needed basis.



Kimberly A. Bartos

Wetlands and Environmental

General Qualifications

Ms. Bartos has managed projects specialized in stream and wetlands impacts, conducting comprehensive field investigations of the environmental conditions of aquatic habitats, providing expertise in assessment for ecological impacts, macroinvertebrate surveys, preparation of comprehensive technical environmental applications for permits in accordance with both state and federal requirements.

She has provided environmental services, ranging from identifying aquatic resources and ecological habitats to assisting with the preparation of the required permits. With specialized environmental services associated mainly with aquatic resources, she has focused on the delineation of wetlands and identification of watercourses associated with the Environmental Assessments of federal and state projects, land development projects and Public and Private Clean Water Act Violations. She has managed projects ranging from permitting wetland and stream impacts, mitigation of resources - design and construction services for wetland and stream restoration and mitigation projects, conducting environmental assessments, macroinvertebrate surveys and conducting Phase I Environmental Assessments.

Experience

Permitting and delineation for gas pipelines, gas well pads and well pad access roads. *Confidential Clients.* Project Manager and Environmental Scientist. Responsible for conducting wetland delineations and stream assessments along proposed pipeline projects, followed with the preparation of required permits and submittal to regulatory agencies.

Wetland and Stream Mitigation Design. *CONSOL Energy, Inc.* Responsible for the design of approximately 3 acres of wetland mitigation area and over 800 linear feet of stream restoration including construction oversight. This project mitigated for impacts that occurred at the Blacksville 13W Airshaft.

Restoration of the Canonsburg Lake's Aquatic Ecosystem. *Redevelopment Authority of Washington County.* Assistant Project Manager. Assisted with the permitting and design of the proposed lake maintenance project working with both state and federal agencies.

Chapman Dam Restoration Project. *DCNR.* Environmental Scientist. Conducted plant survey for potential impacts to a species of concern. Assisted with the permitting and design of the proposed lake maintenance project working with both state and federal agencies.

Panel E-17 Restoration. *CONSOL Energy, Inc.* Responsible for the State and Federal permits concerning the restoration of the flow diminution at an Unnamed Tributary to Crafts Creek in order to maintain stream flow within the surface of the restored, natural streambed

Years with Michael Baker: 5

Years with Other Firms: 16

Education

B.S., 1999, Biology/Applied Ecology,
University of Memphis

Licenses/Certifications

Wetland Certification Training,
Pennsylvania, 2003

Wetland Certification Training,
Pennsylvania, 2012

Rosgen I, Applied Fluvial
Geomorphology, 2004

PA DCNR Wild Plant Management
Permit, Pennsylvania, 2015

US Department of Labor, Mine Safety
and Health Administration, Safety
Training 2013



Non-Michael Baker Project Experience

Marcellus Gas Well Pad, West Virginia. *Confidential Client.* Responsible for conducting forensic aquatic resource identification on impacted wetlands and streams at numerous sites. In addition, EPA requested restoration plans to address the impacts using the West Virginia Stream and Wetland Valuation Metric, which was used as a tool to assess impacted aquatic resources and aid in the design of the restoration of those impacted resources.

Gasline Right-of-Ways, in Pennsylvania. *Confidential Client.* Conducted the baseline wetland delineation and water assessment investigations and reports prior to pipeline layout in order to avoid and/or minimize aquatic resources impacts in Cambria County, PA. Submitted both state and federal permits when required. Responsible for the environmental portions of the permit applications including the Environmental Assessment and stream mitigation plan.

Numerous Wetland and Stream Mitigation Monitoring Investigations, throughout Southwestern Pennsylvania. Monitored wetland mitigation site as required by the Joint USACE Section 404 and PA DEP Chapter 105 Permit conditions to evaluate the success of the replacement wetland. Included with the Wetland Monitoring Report, vegetation, aquatic, and wildlife species observation list, as well as suggested corrective action items for existing and potential problems regarding the success of the mitigation wetlands.

Airport-Wide Wetland Delineation Investigations, Pittsburgh International Airport (PIT), Pittsburgh, Pennsylvania. *Michael Baker International.* Responsible for aquatic resource identification. Conducted wetland delineations for approximately 2000 acres of airport property, using the 1987 U.S. Army Corps of Engineers' *Wetlands Delineation Manual*. The wetland boundaries were identified, flagged and mapped using Global Positioning System (GPS) and overlain on digital base mapping for analysis.

Airport-Wide Wetland Delineation and Environmental Assessment, Morgantown Airport, Morgantown, West Virginia. *Michael Baker International.* Responsible for aquatic resource identification, stream assessment, Phase I Environmental Assessment and Threatened and Endangered Species Habitat Identification. Conducted wetland delineations for approximately 62 acres of airport property using the 1987 U.S. Army Corps of Engineers' *Wetlands Delineation Manual*. The wetland boundaries were identified, flagged and mapped using Global Positioning System (GPS) and overlain on digital base mapping for analysis. In addition, I assessed onsite watercourses according to US EPA Rapid Bio-Assessment Protocols, conducted a Phase I Environmental Assessment according to ASTM E-1527-05 and identified potential Indian Bat habitat.

Brady's Run Lake Maintenance Project, Brighton and Chippewa Townships, Beaver County, Pennsylvania. Responsible for the Environmental Assessment and the design of the stream mitigation for the state and federal permits. Conducted the wetland delineation and water assessment investigations along with the reports. Identified potential stream mitigation areas to address future stream bed and bank erosion. The lake was filled-in with sediment, along with several forebays located on Brady's Run. The County required permits for the maintenance activities on the lake and forebays, along with stream mitigation/stabilization to address potential stream erosion.

McCandless Towns Center, McCandless Township, Allegheny County, Pennsylvania. Responsible for the Environmental Assessment and the design of the wetland and stream mitigation. Conducted the wetland delineation and watercourse assessment investigations and reports. The client was required to obtain both state and federal permits for the proposed development which included a mix of large box retail, small box retail, entertainment (movie theater), office buildings, hotels and residential areas. Identified potential wetland and stream mitigation areas both on and offsite.



Shane Stauffer

Environmental Associate

General Qualifications

Mr. Stauffer specializes in aquatic, biologic, and environmental studies for a multitude of projects involved with oil and gas, air transportation, and coal mining industries. He has been responsible for wetland delineations and aquatic surveys used in regulatory review, environmental compliance programs, and environmental impact assessments. Along with this work in the field, Mr. Stauffer has written Pennsylvania Chapter 105 General Permits for the pipelining industry and local municipalities. Outside of biologic work, Mr. Stauffer serves as a Cultural Resource Field Crew Supervisor for Michael Baker Internationals cultural resource department.

Years with Michael Baker: 2

Years with Other Firms: 1

Education

Bachelor's Degree in Environmental Science. Pennsylvania State University

Licenses/Certifications

38 Hour Army Corps of Engineers Wetland Delineation Certification

Plants of the Wetland Boundary - Northeastern Region Training Certification

Experience

Beta Pipeline System. Rice Energy. Wetland Scientist. Responsible for wetland delineations and aquatic surveying for aquatic resource avoidance measures.

Polen Run Stream Lining Mitigation. Consol Energy. Responsible for construction monitoring and bi-weekly flow analysis.

John Blue Bridge Cultural Resource Study. West Virginia DOT. Field Technician. Responsible for the conduction of Phase 1 and 2 cultural resource studies.

Chapel Drive Waterline Relocation Project. North Sewickley Township Water Authority. Responsible for wetland delineation and aquatics survey, as well as writing Pennsylvania Chapter 105 General Permit Application.

Non-Michael Baker Project Experience

Hydrogeology of Latest-Holocene Recurved-Spit Complex, Presque Isle, PA. Pennsylvania State University. Performed a yearlong bi-weekly well monitoring assessment to determine hydrologic communication between Lake Erie and Presque Isle State Park's pond systems in varying substrates. This project was delivered to The Regional Science Consortium at Erie, Pennsylvania's Tom Ridge Environmental Center.

Southwest Pennsylvania Dam Engineering Technician, Pittsburgh, PA. Pennsylvania Department of Environmental Protection. Conducted Category 3 and 4 dam inspections for the Pennsylvania DEP's Division of Waterways and Wetlands.

Emerald and Cumberland Coal Mine Surface Subsidence Survey, Waynesburg, PA. Wallace and Pancher, INC. Assisted in the stream surveys located above active, and previously active, coal mining sites in order to detect surface subsidence as a result of mining activity. This work required daily heavy field labor and was used to protect aquatic resources at risk of potential impact.



Joseph H. Burawa, P.G.

Environmental Assessments

General Qualifications

Mr. Burawa is a geologist with over 20 years of experience in geological, hydrogeological, and solid and hazardous waste investigations. He has been responsible for numerous projects including environmental site assessments, voluntary action cleanup programs, underground storage tank compliance, hazardous and solid waste management, and environmental compliance. He has developed numerous site investigation workplans, supervised the implementation of those workplans as the project geologist, and interacted with regulatory, subcontractor, and legal personnel.

Experience

Phillipsburg Center - Land Development, Center / Potter Townships, Pennsylvania. *Phillipsburg Center Associates.* Geologist. Responsible for conducting numerous individual Phase I environmental assessments prior to development. Served as site inspector responsible for data collection, interpretation, and report generation. Castlebrook Development, a Pittsburgh-based developer of commercial and public properties, retained Michael Baker to investigate, design, and permit a 75-acre, 18-parcel property. The subject site was located in Center Township and Potter Township, Beaver County, Pennsylvania. The site was on the north side of S.R.18, northeast of Beaver Valley Mall, and west of Township Market Place. The property was located on sloping land with a steep slope down to the Ohio River on the north side of the property.

Phillipsburg Center - Target Store Civil Design, Center Township, Beaver County, Pennsylvania. *Castlebrook Development, L.P.* Task Manager. Responsible for a Phase I environmental site assessment investigation. Castlebrook Development, a Pittsburgh-based developer of commercial and public properties, retained Michael Baker to provide civil engineering and permitting services for a 124,717 square foot Target store located on Subdivision Lot 6 of the Phillipsburg Center Land Development Plan approved by Center Township Board of Supervisors.

Schedule was very important on this project. Michael Baker utilized the talents of 16 employees at various times to provide Castlebrook with excellent responsiveness and quality. Cost was controlled by the short time frames for each task.

Valley View Downs Harness Racing / Gaming Complex, Mahoning Township, Lawrence County, Pennsylvania. *Centaur, Inc.* Task Manager. Responsible for conducting and writing a Phase I Environmental Assessment, follow-up sampling event report, and Acid Mine Drainage Report under the NPDES permit submittal. Michael Baker was retained by Centaur, Inc. to provide general civil and environmental engineering services associated with the proposed Harness Racing/Gaming complex. The 250-acre site will contain a 270,000-square-foot Grandstand/Clubhouse/Casino building, a one-mile harness racing track, eight horse barns, an administration building, dormitory, paddock and various support buildings, a 4,000-vehicle customer parking lot and 100-horse-trailer parking spaces.

Years with Michael Baker: 14

Years with Other Firms: 11

Education

B.S., 1990, Geology, University of Pittsburgh

Coursework, Civil and Environmental Engineering, University of Pittsburgh

Licenses/Certifications

Professional Geologist, Pennsylvania, 2001, PG003241

Professional Geologist, Wyoming, 1998, PG-2649

Professional Geologist, Texas, 2003, 6717

Professional Geologist, Arizona, 2004, 41392

Professional Geologist, North Carolina, 2007, 2120

Licensed Remediation Specialist, West Virginia, LRS-123



Kohl's, Marshalls, Dress for Less, Monaca, Center Township, Pennsylvania. *Castlebrook Development, L.P.* Task Manager. Responsible for a Phase I environmental site assessment investigation. Castlebrook Development, a Pittsburgh-based developer of commercial and public properties, retained Michael Baker to provide civil engineering and permitting services for a 135,400 square foot "big box" strip center located in the Stone Quarry Commons Development.

General Technical Assistance Contract (GTAC 3 and 4) - Pennsylvania Superfund Program, Various Sites, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Project Manager. Responsible for interacting with the client, tracking budgets, and QA/QC of deliverables for well abandonment activities of numerous sites. Michael Baker was selected to provide the PADEP with general technical assistance and environmental consulting relating to Pennsylvania's Environmental Cleanup, Land Recycling (Act 2), and Storage Tank Programs, as well as Comprehensive Multi-Site Agreements and other associated remedial programs. The contract consists of a series of work assignments (task orders) for sites across the state that had been identified by PADEP as posing a threat to public health and/or the environment, but did not qualify for inclusion on the Federal National Priorities List under CERCLA. These assignments included storage tank closure and management, site characterizations, engineering feasibility studies, engineering design, construction inspection, provisions for bottled water and residential water systems, and third-party reviews.

Phase I Environmental Site Assessment, Wilkinsburg, Pennsylvania. *Pittsburgh History & Landmark Foundation.* Project Manager. Responsible for client interaction, tracking budgets, and QA/QC of deliverables. Michael Baker performed a Phase I Environmental Site Assessment (ESA) of five parcels located in Wilkinsburg, Pennsylvania. The preparation of this document was conducted in general accordance with the American Society for Testing and Materials (ASTM) Standard E 1527-05, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process." In addition the United States Environmental Protection Agency (USEPA) final rule for conducting "all appropriate inquiry" (AAI), scheduled for inception on November 1, 2006, was considered in preparing this ESA.

Currie Landfill Site, Erie, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Geologist. Responsible for developing and implementing work plans to investigate a former unlined disposal area possibly containing hazardous waste drums. The investigation included a surface water and sediment, and groundwater investigation. Responsibilities also included data collection and interpretation, and report preparation. The Currie Landfill Site project involved work plan and cost estimate development, site surveying and mapping, conceptual site modeling, pre-design investigation activities, and a detailed design (drawings and specifications) of a soil capping system. The work was completed in two phases at a total project cost of about \$250,000.

Phase I and Phase II Environmental Site Assessment, West Mifflin, Pennsylvania. *Confidential Client.* Geologist. Served as a field geologist responsible for conducting a Phase I environmental site assessment, including some limited soil, paint chip, and wipe sample collections. Also responsible for data collection, interpretation, and report generation. Michael Baker performed a Modified Phase I Environmental Site Assessment (ESA) of an active automobile service station for consideration of future purchase by the client.



Andrew A. Frishkorn, P.G., L.R.S.
Project Manager/Senior Geologist

General Qualifications

Mr. Frishkorn is a long time resident of Quaker Valley, who has diverse educational and practical experience related to geological, hydrogeological, solid and hazardous waste investigations under a variety of geological settings and regulatory conditions. He has been responsible for development and/or implementation of Phase I & II Environmental Site Assessments (ESAs), hazardous waste and hydrogeological investigations throughout the United States, including Southwest Pennsylvania. These projects have been conducted to meet the requirements of state and federal regulatory programs (e.g., Act 2, RCRA and CERCLA) for a variety of steel, chemical, energy, transportation, manufacturing, military, and other governmental clients.

Mr. Frishkorn's areas of expertise include: project management; work plan preparations for geological and contamination characterization; subcontractor procurement and oversight; field sampling of wastes, soils, groundwater and surface water; design and supervision of monitoring and extraction well installations; subcontracting and contractor oversight; geological and chemical data evaluation; interpretation of geologic/hydrogeologic settings with respect to the migration of hazardous constituents in the environment; property transfer and regulatory negotiations, RCRA compliance and permitting activities; waste management plans; remedial cost estimates; specification writing and Brownfields redevelopment.

Experience

Phase I/ II ESAs for Brownfields with the Beaver County/Ohio River Brownfields Coalition, Beaver County, Pennsylvania. *Stromberg-Garrigan & Associates, Inc.* Project Manager. Responsible for Phase I Environmental Site Assessments (ESAs) for multiple parcels, development of a site investigation strategies for two dump sites in Aliquippa and Center Township, attended meetings with local governmental officials, prepared a USEPA approved Quality Assurance Project Plan for the Beaver County Brownfields program and submitted a Sampling and Analysis Plan to USEPA for review and approval. The Phase II ESA work will proceed upon USEPA approval. The work is being performed under a USEPA brownfields grant.

Phase II Environmental Site Assessment (ESA)/Remedial Cost Estimate, Washington County, Pennsylvania. *Confidential Energy Producer.* Project Manager. Responsible for performing a Phase II ESA on a roughly 32-acre parcel to support a property transfer assessment. The assessment included the following elements: (1) PADEP File review, (2) Deed Review, (3) Owner Interview, (3) Field Inspection, (4) Work Plan Development, (5) Utility Clearance, (6) Geophysical Survey, (7) Tunnel Inspection, (8) Membrane Interface Probe (MIP) Survey, (9) Surface Soil Sampling, (10) Test Pits and shallow soil samples, (11) Geoprobe Sampling for Soil and Groundwater, and (12) Asbestos and Hazardous Materials Survey. Based on the results of the investigation, order of magnitude remedial cost estimates were developed.

Years with Michael Baker: 32

Years with Other Firms: 1

Degrees

Graduate Studies in Hydrology,
University of Virginia

B.S., 1984, Geology/Chemistry, Juniata
College

Licenses/Certifications

Professional Geologist, Pennsylvania,
1994, PG000376G and nine other states

Licensed Remediation Specialist, West
Virginia, 1998, LRS #47

OSHA 40-Hour HAZWOPER
Certification, 1986

OSHA 8-Hour HAZWOPER Supervisor
Training, 1993

OSHA 8-Hour HAZWOPER Refresher
Training, 2017, 1504165137666

PEC Safety Certification, 2014



General Technical Assistance for the Pennsylvania Superfund Program, Statewide, Pennsylvania. *Pennsylvania Department of Environmental Protection.* Project Manager. Also served as geologist on multiple projects under PADEP's Hazardous Sites Cleanup Act (HSCA). Performed multiple Phase II Environmental Site Assessments throughout Pennsylvania, to characterize soil, groundwater surface waste, sediment and indoor air in accordance with Act 2 guidelines. Michael Baker completed over 100 work assignments under these three contracts.

Pennsylvania Department of Transportation – Phase I Environmental Site Assessments and Waste Management Plans. *Pennsylvania Department of Transportation.* Technical Manager. Mr. Frishkorn has managed implementation of scores of Phase I ESAs for multiple roadway corridor and bridge projects throughout southwest Pennsylvania in accordance with Publication 281. When required, sampling plans, health and safety plans and remedial action/waste management plans specifications and associated contract special provisions and cost estimates were prepared in accordance with the requirement of PA Act 2 and associated PADEP Management of Fill Policy. During construction, Mr. Frishkorn provided senior environmental consultations to the Department, with respect to remediation/waste management issues.

Lower Hill Redevelopment Infrastructure Project, City of Pittsburgh, Allegheny County, Pittsburgh, Pennsylvania. *Sports and Exhibition Authority of Pittsburgh and Allegheny County.* Technical Manager. Oversaw preparation of a Phase I Environmental Site Assessments for multiple parcels, located at the site of the former Civic Arena. The project was performed in accordance with PennDOT Publication 281. Provided recommendations in support of the proposed redevelopment for management of soils. Michael Baker is performing preliminary engineering and final design services for the infrastructure associated with re-creation of the street grid system for the Lower Hill Redevelopment Infrastructure Project (former Civic Arena site). The project includes the infrastructure (streets, sidewalks, utilities, and landscaping) necessary to support proposed development of the site to attain LEED® certification. Michael Baker will provide design services, including preliminary engineering, final design, and construction phase services. In addition, Michael Baker will prepare the environmental document and obtain the environmental clearance required to advance the project, including an environmental site assessment, Phase I and II archaeological investigations, and a pre-final geotechnical engineering report.

S.R. 1022, Oak Road Phase III Environmental Site Assessment, West Deer Township, Allegheny County, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Technical Manager. Conducted a Phase III ESA using Geoprobe sampling to evaluate soils containing arsenic, cobalt and petroleum. Traffic control was required to perform the sampling. Developed recommendations and specification for management of soils during construction in accordance with Pennsylvania's Management of Fill Policy. Developed construction specifications for the bid package.

S.R. 28, East Ohio Street Improvement Project, Allegheny County, Pennsylvania. *Pennsylvania Department of Transportation, District 11-0.* Technical Manager. Prepared assessment reports for the award winning State Route 28 expansion project. The project included a geophysical survey, and collection of soil and perched water samples from test pits, Geoprobe borings, geotechnical borings, hand-auger borings. Additionally, the buildings were inspected for asbestos and hazardous materials. The data was used to develop a waste management plan and health and safety plans, special provisions and remedial cost estimates for incorporation into the bid specifications. Performed negotiations with PADEP concerning waste disposal. Assisted the Department with on-going construction management support, attended project control meetings as needed and provided senior level reviews of environmental submittals from the construction subcontractor. Answered any environmental or safety questions that were raised during the project and coordinated with other environmental staff when needed. Michael Baker provided comprehensive engineering and environmental services to upgrade a 2-mile, four-lane section of S.R. 28 between the Chestnut Street Ramps and the Millvale Interchange to a limited-access expressway.



Moon High School and Middle School Campus

Moon Township, PA

Baker was retained by Eckles Architecture and Engineering, in conjunction with the Moon Township School District, to prepare the design drawings for a renovated High School and Middle School combined campus. The site is located between University Boulevard and Beaver Grade Road in Moon Township, Allegheny County, Pennsylvania.

The existing campus consists of several athletic fields, a multi-purpose stadium, a Middle School and a High School. It was determined that the existing Middle School would be demolished, a new High School built in the same general area, and the existing High School renovated into a new Middle School. In addition, athletic fields, access roads, parking areas, along with approximately 80% of the entire campus will be renovated or relocated.

The project documents included the preparation of an Existing Conditions Plan, Site Plan, Horizontal Control Plan, Grading and Storm Drainage Plan, Utility and Paving Plan, Soil Erosion and Sedimentation Control Plan, Stormwater Management Plans including both above ground and underground detention systems, written Technical Specifications and miscellaneous Bid Documents as required for both Municipal and State approvals and construction. Several phases of construction were required, as the existing schools will remain open during the construction of the proposed facilities, as well as the limited space for construction.

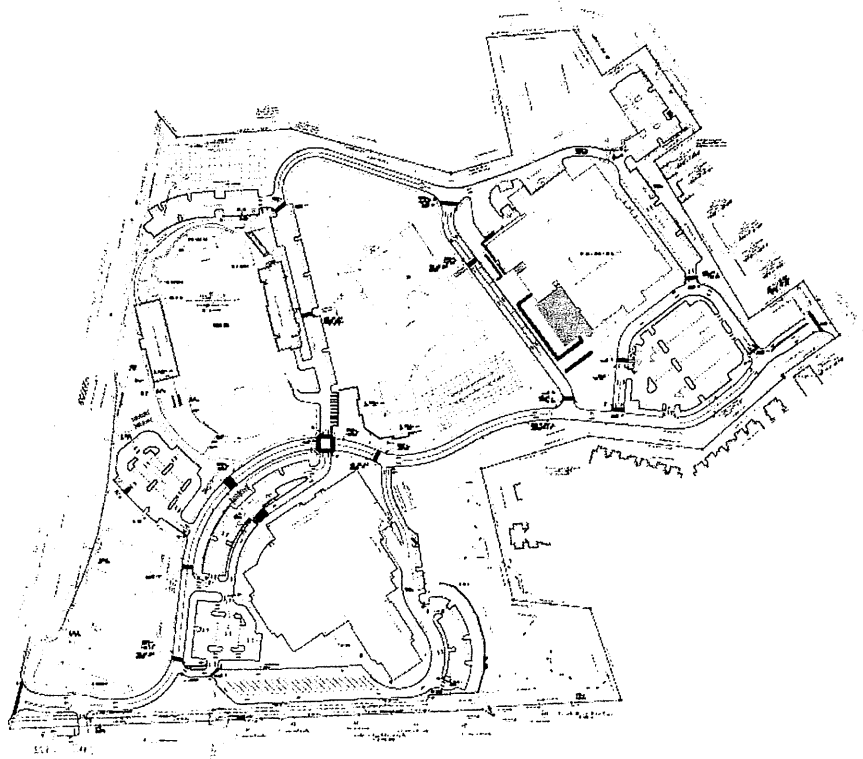
Both the local Municipality and the School District have required the various parties in the design team to provide significant phasing information to minimize the amount of disruption to ongoing school functions / events during construction. Baker also provided coordination with the Architect throughout the design phase to ensure the project met with both the aesthetic and budgetary requirements of the District.

Client

Eckles Architecture and Engineering
301 North Mercer Street
New Castle, PA 16101

Baker's Role

- Site/Civil engineering
- Construction plans and specifications
- Utility design and coordination
- NPDES permitting and stormwater management
- Surveying and mapping
- Coordination and permitting with governmental agencies
- Construction phase services





Pine-Richland Upper Elementary School

Richland Township, PA

Baker was retained by the Pine-Richland School District to perform the design of the Eden Hall Upper Elementary School building. The site is located in Richland Township, Allegheny County, PA. The Upper Elementary School includes grades 4 through 6 and was designed to harmoniously blend in with the existing surroundings to create an on-site, outdoor science lab environment. The stormwater management pond was designed as a "wet" pond to facilitate the growth of wetland vegetation and small aquatic animals.



This project included the preparation of an Existing Conditions Plan, Site Plan, Horizontal Control Plan, Grading and Storm Drainage Plan, Utility and Paving Plan, Soil Erosion and Sedimentation Control Plan, Technical Specifications and other miscellaneous Bid Documents as

required for both approvals and construction. Baker also completed the PennDOT road widening and traffic signalization for the access driveway.

Baker coordinated with the Developer throughout the construction phase, responding to "Requests for Information," performing site inspections, and providing general engineering support until the project's completion.

Client

Pine-Richland School District
702 Warrendale Road
Gibsonia, PA 15044

Mr. James C. Manley
Phone: (724) 625-7773

Completion Date

2008

Baker's Role

- Site/Civil engineering
- Construction plans
- Technical specifications
- Utility design and coordination
- Site lighting
- Soil erosion and sedimentation control
- Surveying and mapping
- Coordination and permitting with governmental agencies
- Traffic signalization design





Geotechnical Open-End Services

Allegheny County, Pennsylvania

Baker was retained by the County in 2002 to provide on-call Geotechnical support to address Geotechnical impacts to the County's aging infrastructure. Geotechnical services provided under this contract included emergency response, landslide remediation, addressing lateral support issues, retaining wall failures, drainage improvements, flood facility studies, dam inspections, dam rehabilitation, roadway subgrade evaluations, subsurface investigations, laboratory testing and construction support. Since many of these impacts were impacting County facilities, Baker was also providing all inclusive services for field surveys, mapping, property delineations and investigations, utility coordination, maintenance and protection of traffic, site design, hydraulic and hydrologic analysis, construction cost estimates and plans and specifications for construction. Baker won two awards under this contract including the Engineer's Society of Western Pennsylvania's Project of the Year Award for the Hurricane Ivan Emergency Response.

Other projects completed under this assignment included:

- ◆ Pitcairn Road Stabilization,
- ◆ Glen Mitchell Road Landslide Stabilization,
- ◆ New England Road Retaining Wall Replacement and Reconstruction,
- ◆ Broughton-Cochran Mills Road Rockslope and Retaining Wall Reconstruction,
- ◆ Pine Creek Dam Inspection,
- ◆ North Park Lake Civil Projects,
- ◆ North Park Lake Trail Alternative Analysis,
- ◆ North Park Nature Center Pond Dredging,
- ◆ Greensprings Road Stabilization,
- ◆ Hope Hollow Road Retaining Wall Stabilization,
- ◆ Deer Lakes Lake #1 Dam Improvements,
- ◆ Turtle Creek Flood Control Project Base Map Development
- ◆ Stow Township SR 51 Slide
- ◆ Delafield Avenue Retaining Wall Failure
- ◆ Pierson Run Road Landslide
- ◆ Cliff Mine Road Retaining Wall Failure
- ◆ McNeilly Road Drainage Investigation

Client

Allegheny County Department of Public Works
County Office Building
542 Forbes Avenue
Room 501
Pittsburgh, PA 15219-2904

Joseph A. Olczak
Director of Public Works
412.305.4005

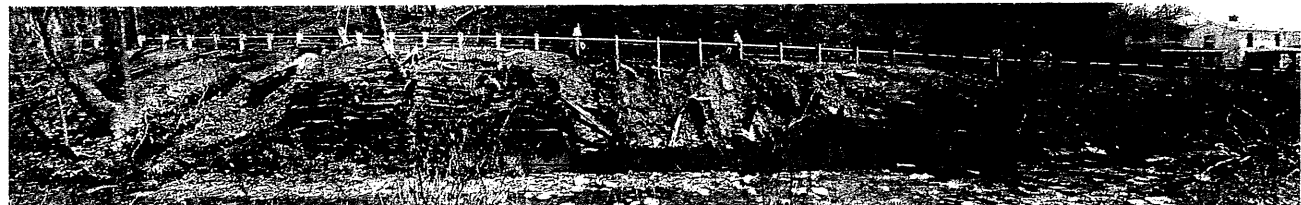
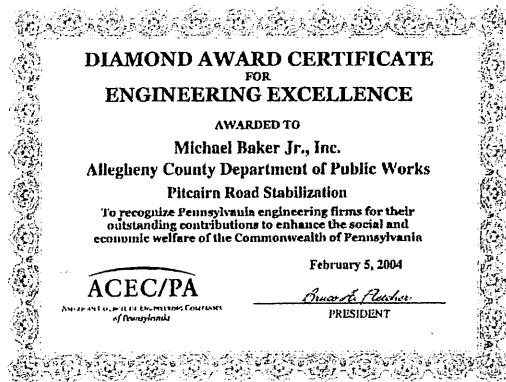
Joseph Hrabik, P.E., Esq.
Deputy Director of Public Works
412.350.5902

Completion Date

2007

Baker's Role

- Geotechnical Services
- Roadways and Walls
- Dam Inspection / Rehabilitation Designs



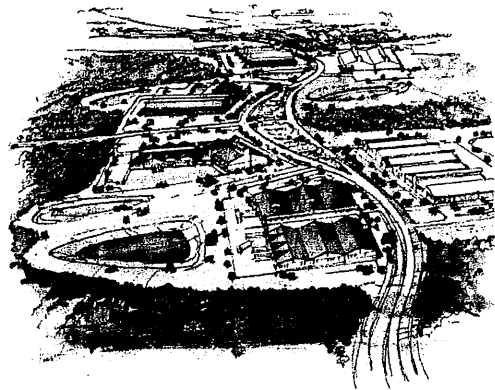
Pitcairn Road Slope Failure



Starpointe Mixed Use Development Master Plan

Washington County, Pennsylvania

Michael Baker has teamed with LaQuatra Bonci Associates to form a multi-disciplinary team that has developed a master plan for the re-use of over 1,000 acres of vacant brownfield land in Washington County, Pennsylvania. The design for this project will incorporate an ecologically friendly approach to the development of a mixed use, industrial, and commercial center. The project will attempt to mitigate the impacts of the development through the use of low impact design elements and ecologically sensitive site planning.



The project followed a three part process; exploratory phase, master plan development and final plan creation.

Client

Fourth River Development LLC acting on behalf of the Washington County Council on Economic Development

116 Federal Street, Suite 260
Pittsburgh, PA 15212

Ms. Sally P. Flinn

Phone (412) 780-3780

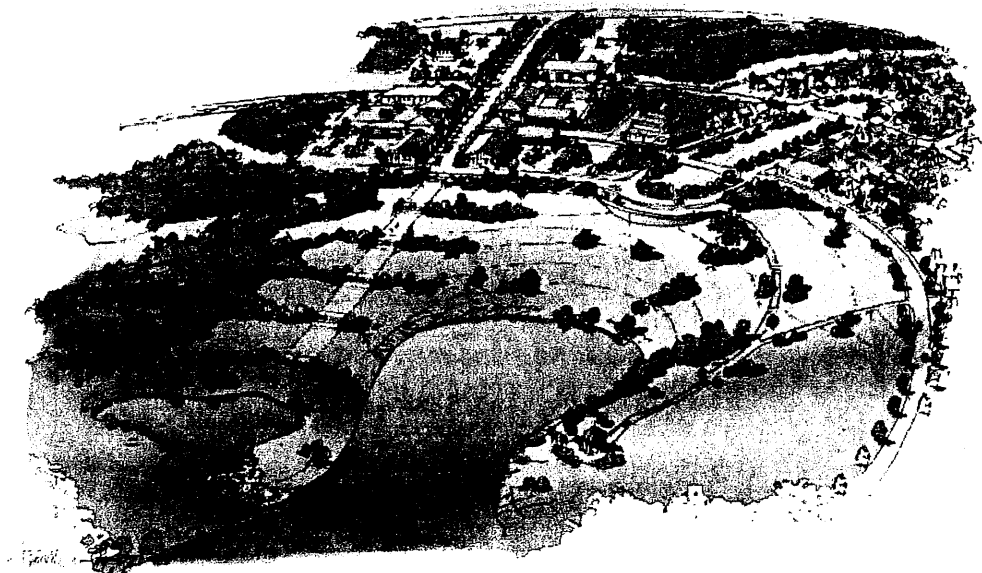
Baker's Role

- Site engineering
- Geotechnical engineering
- Traffic engineering
- Utility engineering

The exploratory phase was to investigate and assess all existing conditions and planning documents. Additionally, the team initiated a comprehensive public participatory process where community input was gathered and cataloged for consideration.

The master plan development phase prepared a program for the development of the site. Included in the site programming was a park and open space system in response to the community, design alternatives of potential park configurations that provided a mix of commercial, office and industrial land uses, and a set of development guidelines to be implemented for each land use type. The plan was then presented in a public forum for review and comment.

The final plan preparation consisted of taking the desired master plan configuration and refining it according to the owner and public commentary. The goal of the plan was to provide a guide for the development of the parcel that will be an economic engine for the region as well as a community supported development.

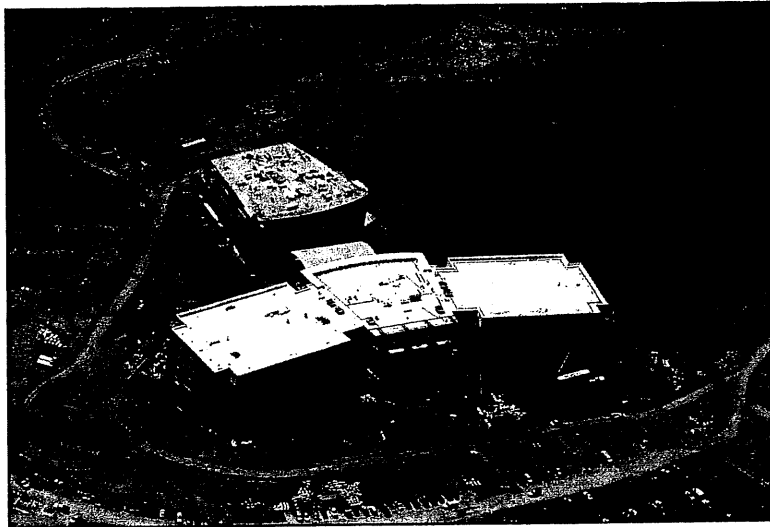




Dick's Sporting Goods Corporate Headquarters

Pittsburgh International Airport (PIT),
Pittsburgh, Pennsylvania

Baker performed complete site design, environmental permitting, traffic forecasting, access roadway design, taxiway and ramp design, and construction phase support services to develop a new, 670,000-square-foot corporate headquarters campus for Dick's Sporting Goods at Pittsburgh International Airport.



Site Design

Site design for the approximately 116-acre parcel required close coordination with the developer and consisted of surveying, geotechnical investigation, and grading and drainage plan development.

Surveying was performed to verify existing mapping. The existing utility lines near the project site were field located (including water, sewer, electric, natural gas, and communications), and plans were developed for the configuration of electric lines to serve the access roads and parking lots. An ALTA/ACSM Land Title survey was performed to determine property boundaries.

The geotechnical investigation analyzed existing soil and rock conditions and included laboratory testing. Data were used to perform pavement design and estimate the bearing capacity for foundation design and cut-and-fill stability.

Investigation of the site for potential hazardous materials was another integral step in site development. Baker conducted a Phase I ESA to identify past and present site uses and confirm the presence or absence of environmental hazards. The ESA involved a review of environmental records and databases as well as a visual reconnaissance.

A complete grading plan was prepared that provided for positive drainage away from the proposed buildings. Baker prepared an Existing Conditions Plan to depict utility location, property boundaries, and physical site

Client

Horizon Properties
375 Southpointe Boulevard
Suite 41
Canonsburg, PA 15317

Brandon Miles
Project Manager
724.743.7722

Completion Date

Estimated: 2012

Baker's Role

- Project Administration
- Highway Occupancy Permit Application Preparation
- Surveying
- Geotechnical Investigation
- Complete Site Design
- Phase I ESA Development
- EA Re-Evaluation
- Environmental Permit Application Preparation
- Airspacing Permit Application Preparation
- Traffic Impact Study
- Taxiway and Ramp Design
- Access Road Design
- Construction Drawing Preparation
- Construction Phase Support Services

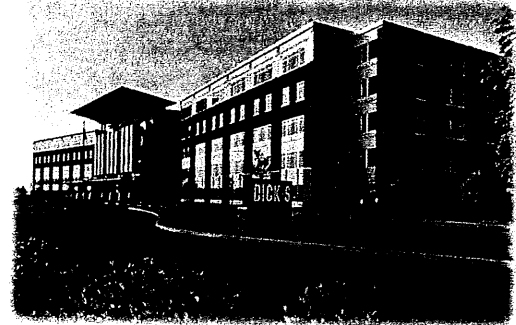


Three Rivers Trust Property - Preliminary Engineering Services

features, including wetlands and streams, contours, roadways, buildings, and fences. As well, Baker prepared a Design Development Plan based on the Conceptual Site Plan prepared by the site developer that illustrated the complete build-out of the property.

Both the grading permit application and final land development plans were prepared in accordance with local township ordinances. Baker also assisted the owner with obtaining relevant approvals from the township.

Drainage design was developed for the entire site. Drainage consisted of culvert designs for two stream enclosures as well as drainage designs for the parking lot and roadways. A hydrology and hydraulics report was prepared for the site which included the stormwater management plan for the development, prepared in accordance with Pennsylvania Department of Environmental Protection (PADEP) and local ordinance requirements.



Erosion and Sedimentation Control (E&SC) plans and sequencing for the development were also provided. E&SC plans were prepared in accordance with PADEP and Allegheny County Conservation District (ACCD) requirements. Baker also supported the owner in obtaining ACCD approval for the E&SC plans.

Environmental Permitting, Reevaluation, and Mitigation

Since the project would impact approximately 0.40 acres of wetlands and 1,250 feet of regulated stream channel, state and federal waterway permits were required. Baker prepared a PADEP Joint Chapter 105 Water Obstruction and Encroachment Permit/U.S. Army Corps of Engineers (USACE) Section 404 permit application and also applied for PADEP Section 401 Water Quality Certification. As part of the application, Baker revised the existing NPDES Phase II Stormwater Construction General Permit and prepared other supporting documents that include an erosion control plan, a site development plan/grading plan, preliminary and post-construction stormwater management plans, a hydraulics and hydrology report, and an Environmental Assessment (EA).

Stormwater management was a particularly important aspect of the project's development, given the project's location within the Montour Run Watershed. The stormwater management report required documentation of pre- and post-construction conditions and peak runoff discharge rates, as well as recommendations for drainage system design mechanisms that meet township and state regulations.

The EA for the waterway permits included a Wetland Identification and Delineation and Functions and Values Report and a macroinvertebrate survey, performed by subconsultants. Macroinvertebrate survey data were used to perform a biological assessment of the site's lotic systems. Physical habitat assessment included characterization of the existing condition of surface waters through literature review as well as field observation. An aquatic physical habitat assessment was conducted which consisted of estimations of in-stream habitat, channel morphology, bank conditions, and riparian habitat. The abiotic elements of surface water resources, including dominant aquatic vegetation, stream depth, bank conditions, and shading, were evaluated. The potential for both point and non-point source pollution indicators was also investigated. Baker prepared a summary for each surface water resource utilizing baseline stream data to obtain a broader, non-linear prediction of the spectrum of potential impacts to aquatic life and habitat.

Environmental investigations of the site also included wetland and stream mitigation. To satisfy project requirements, an impact-to-replacement mitigation ratio of 1:1 was established. Mitigation is being accomplished through separate, independent projects.



While the original EA for the parcel had been approved by the FAA for a particular tenant's use, re-evaluation of the document was necessary to obtain clearance for use of the property by Dick's Sporting Goods. Baker prepared a letter documenting that no additional environmental impacts would be realized from the new site development.

Traffic Analysis and Forecasting

Baker investigated the anticipated impacts from traffic generated by the proposed site development, which involved collection of data and projection of future traffic volumes, and recommended improvements to mitigate traffic impacts. The Traffic Impact Study was based on specific details of the proposed development, as well as data collected as part of the study. The existing conditions were analyzed to determine the current traffic operations of the study area roadways and intersections. Traffic data associated with the proposed development were added to the roadway network analysis assuming two phases of construction. Phase 1 will consist of 670,000 square feet of office space and Phase 2 (full build-out) will consist of the remaining 330,000 square feet. A cursory crash analysis was also conducted. Traffic signal warrant analysis was performed for seven intersections. Highway Capacity Manual methodologies were utilized to conduct a capacity analysis of the intersections in order to determine the level of service for the project area roadway network. The capacity analysis involved determining the required lane configurations to mitigate site traffic impacts and maintain an acceptable level of service.



Highway Occupancy Permit

Following the Pennsylvania Department of Transportation's (PennDOT) acceptance of the traffic impact study, Baker prepared a Highway Occupancy Permit application for the requested infrastructure improvements. Preparation of the application required various engineering services, including developing final roadway design plans for improvements to the Clinton/Flaugherty Run Road and Route 60 interchange; performing supplemental field survey work; assisting in preparing the limited access right-of-way dispensation package; modifying the Erosion and Sedimentation Control Plan and the NPDES stormwater permit for roadway improvements; designing drainage facility modifications to accommodate roadway requirements; developing roadway slope recommendations; developing traffic signal construction plans for various intersections in accordance with roadway geometry, right-of-way, utility location, and drainage design requirements; and preparing signing and pavement marking plans and a traffic control plan. Other duties performed by Baker include supporting PennDOT's project manager in PS&E document submission.

Access Road Design

Design plans that complied with the client's requirements for truck and traffic routing were prepared for the internal access roadway network. Hydraulic and hydrologic calculations were also developed to size the culverts needed for the proposed access roads. Lighting design for the roadways and parking lots involved establishing a power feed to serve the facilities. Subsequent light fixture and pole design will be performed by the owner.

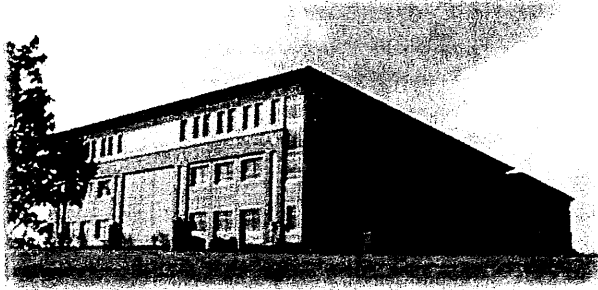
Construction Support Services

Construction phase support services may include reviewing construction material certifications to ensure that materials conform to design specifications, examining shop drawings, responding to contractor requests for information, and performing on-call reviews.



Airside Business Park
Moon Township, Pennsylvania

Baker worked with The Elmhurst Group (operating as Airside Business Park, LP) to develop the Airside Business Park, approximately 26 acres of property owned by Allegheny County at the Pittsburgh International Airport. The site is the location of the



Client

The Elmhurst Group
(Airside Business Park, L.P.)
1 Bigelow Square, Suite 630
Pittsburgh, PA 15219

*Mr. Andrew Gildersleeve
Phone: (412) 281-8731*

Baker's Role

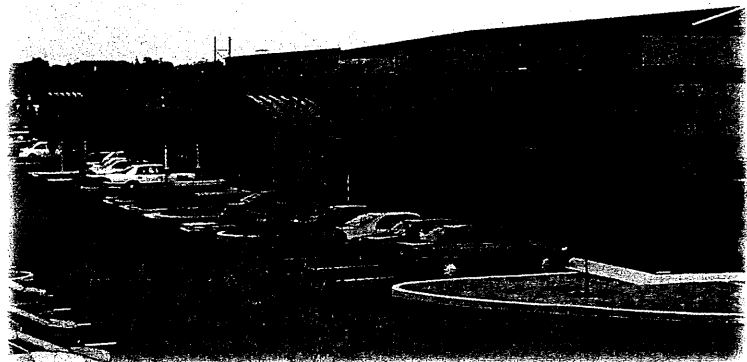
- Master planning
- Site/Civil engineering
- Utility coordination
- Agency coordination
- Architecture
- Landscape architecture
- Geotechnical investigation

former airport terminal parking lot along Business Route 60, between University Drive and the Thorn Run interchange. The development, under long-term land lease, includes five buildings: two 63,000-square-foot flex buildings, and three, three-story office buildings of various sizes.

Baker performed site civil engineering services including site planning and permitting, while coordinating with all of the various design elements required by Allegheny County. Baker also performed a geotechnical investigation which included test borings and laboratory testing. Foundation recommendations were provided for spread footing and drilled caisson foundations, retaining walls, slopes, slabs, and subdrainage.

The site design features an unusually high density of landscape materials and careful attention to parking circulation including pedestrian "collectors" leading to the office building's entrances. The space between the two main office buildings is designed as an outdoor court for use by the tenants.

Baker planned the flex buildings around an 80% office / 20% warehouse market mix. The flex buildings are designed for high-end office visibility from Business 60 with warehouse truck traffic sequestered behind the buildings. The office buildings are sited to provide maximum exposure and accessibility from the intersection of Business 60 and University Drive.





Woodlawn Road Extension and Utility Corridor

City of Aliquippa, Pennsylvania

The project site is located on the east side of S.R. 0051 within the Aliquippa Industrial Park. The area of work is the Woodlawn Road and Utility Corridor and has a drainage area of approximately 56 acres in size. A road, storm sewer system and sanitary system have been designed for future development assuming that appropriate stormwater detention facilities would be built for each area that will be developed. The sanitary system includes collection pipes, a pump station and a force main. The proposed alterations to the project site include grading, construction of utilities and paving.

Client

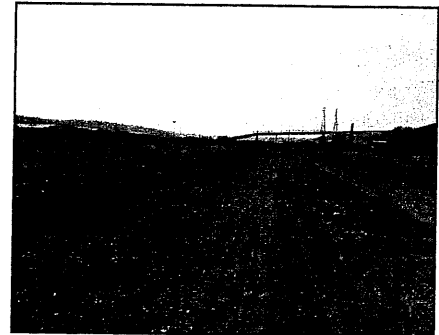
Beaver County Corporation for
Economic Development (BCCED)
250 Insurance Street, Suite 300
Beaver, PA 15009

Laura Rubino
724.728.8610

The storm water discharge resulting from the development of the site will be conveyed via a proposed storm sewer system, with vegetated swale and rain garden to the Ohio River.

The work generally includes the following items:

1. Mobilization/ Demobilization which includes all permits, bonds and meetings.
2. Soil Erosion and Sediment Control.
3. Unclassified excavation (19,800 CY) and compacted fill (11,300 CY).
4. Sanitary sewer collection system (1,390 LF) of SDR35 PVC sanitary gravity pipe
5. Water distribution system connecting to the existing distribution system and replacing a portion in the southern portion of site.
6. Storm sewer system including collection system, rain garden and energy dissipater at the Ohio River discharge.
7. Sewage pump station and force main with a 120 GPM pump at 40' TDH and 4" dia. Class 52 ductile iron pipe (1151 LF) force main.
8. Bituminous roadway with subgrade and wedge curbs.
9. Landscaping/Revegetation over 3.1 acres along the slopes greater than 3:1 and a vegetated swale.



Construction Inspection Services

Baker identified four specific areas of construction services in which Baker assisted BCCED. These areas included surveying, inspections, preparation of as-built drawings, and construction contract administrative support.

- Surveying: Baker will mobilize a two-man crew to the Woodlawn Road extension location during mobilization to provide benchmarks and control points.
- Inspections: Baker will provide a construction site inspector from construction contractor mobilization until completion of the construction project site activities
- As-Builts: The contractor is primarily responsible for as-built drawings. Baker will review the drawings and comment on their accuracy based upon our field inspection reports. Follow-up surveys may be necessary to verify the accuracy of the as-built drawings.
- Construction Contract Administration Support: The project manager will be primarily responsible for documentation and communication with regard to safety, contract compliance, pay application requests, and the schedule.

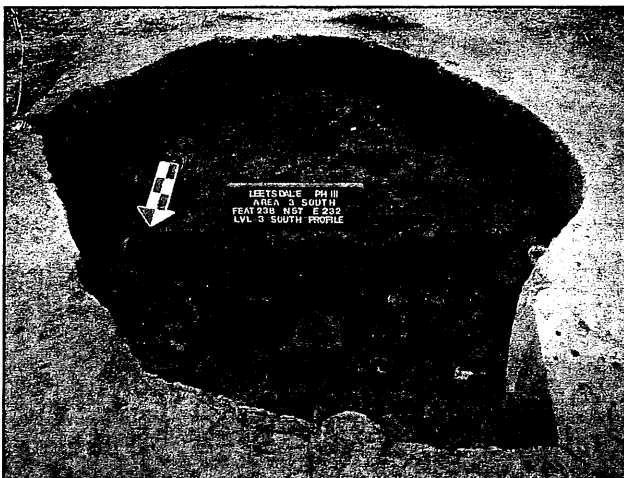


Leetsdale Archaeological Data Recovery, Area 3 Leetsdale, Pennsylvania

The Leetsdale Archaeological Project consists of a Phase III archaeological data recovery project in Area 3 of the Leetsdale Archaeological Site (36AL480). This archaeological site is a deeply stratified site located along the Ohio River in Leetsdale, Allegheny County, Pennsylvania. The project is being conducted as a team effort between Tetra Tech, Inc. and the Cultural Resource Section of Michael Baker Jr., Inc. for the Pittsburgh District, U.S. Army Corps of Engineers.

Excavations consist of a fixed 200 m block. To date, the project has revealed archaeological deposits dating to the Terminal Middle Archaic through Early Woodland periods (6000 B.C. - 1 A.D.). An artifact assemblage of over 21,000 artifacts has been recovered including prehistoric ceramics, stone tools, lithic debitage, and floral and faunal remains. Presently over 100 cultural features have identified and excavations have reached depths of 16 feet below the modern ground surface.

The nature of the archaeological site and the needs of the U.S. Army Corps of Engineers presented several challenges to the cultural resource effort. In order to provenience and track the artifacts being recovered, a computerized field data collection system was developed by Baker. This system allowed for up-to-the-minute artifact counts as well as the status of processing and analysis of the materials. Additionally, this system was used in conjunction with a Geographical Information System to allow for the creation of real-time distribution maps of artifact locations and concentrations. Using this system, we have been able to utilize detailed preliminary data to direct and focus the excavation efforts on a day-to-day basis.



Client

U.S. Army Corps of Engineers,
Pittsburgh District
Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4186

Completion Date

2008

Baker's Role

- Directed excavation
- Developed excavation plan
- Spatial Analysis
- Data Management
- Safety Monitoring
- Final Report Review
- Principal Investigator
- Directed Volunteer Program

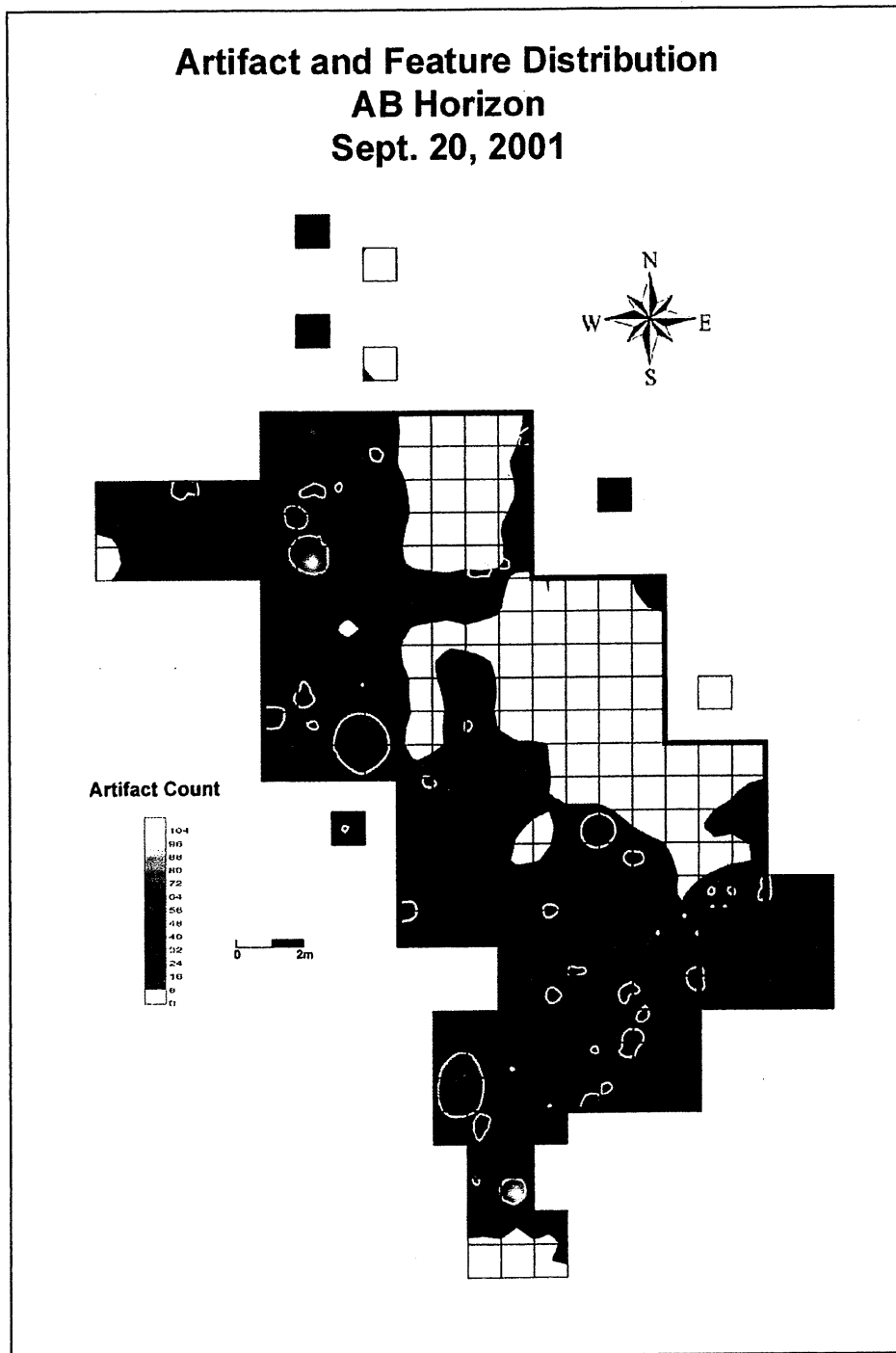


The deeply buried nature of the archaeological deposits has presented several challenges in methodology and logistics. The complex nature of the soil stratigraphy has required close coordination with the geomorphological consultants in order to modify excavation methodologies as needed to ensure data integrity as well as provide for the most cost effective approach to each situation. With deposits extending at least 16 feet below the modern ground surface, logistics, scheduling and safety are major issues in an undertaking of this complexity.



Project Features

- ◆ Complex and Deeply Buried Stratigraphy
- ◆ Excavation within an Active Construction Area
- ◆ Computerized Data Collection and Tracking Systems
- ◆ Scheduling, Logistics, and Safety





Northern Ambridge Redevelopment Ambridge, Pennsylvania

The Northern Ambridge Redevelopment project area once consisted of several steel manufacturing facilities that are now vacant or underutilized. The site is a classic "brownfield", situated in the central core of the Borough of Ambridge and has had a negative impact on the commercial, historical and residential uses that border the project area. The project site consists of approximately 60 acres in Ambridge, Beaver County, Pennsylvania. The southern end of the site is bounded by 11th Street, which connects to the Aliquippa-Ambridge Bridge over the Ohio River.

Baker's role was to evaluate the condition of the site, propose alternative concepts for site improvement, and prepare cost estimates to upgrade the condition of the site for possible sale and development. The goal of these services was to provide the Redevelopment Authority of Beaver County (RABC) with the following:

- ◆ Alternative site development concepts and associated cost estimates
- ◆ Condition evaluation of existing infrastructure (e.g., roads and utilities) and cost estimates of needed improvements for the site development concepts
- ◆ Condition assessment of existing structures
- ◆ Plans and conceptual cost estimates for demolition of abandoned structures and environmental remediation of the site
- ◆ Geotechnical evaluation of the site for future development
- ◆ At Baker's recommendation, a Photogrammetry and Topographic Mapping task was added.



Client

Redevelopment Authority of Beaver
County
Beaver County Courthouse
810 Third Street
Beaver, PA 15009

Frank Mancini, Jr.
Executive Director and Assistant
Secretary
724.728.3934 ext. 11313

Completion Date

2005



The client was the RABC, which obtained a planning grant for conceptual engineering. Moltoni Corporation (Moltoni) was the developer, which acquired 40 acres of the site during the implementation of the project. The location and environment of the project area caught the attention of Australian developer Rob Moltoni, who envisioned a mixed-use development consisting of industrial, commercial, and residential uses. Plans are to rehabilitate the buildings in the northern, industrial area of the site, and provide at least one new access road. Except for two buildings on the southern end of the site, and one office building, the remaining 30 buildings are to be demolished to provide space for the new development.

Baker prepared conceptual plans laying out the industrial, commercial and residential areas for the site including infrastructure. The Conceptual Engineering Plan was developed considering the following:

- ◆ Historical information
- ◆ Site topography and existing conditions
- ◆ Building assessment and assumed reuse of buildings L/M/N, O and 24.
- ◆ Reuse of existing utilities where feasible and cost-effective.
- ◆ Existing and proposed roads
- ◆ The conceptual layout of residential and commercial property described and shown in the Moltoni Corporation Feasibility Report.
- ◆ Feedback from multiple stakeholders including Beaver County Redevelopment Authority, PMET, Moltoni Corporation, Borough of Ambridge, and PADEP.

The plans consisted of 22 full-size drawings. The Conceptual Engineering Plan report provided an Environmental Remediation Plan and Demolition Plan, as well as a review of the local ordinances and permitting requirements.





North Shore Infrastructure Improvements Pittsburgh, Pennsylvania

Baker performed the final design for the North Shore Infrastructure Improvements associated with construction of Heinz Field (Steelers) and PNC Park (Pirates) facilities. The design included new roadway alignments as well as an upgrade to existing roadways. Following the demolition of Three Rivers Stadium the new roadway grid was extended through the site to form new development parcels.

Baker's responsibilities included rights-of-way, roadway alignment, sidewalk, pedestrian and roadway lighting, traffic signals, sanitary sewers, storm sewers waterlines and design of a new pedestrian underpass at North Shore Drive from Riverfront Park to the new Heinz Field. The project required extensive coordination throughout the design process between the stadiums, utility companies, the City of Pittsburgh, PennDOT and the Pittsburgh Water and Sewer Authority.

The project was designed, bid and constructed in four phases, each with its own preliminary and final design processes as well as construction bid packages. Design features included realignment of North Shore Drive away from the Allegheny River to make room for a riverfront park; reconstruction of existing streets to meet Central Business District Standards with granite curbs, decorative street lighting, trees and irrigation systems; design of a 120' pedestrian underpass structure with stone veneer to match the stadium and other architectural treatments; installation of new waterlines to service the development parcels between the stadiums and the new riverfront park; and redesign of the existing combined sewer system to provide separate dedicated sanitary and storm sewers. The projects were designed, bid and constructed on extremely aggressive fast track schedules to permit opening for the stadiums.



Client

Sports and Exhibition Authority of
Pittsburgh and Allegheny County
Regional Resource Center
425 Sixth Avenue, Suite 2700
Pittsburgh, PA 15219

Ms. Mary Conturo
Executive Director
Phone: (412) 393-0200

Baker's Role

Engineering Design and Consultation

Combined Sewer Separation

City of Pittsburgh officials and the Pittsburgh Water and Sewer Authority (PWSA) made a commitment to eliminate sewer overflows from the local combined sewer system serving the stadium and surrounding neighborhood. In conjunction with Baker's role on the North Shore Infrastructure Project surrounding Heinz Field and PNC Park, the decision was made to extend the project to cover combined sewer separation in the vicinity of Heinz Field, Community College of Allegheny County (CCAC), and the Carnegie Science Center.

In conjunction with engineers at PWSA, a comprehensive plan was developed to fully map and investigate the sewershed to determine all sources of storm water entering the system. Field activities included CCTV pipe inspection, manhole inspection, catch basin inspection and building dye testing. Following the extensive field activities, the sources of storm water inflow were identified and a plan for removal was developed.

Baker designed a combination of new sanitary sewers, new storm sewers and modifications to the existing system to provide for the separation of storm sewer flow within the street rights of way.



Provisions were made for new sanitary sewer laterals to serve Heinz Field, CCAC and other private buildings, thus allowing the conversion of some existing combination sewers to storm sewers. As with the rest of the North Shore project, the separation project was designed and constructed on a fast track schedule. The work was completed on schedule, and the City and PWSA's commitment to providing separated sewer systems and eliminating overflows caused by the new development was fulfilled.

Roadway Improvements

Baker developed plans for the roadway network in and around the new stadiums. The project consisted of approximately 15,000 feet of roadway and 8 signalized intersections, including warrant analysis timing, phasing, and interconnection. In addition, Baker was responsible for landscaping and lighting and was included in coordination meetings with the City of Pittsburgh, Steelers, and Pirates. The project presented all the challenges of design in a highly urbanized area. It required coordination with numerous underground utilities, relocation of facilities to accommodate construction placement of water and sewer lines for future development, and coordination with PaDOT for right-of-way permits and approvals.

Plans were prepared as 7 separate construction projects: 3 projects were for advanced storm, sanitary, and waterline construction and 4 projects were for roadway construction. The designs, which began in July of 1999, were required to accommodate opening of the sports facilities (PNC Park in April of 2001 and Heinz Field in August of 2001). Preliminary and final designs were completed in 14 months to accommodate completion of construction by opening day of the stadiums. The project consisted of approximately 15,000 feet of roadway with granite curbs; decorative street lighting; street trees with irrigation; 7 signalized intersections, including warrant analysis timing, phasing, and interconnection; and a 3-span pedestrian underpass structure from Riverfront Park to Heinz Field. The project presented all the challenges of design in a highly urbanized area. It required coordination with the City of Pittsburgh, Steelers, and Pirates and numerous underground utility companies, relocation of facilities to accommodate construction, placement of water and sewer lines for future development, and coordination with PaDOT for right-of-way permits and approvals.

Geotechnical

Baker provided geotechnical services to Continental Real Estate Companies for the development of the North Shore area between PNC Park and Heinz Field. Baker provided geotechnical services for the subsurface investigation, foundation analyses, foundation recommendations, and foundation construction monitoring.

The first site developed was an office building for Equitable Resources, Inc. The building foundation system is a combination of concrete auger cast in place piles and driven steel H-piles. The Allegheny Port Authority is installing the North Shore Connector portion of the Light Rail Transit system from the North Shore to downtown Pittsburgh. The connector is designed for parallel tunnels running from a station on the North Shore near PNC Park and connecting to the Gateway Subway Station underneath Stanwix Street on the light rail transit system already in place downtown. The route for the western tunnel is directly under the Equitable Resources building. Baker worked with representatives of the Allegheny Port Authority to design driven steel H-piles to withstand anticipated pressures and settlement resulting from tunneling under the building. The open bay between piles was spaced to accommodate the width of the tunnel. The remaining portion of the building's foundation system is auger cast piles. The building was designed with a full basement which complicated the construction. Old railroad facilities were encountered below grade requiring relocation of a few auger cast piles and redesign of pile caps to accommodate the relocation.

The second building developed on the site is a six-story, 270,000 square foot office building principally housing Del Monte Foods. The building provided approximately 40,000 square feet of retail space on the first floor. The building foundation system was constructed entirely on concrete auger cast-in-place piles. Auger cast piles were advanced to bedrock to achieve a greater capacity based on structural capacity not geotechnical capacity. The building is designed as two structures joined at the second floor, and was constructed without a basement.



Green Infrastructure Pilot Project
Broad Street and Broad Street Plaza
Pittsburgh, Pennsylvania

Baker provided planning and engineering services for a green infrastructure pilot project of site improvements to support a new hotel, office complex, and public plaza along Broad Street within Pittsburgh's East Liberty neighborhood to reduce combined sewer system overflow.

The project, which encompasses two city blocks, is the first green infrastructure initiative within the City of Pittsburgh.

Baker designed the green infrastructure needed to prevent the first inch of rainfall from entering the combined storm and sanitary system while adhering to local regulations and ordinances to the greatest extent possible.

Combined sewer overflow has historically been a significant problem in the Pittsburgh area. Baker's overall goal for green infrastructure application is to collect and infiltrate the first inch of rainfall, given that more than 95 percent of Pittsburgh's annual rainfall events are less than an inch in total depth. This will help to reduce the hydraulic loading of the combined sewer system and improve the operating efficiency of the collection system.

Baker developed the design concepts, presented them to the review agencies, and based on feedback, further modified the designs. Baker conducted flow monitoring to quantify study results and developed a visual monitoring and inspection protocol.

To promote public awareness, Baker created informational flyers. Baker also presented preliminary study results at the 11th annual conference convened by 3 Rivers Wet Weather, an organization dedicated to assisting Allegheny County communities in addressing untreated sewage and stormwater overflow.

Green technologies that Baker integrated into the site designs include bioretention systems, depressed tree boxes, pervious pavement, pervious concrete, pervious asphalt, green roofs, cisterns, and native plantings.

Baker anticipates that the green infrastructure best management practices applied for this project will decrease the site impermeable area by 42 percent.

Client

East Liberty Development, Inc.
6101 Penn Avenue, Suite 201
Pittsburgh, PA 15206

Mr. Nathan Wildfire
Sustainable Policy Coordinator
Phone: (412) 361-8061 x24

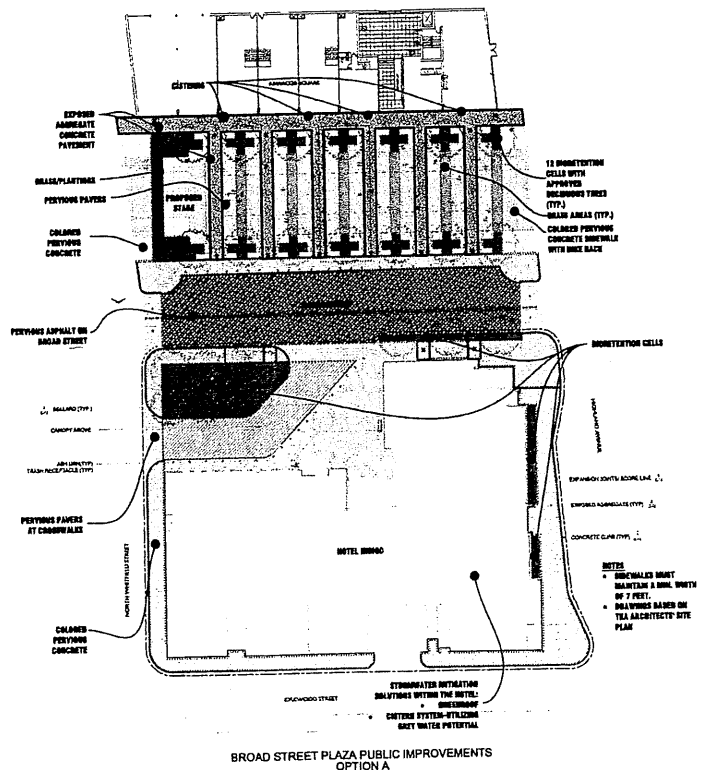
Additional References

City of Pittsburgh, Pennsylvania, Urban
Redevelopment Authority
200 Ross Street
Pittsburgh, PA 15219

Ms. Maribeth Hook, R.A.
Project Manager
Phone: (412) 255-6664

Baker's Role

- Planning and site design
- Data collection
- Flow monitoring
- Visual monitoring and inspection protocol development
- Public outreach coordination





Federal Hill Residential Development Pittsburgh, Pennsylvania

Baker has been providing conceptual and final design services for the Urban Redevelopment Authority (URA) Federal Hill Project, which involves the redevelopment of approximately forty-five existing residential parcels.

The scope of engineering and design work includes: field reconnaissance; geotechnical investigations; gas, electric and telephone utility coordination; water and sewer system design; roadway design; schedule development; and cost estimating.

Included in the scope of work is coordination of design work among numerous public and private entities including the S & A Homes (Developer), the City of Pittsburgh Department of Engineering and Construction, the Pittsburgh Water and Sewer Authority, the Allegheny County Health Department Plumbing Division, and the electric, telephone and gas utilities.

Baker began with a comprehensive review of the existing plans and work performed by others. Despite initial field reconnaissance efforts by the developer and their subconsultants, the project site continued to present a number of complexities due to the configuration of existing utilities and uncertainties regarding their age, location, condition and operational status.

Meetings were scheduled with PWSA and the Chief Plumbing Inspector to resolve outstanding issues regarding improvements required on the water and sewer systems, both within the public rights-of-way and on private property. To aid in resolving the issues, Baker arranged for supplemental field inspection work aimed at gathering additional information about the condition and status of the existing sewer systems. The information gained was used to develop water and sewer system improvements that were acceptable to PWSA, the County and the developer. These solutions helped reduce the cost burden and plan approval process for both the URA and the Developer. Baker prepared partial tap-in drawings for the first six dwellings so that the Developer could break ground in advance of the URA site improvements contract.



Client

Urban Redevelopment Authority of
Pittsburgh
200 Ross Street
Pittsburgh, PA 15219-2069

*Mr. Joseph Popchak, P.E.
Director of Engineering
Phone: (412) 255-6620*

Additional References

City of Pittsburgh, Pennsylvania, Urban
Redevelopment Authority
200 Ross Street
Pittsburgh, PA 15219

Baker's Role

- Field investigations
- Geotechnical investigations
- Utility Coordination
- Water and sewer design
- Roadway design
- Developer coordination



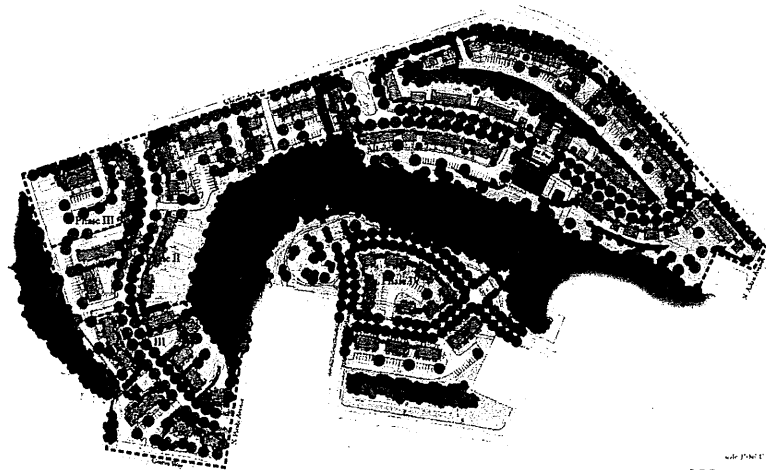
Garfield Heights Public Housing Redevelopment Pittsburgh, Pennsylvania

As part of a multidisciplinary consulting team, Baker is providing planning, civil engineering, and construction phase services for the Garfield Heights project, one of the major redevelopments in a neighborhood adjacent to the City of Pittsburgh's rapidly growing East Liberty area.

The demolition of outdated former public housing units and a high-rise apartment cleared the way for the project, which was anchored by a unique agreement between the client and a private developer who will ultimately manage the housing units. Other major stakeholders include the City of Pittsburgh (City), the Pittsburgh Water and Sewer Authority (PWSA), and the Allegheny County Health Department - Plumbing Division (ACHD).

In 2006, client hired a private developer to begin the task of re-inventing Garfield Heights. In 2007, a master plan was created and approved by the City. The consulting team that Baker is a part of was hired in early 2008 to advance the goals of the approved master plan. The team's first task was to study the approved master plan based upon experience with similar projects. Detailed grading and road alignment studies were prepared that identified problems with the approved master plan. For example, given the severe topography of the site, proposed roads were not designed to City standards, and the numerous proposed walls would change the neighborhood character. Therefore, a revised or "updated" master plan was proposed that eliminated the steep streets, eliminated the extensive retaining walls, and sought to minimize the cost of infrastructure improvements through a more efficient layout of the mains and service lines.

The revised Garfield Heights master plan was re-submitted to the City, underwent an extensive design review process, and was eventually approved by the planning commission in summer 2008. This formed the basis for construction drawings of four separate stand-alone phases that enabled demolition of the old housing and basic site preparation, while acquisition of necessary approvals from the City Planning Department, Zoning Office, Bureau of Building Inspection, Department of Public Works, ACHD, and PWSA progressed through the unique processes of those entities. During each phase, designs for private housing and public improvements were generally developed concurrently, with separate contracts for private and public work.



Design and construction phase services for the public improvements involved infrastructure to be owned by the City or PWSA. The Public Improvements Contract consisted of the complete relocation of Fern Street, the

Client

Housing Authority of the City of
Pittsburgh
200 Ross St., 9th Floor
Pittsburgh, PA 15219

Baker's Role

- Site design
- Utility design
- Grading and drainage design
- Erosion and sediment control
- Construction consultation during Phase I
- Full-time construction management and inspection during Phase 2



construction of a new Fern Circle, and the rehabilitation of portions of Columbo, Mossfield, and Schenley avenues as established by the master plan and overall site development plans. Also included were new water and sewer facilities and underground utilities. The private development plans established all grades throughout the site and designs for all of the stormwater collection and management facilities, all off-street pavements and sidewalks, and utilities outside of the right-of-way.

Upon approval of the preliminary plan for each phase, the process of developing the construction documents for both the public and private improvement contracts began. Investigations were conducted to determine the existing condition and makeup of elements such as streets, sidewalks, subsurface strata, and water and sewer facilities and other utilities. Layouts of new or rehabilitated City streets were developed in accordance with the housing master plan, preliminary designs, and City standards for roadway design. The team made a special effort to accommodate the many United Facilities Accessibility Standards - accessible housing units while not compromising the City's design standards.

Plans and specifications were developed and submitted to the City at typical percent-progress intervals and were continuously refined throughout the process. Concurrently, plans were submitted to PWSA and ACHD for approval of the proposed water and sewer facilities within the street right-of-way and outside of the right-of-way. This separation is based upon the division of what is publicly and privately owned. Electrical, telephone, and CATV lines within the redeveloped areas were switched from old overhead distribution systems to all underground systems by their respective owners, which necessitated extensive coordination to provide clear travel paths for the new underground facilities and service to the housing units. Ultimately, City and PWSA public improvements were packaged together for bidding and construction while the private site preparation and final development plans were kept as a separate package. The initial Phase 1 Public Improvements Contract was owned and administered by the Urban Redevelopment Authority and bid according to the authority's guidelines. Subsequent public improvements contracts were owned and administered by the developer, and ownership of approved infrastructure was turned over to the City and PWSA. The private developer retained ownership of all improvements outside of the right-of-way.

Construction of Phase 1 improvements commenced in January 2009 and was fast-tracked to comply with the developer's strict contractual agreements with funding sources, which required that the first 90 housing units and related public infrastructure be substantially completed by December 2009. Baker provided construction phase consultation during the Phase 1 work, which was completed in accordance with the developer's time frame, thereby ensuring that funding for future phases would be forthcoming.

The final design for Phase 2 public improvements began in July 2009, and ownership of the contract changed to the developer. Final City and PWSA approvals were granted by November 2009, and construction commenced shortly thereafter. Phase 2 construction was completed in November of 2010, and portions of the site with associated housing units were incrementally released in July and September of 2010. The developer requested that Baker provide full-time construction management and inspection services for Phase 2 to ensure that the work was performed in accordance with City and PWSA requirements and would be accepted for ownership accordingly. The public improvements work was closely coordinated with housing unit construction to ensure seamless transition.

Baker's performance on the private housing development and public improvements contracts for the Garfield Heights Redevelopment Project has been integral to the successful redevelopment of the neighborhood. Cost-effective designs and timely completion of work have ensured that funding for ongoing neighborhood redevelopment will continue.

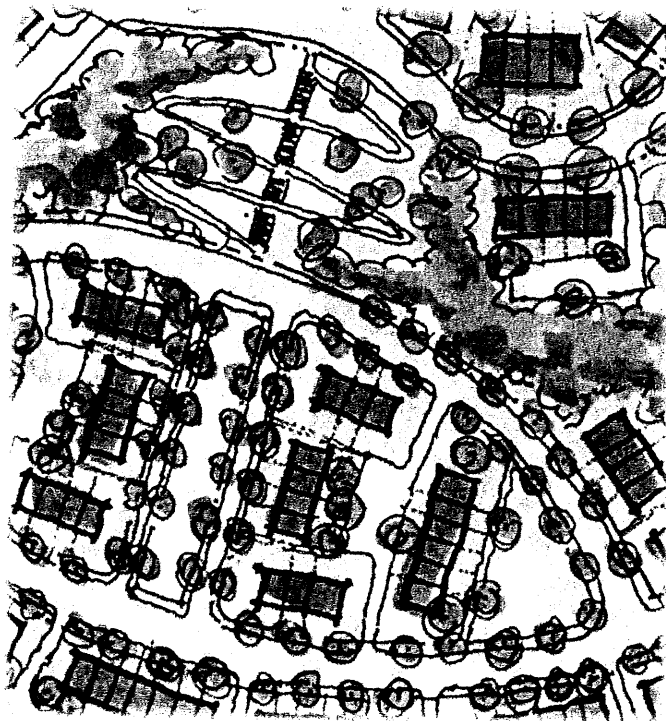


**Master Planning and Engineering Services for
Addison Terrace Public Housing Redevelopment**
Pittsburgh, Pennsylvania

As part of a multidisciplinary consulting team, Baker is providing planning, civil engineering, and construction phase services for the Addison Terrace project.

Addison Terrace is a multi-phase public housing redevelopment within the Hill District of Pittsburgh. Baker is providing full site development services for the project and is a member of the Master Planning Team that has developed a new master plan for the overall project. The project scope is to develop up to 400 housing units on approximately 40 acres of hilly to steeply sloped terrain and in the adjacent neighborhood as infill housing.

The project will redevelop the oldest remaining public housing site with a new mixed use development that will accommodate commercial and residential uses. The plans will completely demolish the existing development including public and private infrastructure and redevelop the entire street grid and public infrastructure. The new development will re-establish the regular street network that exists adjacent to the site with new streets, utility lines and other public infrastructure. Additionally, Baker will provide all private site development design from initial site preparation, through site improvements for all of the new housing units.



Design and construction phase services for the public improvements involve infrastructure to be owned by the City or PWSA. The Public Improvements Contract consisted of the complete redesign and construction of Addison, Elmore, Reed and Grove Streets as established by the master plan and overall site development plans. Also included are new water and sewer facilities and underground utilities. The private development plans established all grades throughout the site and designs for all of the stormwater collection and management facilities, all off-street pavements and sidewalks, and utilities outside of the right-of-way.

Layouts of new City streets were developed in accordance with the housing master plan, preliminary designs, and City standards for roadway design. The team is making a special effort to accommodate the many United Facilities Accessibility Standards - accessible housing units while not compromising the City's design standards.

Client

Housing Authority of the City of
Pittsburgh
200 Ross St., 9th Floor
Pittsburgh, PA 15219

Baker's Role

- Master planning
- Site preparation
- Infrastructure design
- Site design
- Utility design
- Grading and drainage design
- Soil erosion and sediment control