

# WALK ON

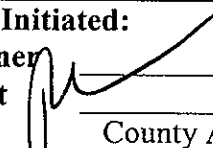
Lee County Board Of County Commissioners  
Agenda Item Summary

Blue Sheet No. 20061560

1. ACTION REQUESTED/PURPOSE: Concur with staff's recommendation to hire McLane Environmental, of Princeton, N.J., to conduct a compilation review of the Density Reduction/Groundwater Resource (DR/GR) studies to date.

2. WHAT ACTION ACCOMPLISHES: Provides an out-of-state, objective expert to perform a compilation/review of the DR/GR studies, using Best Available Science, and give the county an opinion of where we are to date.

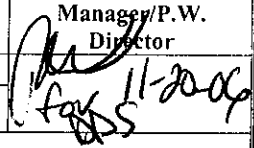
3. MANAGEMENT RECOMMENDATION: Approve.

4. Departmental Category: <b>WO # 1</b>		5. Meeting Date: November 21, 2006
6. Agenda: <input type="checkbox"/> Consent <input type="checkbox"/> Administrative <input type="checkbox"/> Appeals <input type="checkbox"/> Public <input checked="" type="checkbox"/> Walk-On	7. Requirement/Purpose: (specify)	
	<input type="checkbox"/> Statute	
	<input type="checkbox"/> Ordinance	
	<input type="checkbox"/> Admin. Code	
	<input checked="" type="checkbox"/> Other	
		8. Request Initiated: Commissioner  Department Division <u>County Administration</u> By: <u>Donald D. Stilwell</u> County Manager

9. Background:

(See Attached)

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	 11-2006

11. Commission Action:

- Approved
- Deferred
- Denied
- Other

**Winton, Peter**

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**From:** LaGuardia, Joan  
**Sent:** Wednesday, November 15, 2006 5:20 PM  
**To:** Winton, Peter  
**Cc:** Gibbs, Mary  
**Subject:** DR/GR points to consider

Hi, Pete.

As we discussed by phone Wednesday afternoon, here are some points about the DR/GR consultant search to keep in mind. Also, as you requested, I'll come to the meeting.

There were two over-arching objectives in this search:

1. To move quickly, because of the sense of urgency communicated by commissioners.
2. To remain objective by making no presumptions about the DR/GR and by working only to uncover accurate, up-to-date science for smart and defensible decision-making.

To accomplish that, we took these steps:

1. Collected names of consultants from any interested party who submitted them.
2. Did our own Internet-based search for consultants.
3. Contacted experts in academia and government to get the names of consultants. (See their names below)
4. From those recommendations, we had a group of 15 consultants. (See their names below)
5. We investigated them, talked to references, and talked to many on the phone. We eliminated anyone who previously worked on any development or environmental project in Southwest Florida, who owned property here or had any other connection that would give even the appearance of a stake in the consultant's report.
6. Then, we conducted formal phone interviews with five of the most promising consultants. (See their names below) We then eliminated anyone who lacked the multidisciplinary experience or contacts to do this study.
7. Took another week to review two last-minute suggestions, just to be sure we had the right ones.
8. Selected McLane Environmental, Joe Tomalavage and Shannon & Wilson as our final three and asked for a response to our Written Request for Proposal, including identification of specific team members and their expertise, project approach and time schedule.
9. After analyzing their submissions, we did another round of phone interviews and decided on McLane.

We feel confident that McLane Environmental and the team Charles McLane has put together will satisfy any demand for multidisciplinary abilities and absolute objectivity. Their team includes two environmental scientists, a wetland scientist/certified senior ecologist specializing in plant and animal science studies, a hydrogeologist, and an environmental engineer. They've had experience in very similar projects. At heart, they are scientists and will be governed by fact and scientific evidence. Of all the consultants, McLane did the best job of handling the delicate balance of assembling a team with Florida-specific knowledge but without any current stake in Southwest Florida.

RE#3: In addition to names submitted to us from a variety of sources, we contacted these sources for names:

- Environmental engineering deans at Auburn University, Georgia Tech and the University of South Florida's Center for Modeling Hydrologic and Aquatic Systems
- Charlotte Harbor National Estuary Program
- Georgia Water Resources Institute
- U.S. Geological Survey water resource directors in Alabama and Florida
- US Army Corps of Engineers
- US EPA

RE #4: Here's the full list of consultants we considered

- Alpha Geological, Clifton Park, N.Y.

11/17/2006

- David Blackmore & Associates Inc. (aka DBA Geotechnical & Environmental Engineers) Pottstown, Penn.,
- Leslie Blythe, P.E., Atlanta
- Entrix Inc., Houston, TX
- Errol Montgomery from Montgomery&Associates in Tucson.
- Dr. Aris Georgakakos, Head of the Georgia Water Resources Institute and professor of the School of Civil and Environmental Engineering, Georgia Tech,
- Janicki Environmental Inc., St. Petersburg
- Jones Edmonds, Associates, West Palm office
- MWH Global, Inc.
- David R. Godschalk, professor, Kenan-Flagler Business School
- Jeremy Osborne
- Shannon and Wilson, Inc., Geotechnical and Environmental Consultants, Seattle, Wash.
- PBS&J office in St. Pete
- Pascoe Environmental Consulting, Port Townsend, WA, Gary Pascoe
- Daniel B. Stephens and Associates, Albuquerque
- Weston Solutions, Inc., West Chester, PA
- Winchester Environmental Associates, Brian Winchester, Tampa

RE #6: This was the first round of formal phone interviews

- Shannon Wilson-
- Alpha Geological-
- Entrix-
- McLane Environmental
- Joseph Tomalavage

*Joan*

Joan D. LaGuardia  
Communications manager  
Lee County Department of Community Development  
(239) 479-8705  
[jlguardia@leegov.com](mailto:jlguardia@leegov.com)

**MEMORANDUM**  
FROM  
**OFFICE OF THE COUNTY MANAGER**

DATE November 8, 2006

  
FROM Donald D. Stilwell

County Manager

To: BoCC

**RE: Compilation of DR/GR Studies**

Commissioners:

Per the attached memo of September 8, this is to keep you apprised of where we are in the DR/GR Compilation/Study Review process.

Assistant County Manager Pete Winton, Joan LaGuardia with Community Development, and I conducted phone interviews of the three consultant finalists Monday. The finalists were Seattle-based Shannon & Wilson, McLane Environmental out of Princeton, N.J., and Malarkey Consulting of Pottstown, PA. Pete and Joan were the voting members of the panel and selected McLane Environmental.

The contract is less than \$100,000 and will be done under the County Manager's spending authority. In that vein, we are intentionally trying to keep this process as objective, unbiased, and apolitical as possible.

McLane has wide latitude in how to accomplish the task other than they need to be free of both internal (staff) and external (community) influences.

The idea being that they give us their objective opinion as to where we are to date with all of these studies, and what the studies tell us – particularly with respect to what the science tells us. We are looking at a four-to-six month time frame for completion.

After that is done, then will be the time for community input and Board consideration of McLane's conclusions.

Please let me know if you have further thoughts or concerns.

Thank you.

Cc: David Owen, County Attorney

**MEMORANDUM**  
FROM  
**OFFICE OF THE COUNTY MANAGER**

DATE: September 8, 2006

To: BoCC

FROM:   
Donald D. Stilwell

County Manager

**RE: Compilation of DR/GR Studies**

Commissioners:

Per your discussion on Aug. 15 regarding the many studies that have been commissioned on the Density Reduction/Groundwater Resource Area (DR/GR), we committed to come back with a plan for "compiling" those studies.

We currently are doing a nationwide search for an outside, unbiased expert – in environmental sciences, systems ecology, or a similar discipline – who can consolidate the numerous that exist.

Two staff members currently are researching the Internet, Lexus/Nexus, academia, symposium speaker lists, journals and articles, etc., in an attempt to identify potential experts, with the following parameters:

- The person should have no vested interest in the DR/GR, and preferably be from outside our area, or even the state (similar to the consultant we retained for the blasting study).
- The person should be non-partisan and objective.
- The person should have the appropriate credentials.
- The person should be highly recommended by colleagues.

We have identified a number of firms/candidates. Once we have a short list, the County Manager and his designees will interview finalists and make a selection.

The preliminary charge of the expert will be to take all of the studies and:

- Enumerate the commonalities and consistencies in the studies.
- Enumerate the differences or inconsistencies.
- Give an indication of which data is most current, and which is outdated.
- Provide an objective, professional opinion on the studies' conclusions and, hopefully, provide a singular conclusion.

We hope to have the expert on board within a month and then project a six-month study, with results in spring 2007.

We will keep you apprised throughout the process.

Please let me know if you have further thoughts or concerns.

Thank you.

Cc: David Owen, County Attorney

not an unusual instance, and cited cleanup at the Justice Center site. In reply to Commissioner Albion's request for a degree of certainty, Mr. Clemens stated staff has looked into this very thoroughly, has performed several tests, and now has 30 days from today to provide due diligence and close on the purchase. Commissioner Albion said based upon the appraisal and the consultant work provided, he was comfortable moving forward. At the request of Commissioner St. Cerny, Mr. Lavender stated that the intent was to move the Elections Office to this building and make significant renovations to the building; and confirmed that the existing tenants would be allowed to stay until the end of their current lease, providing a revenue stream as the County makes future plans for the space in accordance with its growth and renovation requirements. He further noted that the long-term plan is to have government occupy the entire building. The motion was called and carried.  
RESOLUTION NO. 06-08 37

3. COUNTY COMMISSIONERS

- (a) **ACTION REQUESTED/PURPOSE:**  
 Request direction on a locally-sponsored environmental analysis of the Density Reduction/Groundwater Resource (DR/GR) lands east of the proposed Coconut Road/I-75 interchange.
- WHAT ACTION ACCOMPLISHES:**  
 Requests an environmental analysis of specified property.
- MANAGEMENT RECOMMENDATION:**  
 Approve. (#20060845 – Commissioner Judah)

After briefly acknowledging the public comments on the mining issues provided during the public comments portion of the meeting, Commissioner Judah addressed the issue before the Board for an environmental analysis around the proposed Coconut Road/I-75 interchange and the potential impact on DR/GR lands east of the interchange. Following an explanation on the need for the study, Commissioner Judah noted that Smart Growth Director Wayne Daltry and the Florida Wildlife Federation had both provided various studies. He also asked that the Board review the recent memorandum from DOT Engineer and Project Manager Don DeBerry, providing a documentation depicting the land in question as an endangered species habitat, a critical water resource area and an overall environmentally sensitive area. Commissioner Judah pointed out that the Regional Planning Council had provided a transportation modeling study showing that the interchange would not alleviate traffic west of I-75 along Bonita Beach Road and that the same model showed the possibility of alleviating of some traffic concerns along Corkscrew Road, particularly between Ben Hill Griffin and Three Oaks Parkway. He further noted that the studies did not take into account the proposed development of sections of land adjacent to this interchange; and expressed the need to keep in mind that changes might have to be made in the comprehensive plan or the land might have to be annexed into the City of Bonita Springs. Commissioner Judah stated he believed there was a need for local input; noted that the Metropolitan Planning Organization had suggested doing a separate environmental assessment; and suggested not to move forward with another study, but use the studies that have been done to compile one document for the County to work from. Commissioner Hall said DR/GR issues keep coming back, stressed the need to deal with them proactively; and supported use of the various studies comprehensively. She pointed out that she had requested Estero community input through the Horizon Council, with Smart Growth involvement; and supported providing direction to Staff to compile the information from the various studies, and to encourage the County Manager to continue to work with Smart Growth and the Horizon Council to pull the community together. Commissioners Janes and St. Cerny also stated support of a comprehensive report, and encouraged moving forward quickly and productively. Commissioner St. Cerny requested that Mr. Daltry be given the authority to finish any area that might be missed to make one complete and total document. Commissioner Albion believed the Board had commissioned Greg Rawl to do a DR/GR comprehensive study; and noted that the determination needs to be made about that study as it is now a timing issue, and needs to get through the peer review and get back to the Board. At the request of Commissioner Albion, Florida Department of Transportation Southwest Area Office Manager Johnny Limbaugh stated the National Environmental Protection Act (NEPA) rules are very strict and clear regarding qualification for transportation dollars; confirmed the purpose of the Interstate Justification Report (IJR) was only to determine whether an interchange justifies the investment of funds; and noted that FDOT will evaluate several options and look at the variables. Commissioner Albion noted that a full understanding should be attained prior to any changes to the land. Discussion ensued between Commissioner Albion and Mr. Limbaugh regarding the timing of the FDOT study; it was noted that FDOT would be hiring its consultant in February 2007. Commissioner Albion requested that direction be given to Administration that this report be brought back to the Board in six months. Commissioner Judah recognized \$10 million jumpstart through the Transportation Bill for the Coconut Road Interchange project, pointed out that the MPO made it very clear there would be an environmental assessment done to put in proper perspective the potential ramifications of this proposed interchange, and opined that the IJR would not adequately take into account the potential changes in land use that could occur because of the location of this interchange. He expressed appreciation for the discussion today to assemble all the studies and provide a definitive finding of the potential impacts on the lands east of the proposed interchange; and pointed out that Mr. Daltry's workload is currently overextended, and it was likely the Board would need to hire out the job of compiling these reports. Commissioner Hall agreed it would be best to go to an outside source with the internal resources to compile a comprehensive report; and requested that the County Manager recommend how the information will be put together, and make sure the stakeholders have an opportunity to provide

input. County Manager Stilwell stated he believed this could be brought back to the Board in a month with a delineation of timelines, approach and costs. Chairwoman Hall thanked each member of the public who provided written copies of their comments and positions, and advised that those would be shared with staff and would be addressed. Chairwoman Hall and Commissioner Judah agreed that there would be no action taken at this time.

4. **COMMUNITY DEVELOPMENT**

No requests received.

5. **HUMAN SERVICES**

No requests received.

6. **INDEPENDENT**

No requests received

7. **PUBLIC SAFETY**

No requests received.

8. **SOLID WASTE-NATURAL RESOURCES**

No requests received.

9. **TRANSPORTATION**

(a) **ACTION REQUESTED/PURPOSE:**

Approve closing of the Midpoint Memorial Bridge on Veterans Day, November 11, for the next four (4) years, 2007 through 2010, for the Veterans Day 5K Foot Race, from approximately 5:00 p.m. until 9:00 p.m., except those years when Veterans Day follows on a weekend in which case the race would be held on Saturday, Nov 10 or 11 with the closure from ~~7 a.m. until 11 p.m.~~ **7:00 a.m. until 11:00 a.m.** (2006 and 2007). Also approve time of the closing from a PM to an AM closure for 2006.

**WHAT ACTION ACCOMPLISHES:**

Board approval is required to close the bridge.

**MANAGEMENT RECOMMENDATION:**

Allows the citizens of Lee County to participate in the observance of Veterans Day through the 5K foot race across the bridge. (#20060996 -- Transportation)

DURING THE ANNOUNCEMENTS PORTION OF THE MEETING THE CHAIRWOMAN ANNOUNCED THAT:

For Administrative Agenda Item A9(a) the wording should be changed to read: ...except for those years where Veterans Day follows on a weekend in which the race would be held on Saturday, November 10th or 11th with the closure from ~~7:00 a.m. to 11:00 a.m.~~ (2006 and 2007). Commissioner Judah moved approval the corrections, seconded by Commissioner Janes, called and carried.

Commissioner Janes moved approval with the amended language, seconded by Commissioner Albion, called and carried.

(b) **ACTION REQUESTED/PURPOSE:**

Approve advancement from the General Fund Revolving Loan Program for up to \$3,300,000.00, in FY 06/07 to the Bonita Beach Road (Old 41-Lime Street) right-of-way acquisition as a match to funds proposed to be provided by the City of Bonita Springs and include in proposed FY 06/07 Capital Improvement Program budget.

**WHAT ACTION ACCOMPLISHES:**

Provides \$3,300,000.00 to the Bonita Beach Road Phase II Project in Fiscal Year 06/07. If approved and with an equal amount from the City, right-of-way can be acquired next year. Currently it is not programmed in the 5 year CIP.

**MANAGEMENT RECOMMENDATION:**

Approve for the reasons stated. (#20061027 -- Transportation)

DURING THE ANNOUNCEMENTS PORTION OF THE MEETING THE CHAIRMAN ANNOUNCED THAT: Administrative Agenda Item A9(b) should be deferred to the Regular meeting of August 22, 2006. Commissioner Janes moved approval, seconded by Commissioner Albion. Commissioner Judah asked the reason for the deferral of



# MCLANE ENVIRONMENTAL

*A Limited Liability Company*  
707 Alexander Road, Suite 206  
Princeton, NJ 08540  
609.987.1400 Fax 609.987.8488

October 26, 2006

Pete Winton  
Assistant Lee County Manager  
Lee County, Administration Building  
P.O. Box 398  
Fort Myers, FL 33902-0398

**RE: Solicitation for Request for Written Proposal for  
Density Reduction/Groundwater Resource Area (DR/GR)  
Study Review and Compilation**

Dear Mr. Winton:

McLane Environmental, LLC (McLane) is pleased to respond to the request for proposal to provide professional services to Lee County, Florida for the review of study reports and regulatory documents relating to the Density Reduction/Groundwater Resource (DR/GR) area in the southeastern portion of the County. The purpose of the review is to evaluate the usability and reliability of the identified studies, and to convey that information in a clear and concise manner to the County Commissioners whose responsibility it is to make decisions regarding the use of resources in this environmentally complex, valuable, and sensitive area.

To provide outstanding service to Lee County, McLane has assembled a highly qualified and experienced team led by the founding Principals of three small firms; each with training and experience that complement the others in providing the multidisciplinary scientific expertise required by the County. Members of the team have had prior experience working together to successfully complete several projects, and two members of the team have extensive Florida experience that, while it is beneficial to the completion of this review, does not represent a potential conflict.

The project team is expert in geology, hydrology, soil science, terrestrial, aquatic and marine biological systems, environmental investigations, natural resource assessments; and has performed a range of planning, permitting and resource management services. We have provided team members with extensive experience in quantitative analysis of groundwater aquifers, including groundwater modeling; members who specialize in plant and animal science and investigation and assessment of wetlands and ecological systems; and one member with extensive experience in the characterization of geologic and hydrogeologic systems in Florida.


The team is also expert in regulatory compliance and experienced in coordination and communication with various regulatory and resource protection agencies and members of the public. We have performed projects for multiple federal and state government agencies including USAEC,

USACE, USEPA, FAA, FHWA, DOD, DOE and NPS, as well as for local and municipal governments dealing with sensitive resource management issues.

The Project Manager, and other members of the team, have successfully completed other engagements in which they were retained to review complex programs of study, and to report back to a variety of audiences in clear and non-technical language their findings and recommendations.

The McLane Project Team is looking forward to the opportunity to work closely with Lee County in evaluating the existing environmental studies that are likely to form much of the basis for DR/GR growth and resource management decisions in Lee County in the coming years.

Sincerely,

A handwritten signature in black ink that reads "Charles F. McLane III". The signature is written in a cursive style with a distinct "III" at the end.

Charles F. McLane III, Ph.D., CGWP  
Principal



**PROPOSAL TO PROVIDE TECHNICAL SERVICES  
TO LEE COUNTY, FLORIDA  
FOR  
DENSITY REDUCTION/GROUNDWATER RESOURCE AREA  
(DR/GR)  
STUDY REVIEW AND COMPILATION PROJECT**



Prepared for  
**Lee County Department of Community Development**

Prepared by  
**McLane Environmental, LLC  
Princeton, New Jersey**

**Amy S. Greene Environmental Consultants, Inc.  
Flemington, New Jersey**

**Head First, Inc.  
Jacksonville, Florida**

**October 26, 2006**

## **1.0 Introduction**

Lee County, Florida is experiencing high growth and the pressures that growth exerts on its natural resources, including groundwater, surface water, natural habitat areas, and threatened and endangered species. Recognizing the important interrelationships between land use, development, water, and ecological resources, a non-urban portion of Lee County has been designated as a Density Reduction/Groundwater Resource (DR/GR) area.

The density of development within the DR/GR area is controlled through the Lee County Comprehensive Plan. The DR/GR area is viewed as a valuable ecological and water recharge area and a number of multi-disciplinary studies and regulatory documents have been prepared that focus on the area.

To assist with resource management and land use planning in this area, the County has determined that it would be beneficial to have a consultant review a number of the existing studies for this area, and to inform the County Commissioners on the scientific, environmental, and planning issues in this important area of Lee County. The initial list of studies to be reviewed is presented in Appendix A.

A team of scientific consultants has been assembled with McLane Environmental, LLC as the team lead. This team has been chosen because of its multi-disciplinary background, years of strategic and advisory experience, familiarity with south Florida ecology and water resources, and its lack of bias on Lee County growth issues. This team provides the following information in response to the County's request for written proposals for the review and compilation of studies applicable to the DR/GR area.

## **2.0 Project Team**

McLane Environmental has assembled a team of scientific consultants with complementary expertise and experience in the fields of geology, hydrology, hydrogeology, groundwater modeling, soils science, water resource planning and land use planning, wetlands hydrology and ecology, ecosystems science, and plant and animal science. Team members have experience working together on multiple projects and have available time to devote to this project.

The project team will be led by, and the County will enter into the contractual agreement with, McLane Environmental. Additionally, the project manager and primary point of contact between the County and the project team will be Charles McLane of McLane Environmental. The following section presents a brief introduction to the personnel who will assist the County on this project. (Short resumes for these team members are provided in Appendix B):

**Charles McLane, Hydrogeologist / Environmental Scientist**

- **Project Responsibilities:** Point of Contact for Lee County; Project Manager, and Project Scientist.
- **Fields of Expertise:** Geology, hydrology, hydrogeology, groundwater modeling, soils science, and water resource planning.
- **Previous Work in Lee or Contiguous Counties:** None.
- **Similar Project Experience:** Analysis of groundwater flow in coastal aquifer systems; application of groundwater models to a broad range of environmental and water resource projects; analysis of nitrogen loading to groundwater from municipal and residential wastewater systems; evaluation of natural resource damages; served on expert review panels to evaluate environmental studies, identify information needs, and develop recommendations; chairman and/or lecturer at numerous workshops and environmental short courses; served as consulting and testifying expert in a variety of environmental litigation cases.

**Amy Greene, Professional Wetland Scientist, Certified Senior Ecologist**

- **Project Responsibilities:** Secondary Project Manager and Project Scientist for ecosystem, and plant and animal science studies.
- **Fields of Expertise:** Environmental land use planning, wetlands hydrology and ecology, ecosystems science, and plant and animal science.
- **Previous Work in Lee or Contiguous Counties:** None.
- **Similar Project Experience:** Natural Resources Inventories, multiple Counties and Municipalities in New Jersey; NJ Pinelands wetlands and endangered and threatened species surveys and Public Development Approval applications; over 30 years experience in ecological studies for public and private development projects as well as for local government planning.

**Andrew Miller, Hydrogeologist**

- **Project Responsibilities:** Secondary Project Manager and Project Scientist for geology, mining, and hydrogeology studies.
- **Fields of Expertise:** Geology, hydrology, hydrogeology, groundwater modeling, soils science, and water resource planning with Florida-specific expertise.
- **Previous Work in Lee or Contiguous Counties:** Water Use Permit reviewer for the SFWMD (1984 - 1985), supervising geologist at deep injection wells in Collier and Hendry Counties (2004 - present).
- **Similar Project Experience:** Water supply investigation and development (including the determination of recharge areas and quantities); studies on the interaction between groundwater withdrawals, salt water intrusion, and surface water levels; studies on the interaction between nutrient sources (e.g., septic systems, fertilizer) and groundwater and surface water resources; numerous reviews of previous studies and public presentations.

**Ann Ertman, Environmental Scientist**

- **Project Responsibilities:** Project Scientist.
- **Fields of Expertise:** Land use planning, wetlands hydrology and ecology, ecosystems science, and plant and animal science with Florida-specific expertise.
- **Previous Work in Lee or Contiguous Counties:** Worked at FDEP as an environmental specialist and as manger for the mitigation banking program from years 1995 to 1998.
- **Similar Project Experience:** Regional planning study review and development as part of a multi-disciplinary team including the Jamaica Bay New York Watershed Management Plan and mitigation bank siting throughout the state of Florida; review and development of wetland assessment methodologies; wildlife habitat assessment; wildlife surveys; public presentations.

**Liliana Cecan, Environmental Engineer**

- **Project Responsibilities:** Project Engineer
- **Fields of Expertise:** Environmental engineering, hydrology, groundwater modeling, statistics
- **Previous Work in Lee or Contiguous Counties:** None
- **Similar Project Experience:** Modeling groundwater flow and transport of complex aquifer systems; application of models for several brownfields redevelopment sites, waste water management, remediation, and litigation support; analysis of contaminant loading from soil to groundwater and surface water; numerous evaluations of natural resource damages (NRD); project manager for a modeling study which evaluated previous environmental studies, identified additional information needs, and developed a conceptual site model which was used to develop a better groundwater model.

**3.0 Project Understanding**

Lee County desires to retain the services of a consultant (person, firm, or team) to review environmental studies and regulatory documents that have been identified by the County as being particularly important in characterizing the valuable resources or regulating growth in the DR/GR portion of Lee County. This portion of the County, which encompasses a valuable water recharge area and other significant and sensitive resources and features, may be the target of new development to accommodate the growth of the County, and may face increasing potential impacts from one of the largest commercial mining enterprises in the State of Florida.

Lee County restricted land uses within the DR/GR to agriculture, mining, conservation and residential development at a maximum of one dwelling unit per 10 acres. The goals of the DR/GR designation was controlling density and sprawl and protecting groundwater recharge lands. The balance between existing land uses, development, growth, and the protection of natural resources is a complex and challenging issue. Defensible decisions regarding allowable density and the granting of

permits requires a basis in sound science and policy developed from available data and studies.

The consultant (or team) who will conduct the review of existing environmental studies must possess the experience and multi-disciplinary skills to evaluate and comment on the studies that have been performed and be able to present their findings to the County Commission in an understandable manner. The consultant shall be unbiased, with no current or previous stake in any specific development or general growth or environmental objective in Lee County or its contiguous counties that may be perceived as a potential conflict of interest. The project team assembled by McLane Environmental meets these qualifications.

The peer review to be conducted for the identified studies (see preliminary list of studies in Appendix A) will inform the Lee County Commissioners on the scientific, environmental, and planning issues in the important area of Lee County that is the focus of the studies.

The Commissioners are tasked with, among other things, managing growth within the County. Vital information will be provided to the Commissioners by meeting the objectives of the study review project, which include:

- Separating those studies that are more up-to-date and useful, from those that may be dated and less useful;
- Working with Lee County staff to identify studies not on the initial list that may be worthy of review;
- Gleaning from the best studies data that is most applicable to decision-making regarding the area of interest;
- Identifying the most important issues by linking commonalities among the various studies; and
- Identifying information and data gaps that might require additional study.

Additional objectives of the study involve the preparation of work products that will summarize the findings for the Commissioners as described in Section 5.0 below.

#### **4.0 Project Approach**

The members of the McLane Environmental team have performed numerous environmental studies and reviews of environmental studies for government and non-government entities. Based on this experience, the team recommends the following approach:

- 1) **Initial Project Planning Meeting:** meet with Lee County personnel to establish the documents to be reviewed, and the issues and goals of the project. Our experience has shown that a one-day meeting will save weeks of background research on the part of the project team and will provide the basis for preparing a more detailed Scope of Work for the project. Prior to the

Project Planning Meeting, the review team will compile and conduct a preliminary review of the studies listed in Appendix A.

- 2) **Prepare Detailed Scope of Work:** following the initial meeting to discuss issues and scope of the review, the project team will develop a more detailed SOW defining goals and deliverables, and proceed with the project on that basis.
- 3) **Document Review:** the team project manager will assign reports or portions of reports to each of the team members for review. Each team member will review the assigned report or section and prepare a brief summary of preliminary findings and recommendations. During the review, no new mapping, field studies, or groundwater modeling efforts will be conducted.
- 4) **Preliminary Report of Findings:** at the completion of the document review, the project team will conduct a teleconference or web conference with County representatives to provide a verbal first appraisal of findings. A brief outline and "talking point" packet will be prepared to facilitate the conference, but no draft report will be prepared at this time.
- 5) **Draft Report Preparation:** following the preliminary report of findings, the project team will finalize its review based on comments and questions received from the County, and then the project team will prepare a draft findings and recommendations report for submittal to the County. The report will utilize existing graphics (i.e., no additional or new maps or report graphics will be prepared, with the possible exception of simple spreadsheet charts to summarize and compare certain data if necessary). A list or portfolio of existing maps and graphics that would be useful in providing overlays of key information will also be prepared and delivered to the County.
- 6) **Draft Report Review:** the County will have approximately 30 days to review the draft report and transmit comments and requests to the project manager. The review team will then finalize the report within approximately two weeks of receipt of the County's comments
- 7) **Final Report:** the project team will deliver a final, written report with text and graphics to the County, and will also deliver a list or portfolio of key maps and graphics. The project team will participate in a teleconference or web conference call with Lee County representatives to discuss the findings. The report will utilize existing graphics and possibly some simple charts to summarize and compare study data as appropriate.
- 8) **Presentation:** if so requested by the County, the project team will meet with the County and make a formal presentation of findings and recommendations. Following completion of the review study, and transmittal of study findings to the County, the scope of such a presentation, the topics to be addressed, the audience to whom the presentation would be directed, and the appropriate level of detail could be better ascertained, so that this task could be better defined at that time.



## 5.0 Project Tasks and Schedule

The table below summarizes the proposed project tasks, costs, and schedule.

<b>Table 1. Summary of Proposed Project Tasks, Costs, and Schedule</b>			
<b>Task</b>	<b>Description</b>	<b>Duration (weeks)</b>	<b>Estimated Cost</b>
<b>1.0</b>	<b>Project Kickoff Phase</b>		
1.1	Initial review of documents received from Lee County	1.0	
1.2	Participation in Lee County / Project Team Technical Exchange and Planning Meeting (incl travel)	0.5	
1.3	Preparation of final Statement of Work	0.5	
	<b>Task 1 Total</b>	<b>2.0</b>	<b>\$15,000</b>
<b>2.0</b>	<b>Review of Environmental Studies</b>		
2.1	Review initially identified studies and regulatory documents	4.0	
2.2	Interaction with Lee County staff to identify additional documents	0.5	
2.3	Review additional documents	1.5	
	<b>Task 2 Total</b>	<b>6.0</b>	<b>\$45,000</b>
<b>3.0</b>	<b>Preliminary Findings conference call with Lee County</b>		
3.1	Prepare talking points summary for call	0.8	
3.2	Participation in call	0.2	
	<b>Task 3 Total</b>	<b>1.0</b>	<b>\$5,000</b>
<b>4.0</b>	<b>Preparation of Deliverables</b>		
4.1	Perform additional review, as necessary, based on results of Task 3	1.5	
4.2	Prepare draft summary report	3.5	
4.3	Prepare draft portfolio of potential environmental feature and information overlays	1.0	
	<b>Project Subtotal Through Draft Report Submittal</b>	<b>15.0</b>	
	Submit draft deliverables to Lee County for Review		
	Lee County reviews deliverables and prepares comments	4.0	
4.4	Conference calls with Lee County to discuss comments	0.5	
4.5	Finalize project deliverables	2.5	
	<b>Task 4 Total</b>	<b>13.0</b>	<b>\$30,000</b>
	<b>Project Total</b>	<b>22.0</b>	<b>\$95,000</b>
<b>5.0</b>	<b>Presentation of Findings and Recommendations to Board of Commissioners</b>	TBD	TBD

## **6.0 Schedule and Costs**

The proposed schedule and estimated costs are presented in Table 1. As presented in Table 1, preparation of the draft summary report and the maps portfolio can be completed in a little less than four months. Allowing one month for Lee County to review and comment on the draft deliverables, the entire project can be completed in less than six months.

Table 1 also lists the estimated costs for each task. These costs represent the total costs by task for the combined project team members. Based on the scope of work described in Sections 4 and 5 above, and the specific tasks outlined in Table 1, it is estimated that the Lee County environmental study review project can be completed for approximately \$95,000.

**APPENDIX A**  
**INITIAL LIST OF LEE COUNTY STUDIES TO BE REVIEWED**

## **Studies Initially Identified by Lee County for Review**

- 1. Lee County Comprehensive Plan Update**
- 2. Lee Master Mitigation Plan (LMMP)**
- 3. Groundwater Resources and Mining Study**
- 4. Southwest Florida Feasibility Study**
- 5. BMP Rule**
- 6. Total Maximum Daily Load Rule**
- 7. Habitat Mapping (Florida and Wildlife Conservation Commission maps)**
- 8. CREW (Corkscrew Regional Ecosystem Watershed) and Conservation 2020 Assessments**
- 9. Florida Gulf Coast University (FGCU) studies**
- 10. Growth Management Regulation, Public Investment and Resource Implications for the Estero Bay Watershed**
- 11. Estero Bay Symposium**
- 12. U.S. Fish and Wildlife maps and multispecies recovery plan**

**APPENDIX B**  
**RESUMES AND PROJECT EXPERIENCE OF**  
**STUDY REVIEW TEAM MEMBERS**

**CHARLES F. MCLANE III**

**Hydrogeologist, Environmental Scientist**

McLane Environmental, LLC  
707 Alexander Road, Suite 206  
Princeton, NJ 08540  
609-919-2701  
cmclane@McLaneEnv.com

**CREDENTIALS**

Ph.D. Environmental Sciences (Hydrogeology), University of Virginia, 1984  
M.S. Geology (Watershed Hydrology), Colorado State University, 1978  
B.A. Geology, Susquehanna University, 1974

**REGISTRATIONS**

Certified Ground Water Professional, National Ground Water Association

**FIELDS OF SPECIALIZATION**

- Hydrogeology and Environmental Science;
- Groundwater flow system analysis (including computer modeling);
- Chemical fate and transport (including nitrate loading studies);
- Natural resource damage assessment; and
- Environmental education and expert services

**EXPERIENCE SUMMARY**

Charles F. McLane is the founding Principal of McLane Environmental, LLC in Princeton, New Jersey, a firm specializing in strategic ground water services, risk management and the impacts of toxic chemicals on human health and the environment. A Certified Ground Water Professional with over 25 years of diverse experience, Dr. McLane's work currently includes providing strategic consulting for corporate clients regarding investigative and remedial activities at operating industrial facilities, technical direction for remedial activities at Department of Defense and Department of Energy sites, and hydrogeologic analyses to support water management planning. His consulting practice focuses on the application of quantitative hydrogeologic analyses to remediation, risk assessment, resource management and damage assessment, and litigation matters. He has extensive experience in the simulation of the fate and transport of organic and inorganic contaminants in soil and ground water, and in the application of quantitative data analysis and data visualization techniques to ground water problems.

Dr. McLane was selected by the Army Environmental Center as a Subject Matter Expert (SME) in the areas of Karst Hydrogeology and Groundwater Modeling, to serve as a member of an expert review team tasked with reviewing, and preparing recommendations

regarding, current activities and environmental restoration plans being developed by the Department of Defense at several Army installations in the south. More recently, Dr. McLane served for a period of approximately five years as a member of the External Advisory Group (EAG), a team of experts selected by Los Alamos National Laboratory to review and prepare recommendations regarding a multimillion dollar environmental characterization program being conducted at the Laboratory. In both of these engagements, Dr. McLane was responsible for attending technical presentations and reading study reports that outlined ongoing activities and issues; meeting with technical staff, Laboratory of Installation management, and interested Stakeholders to summarize his initial findings; and preparing reports outlining identified information needs and recommendations for the various ongoing programs and studies.

Dr. McLane has authored and delivered numerous publications and presentations in the areas of ground water flow and contamination, risk assessment methodologies, water resource management, and ground water modeling, and he regularly lectures at professional short courses on topics including ground water modeling, probabilistic uncertainty analysis, risk assessment, water supply issues, and forensic hydrogeologic techniques.

#### **EXAMPLE PROJECTS:**

**Water Resources Management and Planning:** Assisted Cape Cod municipality in developing a comprehensive water management plan. Reviewed previous hydrogeologic investigations, conducted modeling analyses for proposed well fields, summarized information regarding previous saltwater intrusion modeling studies, and analyzed saltwater interface upconing as one of the primary limiting factors in establishing safe yields for the well fields.

In a subsequent phase of the project, conducted analyses of aquifer yield and potential saltwater intrusion to assist a coastal community with water management planning and identification of new source alternatives; engaged in technical exchange with U.S. Geological Survey (USGS) regarding freshwater aquifer modeling analyses; presented findings to town leadership to support decisions regarding future plans.

**Wellfield Impacts on Aquifer Yield:** Managed a ground water modeling investigation to examine hydrologic impacts associated with proposed increased withdrawals at an operating municipal well field. Obtained and evaluated existing USGS aquifer model and engaged in technical discussions with USGS to guide model modification to provide a highly cost-effective analysis of the proposed withdrawals. Performed model sensitivity analyses, simulated impacts of planned withdrawals on ecologically sensitive nearby surface water bodies, and presented results to client.

**Nitrogen Loading Studies:** Assisted a local government by performing analyses to support design and permitting of wastewater treatment facility in an ecologically sensitive coastal aquifer area. Developed computer model for Pilgrim Lens aquifer and conducted ground water flow, mounding height, flow path (particle tracking), and nitrogen loading analyses. Participated in meetings with representatives of regulatory,

governmental, and environmental oversight agencies, and provided testimony at public hearing.

Also, conducted nitrate loading analyses for proposed residential development in sensitive ecological area. Developed analytical model for existing and proposed residential sources, and examined various loading scenarios. Prepared report for submittal to regulatory agency and responded to regulatory agency requests for supporting information.

**Expert Review of Aquifer Characterization Study:** Served as hydrogeology and ground water modeling expert on an external advisory panel for a large southwestern Department of Energy facility. Reviewed technical information; met with installation management, staff and consultants; participated in meetings with regulators and public Stakeholders; prepared reports summarizing findings and recommendations, and performed external peer review for final project Hydrogeologic Synthesis Report.

**Expert Review of Environmental Restoration Programs:** Assisted the US Army by serving as a Subject Matter Expert in the areas of hydrogeology, karst hydrology, and ground water modeling for independent technical reviews of ground water investigation and remediation programs at numerous installations. Participated in site tours and meetings with installation staff, contractors and regulators to discuss pending issues and ongoing and planned activities; and attended citizen advisory board meetings to gain information and insight on key issues of concern. Prepared recommendations to assist Army in streamlining studies associated with investigation, remediation, and closure of installations.

**Aquifer Characterization Study:** Authored a report comparing the results of a large aquifer testing field program (8 tests, 18 pumping wells, over 200 observation wells) with the predictions of a three-dimensional numerical ground water flow model developed for a Superfund site in New Jersey.

**Professional Education and Communication:** Dr. McLane has served for many years as the chairman, co-chair, or lecturer for numerous workshops and short courses designed to convey information regarding groundwater resources, groundwater modeling, the fate and transport of chemicals in the environment, and the quantitative analysis of environmental data. As a consultant to the US Environmental Protection Agency, he designed and presented a nation-wide series of workshops for land use planners, attorneys, legislators, regulators, and environmental consultants, on Wellhead Protection Area Delineation for drinking water supplies. He chaired a series of groundwater short courses sponsored by Government Institutes that presented the fundamentals of groundwater investigation, analysis, and remediation; and lectured for over ten years in one of the leading short courses presented by the National Ground Water Association. Recently he has been involved in developing and presenting an Introduction to Groundwater Modeling short course presented annually at Rutgers-Cook College in New Jersey; and in co-chairing a short course that presents the fundamentals of Environmental Forensic techniques.



**Expert Testimony:** During the past 15 years, Dr. McLane has served as both a consulting and testifying expert in numerous environmental and natural resource litigation cases. Recently, he served as the testifying expert in a large Natural Resource Damage case involving a southwestern Superfund site. As part of his engagement in that matter, he performed analyses and provided testimony regarding the assessment of nature and extent of contamination and impacts to various natural resources in the vicinity of the commercial/industrial site; evaluated soil, groundwater, and surface water resources; examined potential loss of services, and duration of impacts; and worked in consultation with a resource economist to evaluate potential past and future damages.

### **Employment History**

**McLane Environmental, LLC** - Principal, 1997 – present.

**ENVIRON Corporation** – Project Manager / Senior Science Advisor, 1989-1997

**Geraghty & Miller, Inc.**, Principal Hydrogeologist, 1986-1989.

**Rockwell International, Inc.** – Senior Engineer, 1983-1986.

**AMY S. GREENE**

**Principal, Professional Wetland Scientist**

Amy S. Greene Environmental Consultants, Inc.  
4 Walter E. Foran Blvd., Suite 209  
Flemington, NJ 08822  
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mail@amygreene.com

**CREDENTIALS**

M.S. Ecology, Rutgers University, NJ, 1984  
B.A. Biology, Boston University, MA, 1974

**SPECIAL TRAINING**

Society for Wetland Scientists Professional Wetland Scientist-1995  
U.S. Fish and Wildlife Service Habitat Evaluation Procedures Certified-1982  
Ecological Association of America Senior Ecologist  
Wetland Functions and Values (WET)-July 1990  
USACOE Wetlands Delineator-1993  
NJDEP Ecologist/Ornithologist  
Jurisdictional Delineation of Wetlands in the mid-Atlantic States-June 1988  
40-Hour OSHA Health and Safety Training Course for Hazardous Waste Site Workers

**FIELDS OF SPECIALIZATION**

- Aquatic, Terrestrial and Wetlands Ecology
- Wetlands Mitigation
- Environmental Permitting
- Environmental Impact Assessment
- Endangered and Threatened Species Habitat Assessment
- Natural Resources Inventory
- Environmentally Sensitive Area Mapping
- Greenway Planning

**EXPERIENCE SUMMARY**

Ms. Greene is President and owner of *AMY S. GREENE ENVIRONMENTAL CONSULTANTS, INC.* (ASGECD) and, as such, has been providing professional environmental services to private and public sector clients since February 1986. She is recognized as an expert in the field of wetland science, environmental permitting, natural resources inventory, and environmental impact assessment. She has presented as a guest lecturer at universities and educational seminars. She has been selected as a mediator in litigation involving wetlands impacts and restoration.

Ms. Greene has been qualified as an expert witness in wetlands investigation and environmental impact assessment before many municipal planning boards and environmental commissions as well as county boards and in Superior Court.

Ms. Greene has 32 years of experience in the performance and management of environmental studies. She has prepared wetland evaluations, delineations and mitigation plans for coastal and inland wetlands. She has also conducted wildlife habitat evaluations and surveys, endangered species surveys, natural resources inventories and environmental impact assessments. Projects completed have entailed environmental planning for residential, commercial, industrial and recreational and educational development and wastewater, sludge, solid waste and transportation facilities and for municipal, open space, and conservation planning.

Ms. Greene has performed review of proposed development applications for environmental impacts and compliance with environmental ordinances and regulatory programs for municipal environmental commissions and planning boards.

Ms. Greene has prepared successful State and Federal permit applications for wetland filling, waterway dredging, coastal zone development, stream encroachment, pollutant discharge, soil erosion and sediment control plans, NJ Pinelands development and hazardous waste facilities.

#### **EXAMPLE PROJECTS**

**Atlantic City International Airport Proposed Master Plan Improvements, South Jersey Transportation Authority/DMJM Aviation, Egg Harbor and Galloway Townships, Atlantic Count, NJ.** Principal responsible for preparation of ecology sections of Environmental Impact Statement and Memorandum of Agreement with the NJ Pinelands Commission. The 2,000 acre property includes extensive grasslands, shrubland communities and forested wetlands, associated with the North and South Branches of the Absecon Creek. Prepared sections of an Environmental Impact Statement to satisfy FAA, NEPA and NJ Pinelands Commission. An analysis of existing conditions and environmental consequences for vegetation, wildlife and wetlands, and collection and coordination of data for a Habitat Evaluation Procedure was prepared for threatened and endangered grassland bird species. Coordinated closely with DMJM/SJTA/FAA to identify the project alternative that would avoid or minimize impacts to critical wildlife habitat to the extent practicable. ASGECI staff attended numerous meetings with the USFWS, NJDEP Endangered and Non-Game Species Program and the NJ Pinelands Commission to solicit comments and concurrence. ASGECI staff also responded to detailed comments from NGO's such as the Pinelands Preservation Alliance and the NJ Audubon Society. The FAA issued their Record of Decision based on the findings of the Final EIS. The NJ Pinelands Commission and the SJTA entered into a Memorandum of Agreement that will authorize the proposed development activities. ASGECI staff received a Certificate of Recognition from the Federal Aviation Administration and South Jersey Transportation Authority for technical excellence and superior project coordination on the Atlantic City International Airport Environmental Impact Statement.

**Watchung Borough, Somerset County, NJ.** Environmental review of site plan and subdivision applications for consistency with municipal environmental ordinances and for the feasibility of obtaining environmental approvals.

**New Jersey Highway Authority/T&M Associates; Garden State Parkway Widening, Mileposts 30 through 80, Multiple Townships, Ocean, Burlington, and Atlantic counties, New Jersey (including the Pinelands).** Principal in charge of performance of field surveys to determine the presence or absence of habitat for numerous endangered and threatened plants and animals within and adjacent to proposed areas of disturbance. During the surveys, many areas of suspected habitat were confirmed to support endangered and threatened species. As a result of early identification of endangered and threatened species habitat, avoidance and minimization of disturbance to confirm (or NJDEP mapped suitable) endangered and threatened species habitat was achieved by the project engineer in project design. Species surveyed included Pine Barrens treefrog, Copes's gray treefrog, eastern tiger salamander and northern pine snake, as well as numerous endangered wetland and upland plants. A review of proposed road widening plans to determine impacts to confirmed (or NJDEP mapped suitable) endangered and threatened species habitat as a result of the proposed road widening was also performed. Recommendations for minimization of disturbance and mitigation for habitat loss were presented as part of the study, which was submitted to NJDEP and USFWS as part of an EIS prepared under CAFRA regulations, NJ Pinelands Commission Comprehensive Master Plan requirements and as part of a Section 404 USACE freshwater wetlands permit application. Additional tasks include the refinement of vegetation mapping created based on aerial photograph review and coordination with state and federal agencies on endangered and threatened species issues of the project.

**O&Y Old Bridge Development Site, Old Bridge Township, Middlesex County, NJ.** Principal responsible for Wetlands Delineation for 2,700-acre parcel and application for a US Army Corps of Engineers Jurisdictional Determination under Section 404 of the Clean Water Act. This site was located at the boundary of the northern extent of pitch pine/oak vegetation communities in New Jersey. The delineation was reviewed and approved by the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service.

**US National Park Services' Eleanor Roosevelt National Historic Site Natural Resources Inventory, Hyde Park NY.** Project Manager responsible for an inventory of natural resources and development of recommendations for environmental education and visitor use of this National Park; including four-season field studies and literature research of vegetation, wildlife, aquatic biota, endangered and threatened species, historic gardens, soils, forest resources, water quality and geology.

**Natural Resources Inventories, Endangered Species Habitat Mapping, Wildlife Management Plans, Greenway and Open Space Plans** for multiple municipalities in New Jersey including Alexandria Township, Bedminster Township, East Amwell Township, Hightstown Borough, Hillsborough Township, Millstone Township, Montclair

Township, Pohatcong Township, Randolph Township, Roxbury Township, City of Somers Point, and West Amwell Township.

**Developing an Indicator of Wetland Status, Statewide, NJ. New Jersey Department of Environmental Protection, Division of Science, Research and Technology, Mitigation Sites Assessment, Statewide, NJ.** Principal responsible for development and application of a method to assess the quality and function of wetland mitigation projects throughout the State. Application of the methodology and data collection to evaluate over 140 wetland mitigation sites was performed and a detailed peer reviewed report was submitted to NJDEP. The methodology included sampling of vegetation, soils and hydrology and assessment of wetland functions. Recommendations in the report were adopted by NJDEP staff who are also using the wetland evaluation methodology on constructed Wetland Mitigation sites.

**ANDREW M. MILLER**

**Hydrogeologist, Water Well Contractor**

Head First, Inc.

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**CREDENTIALS**

M.S. Geology, Oklahoma State University, 1984

B.A. Geology-Biology, Colby College, 1980

**REGISTRATIONS**

Professional Geologist – Wyoming

Licensed Water Well Contractor – Florida

**SPECIAL TRAINING**

OSHA 40-Hour Hazardous Waste Site Activities Health and Safety

OSHA 8-Hour Supervisor Hazardous Substances/Waste Training

**FIELDS OF SPECIALIZATION**

- Water resources investigation, evaluation, and development.
- Use and evaluation of computer models for water supply development and the sustainability of water supply systems.
- Development and implementation of aquifer testing projects.
- Well installation and well development.
- Assessment and cleanup of groundwater and soil contamination.

**EXPERIENCE SUMMARY**

Mr. Miller has designed and implemented numerous water resources investigations and evaluations for private, municipal, and industrial clients. His work has focused on the sustainability of water supplies and a reduction or elimination of the potential for salt water intrusion and adverse effects to surface water bodies. Mr. Miller also has extensive experience with soil sampling and evaluations and has developed several cost-saving sampling techniques for soil and groundwater.

His experience also includes assessment and cleanup of operational and abandoned industrial and government facilities, airports, bulk storage terminals, landfills, and gas stations. The types of contaminants investigated and remediated include solvents, fuels (dissolved and free-phase), metals, nutrients, and radionuclides. He has negotiated and implemented work plans and sampling plans for RCRA and CERCLA projects, resulting in significant cost savings to the clients. His hydrogeologic investigations and cleanups have been performed at more than 100 sites and in more than 20 states.

## **EXAMPLE PROJECTS:**

**Water Supply:** 1972 through Present. Water supply investigations, evaluations, and well installation throughout the United States.

Florida-specific projects include aquifer testing and determining the impacts of pumping on the upper Floridan aquifer in Duval and St. Johns counties. These projects were performed to support applications to increase withdrawals for water utility companies. Two- and three-dimensional groundwater flow models were constructed by Mr. Miller and utilized to predict drawdown and the potential effects on nearby wells. Additional Florida projects include interpretation of the geology and aquifer properties in Volusia and Pinellas counties and the preparation of three-dimensional models to predict the potential impacts of water withdrawals on nearby wells and surface water bodies in support of water use permit applications.

Water supply investigations, in the form of drilling and aquifer testing, have also been performed to locate new sources of water and to optimize well field yield for the towns of Provincetown, Wellfleet, Eastham, Harwich, and Plymouth, MA. This work included the determination of the depth to the top of the salt-water interface, determining the impacts of groundwater withdrawal on surface water bodies, existing well redevelopment, and well replacement. Numerous projects have also been completed that evaluated the impacts of septic systems on the shallow aquifer in Massachusetts and Florida using both field investigations and groundwater modeling.

Most of these studies required the presentation of investigation methods and results to both scientific audiences (e.g., regulatory agencies, the National Park Service, and the USGS) and the general public. The locations of the presentations ranged from formal meeting halls with more than 100 people to field locations with one or two people and utilized posters, handouts, and computer-generated graphics.

**Groundwater/Surface Water Interactions:** Well drilling subcontractor to a consulting firm evaluating the potential impacts of nutrients land uses to the lower St Johns River basin. The tasks performed by Mr. Miller included well installation, groundwater and soil sampling, and data evaluation. Different land use types were studied, including native/undisturbed vegetation, agriculture, low and high density neighborhoods with private septic systems, and low and high density neighborhoods with municipal sewer systems.

**CERP Stormwater Treatment Area Sampling:** Hydrogeologist for the consulting firm chosen by the SFWMD to perform the initial/background sampling of shallow soils and vegetation classification for all of STA 3/4. Mr. Miller performed the sampling at hundreds of locations and was selected for this work based on his experience and familiarity with Florida soil types, soil sampling methods and soil classification, and vegetation types.

**Injection Wells:** Hydrogeologist responsible for classification of geologic samples, aquifer units, and confining units, performance and interpretation of aquifer tests, water sampling, and conformance with contract documents. Work has been performed in Collier, Hendry, and Palm Beach counties, Florida.

**Department of Defense: Massachusetts Military Reservation/Otis Air Force Base,** hydrogeologist and subcontractor. Compiled and interpreted geologic and hydrologic information and built the hydrologic conceptual model of Western Cape Cod. Applied this information and directed two subcontractors for the creation of a three-dimensional MODFLOW model, through a series of multi-million dollar modeling subcontracts.

Mr. Miller developed remediation alternatives that were tested on the MODFLOW model with the goal of maximizing contaminant recovery while minimizing the impacts of groundwater withdrawals on nearby surface water bodies. He performed numerous technical presentations at public and regulatory agency meetings, describing the remediation alternatives (including appearances on local cable television stations). Mr. Miller was also the primary and contributing author to numerous work plans and technical documents supporting the design of the groundwater cleanup alternatives.

Additionally, Mr. Miller was the supervising geologist for the installation and sampling of shallow deep borings to identify geologic characteristics, surface water and groundwater interactions, and contamination profiles. He also supervised the installation, development, testing, and instrumentation of extraction and reinjection wells.

**Department of Energy UMTRA Project:** Mr. Miller designed and implemented hydrologic investigations at former uranium mill sites for the Uranium Mill Tailings Remedial Action Project. His sites were in New Mexico, Arizona, Colorado, Utah, and Wyoming. Responsibilities included estimating historical water uses and groundwater withdrawals at former uranium mills, monitor well design and installation, aquifer test design and implementation, sampling plan preparation, and work plan preparation. Mr. Miller utilized his experience to revise the project standard operating procedures related to well installation, coring, soil sampling, and the frequency of groundwater monitoring, resulting in significant cost savings to the project. Mr. Miller also prepared health and safety plans and was the health and safety officer at various sites during the implementation of the work plans.

**Expert Testimony:** Chemical, Storage and Distribution Facility, Miami, FL. Mr. Miller was the project manager, hydrogeologist, and expert witness for an underground solvent storage and distribution facility. Testimony was based on aquifer properties crucial to the identification of the age of leaks and spills.

### **Employment History**

**Head First, Inc. -** Hydrogeologist, Water Well Contractor, 1998 – to present. Water-supply consulting and well drilling.

**Jacobs Engineering -** Hydrogeologist, 1996 - 1998.

**Brown & Root Environmental -** Hydrogeologist, 1995-1996.

**Geraghty & Miller, Inc. -** Hydrogeologist, 1972-1984 (part-time), 1985-1986 and 1987-1995 (full time).

**Groundwater Monitoring, Inc.,** Hydrogeologist, Water Well Contractor, south Florida, 1986-1987.

**South Florida Water Management District (SFWMD) -** Hydrologist, 1984-1985.



**ANN W. ERTMAN**

**Environmental Scientist**

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**CREDENTIALS**

M.S. Biological Oceanography, Florida State University, 1993  
B.A. Biology-Psychology, Drew University, 1988

**SPECIAL TRAINING**

Environmental Permitting Short Course  
Environmental Enforcement Negotiations  
FDEP Wetlands Delineation Training  
Pinelands Short Course  
NJ Freshwater Wetlands Permitting  
Hydric Soils Short Course  
Lake Management Short Course

**FIELDS OF SPECIALIZATION**

- General ecology
- Wetland assessment and delineation
- Wildlife survey and habitat assessment
- Oceanography

**EXPERIENCE SUMMARY**

Ms. Ertman has a strong background in inventory and analysis of ecological resources and the application of environmental regulations for the protection of those resources. She has contributed to regional planning studies including the Jamaica Bay New York Watershed Management Plan.

Ms. Ertman has extensive past experience studying Florida ecosystems and in the application of relevant resource protection regulations. She worked for the Florida DEP from 1995-1998 as an environmental resource permit processor and then as an environmental manager in charge of statewide oversight of mitigation and mitigation banking. She worked on large, regional, and linear wetland impact projects; mitigation banking permitting; credit tracking, including database management; development and implementation of wetland assessment techniques; compliance/enforcement; interagency coordination; policy development; and rulemaking. She gained experience in review and analysis of multi-disciplinary studies as a member of the Florida Mitigation Banking Review Team and in the process of permitting mitigation banks. Effective written and oral communication of findings and suggestions was an essential part of these tasks.

Ms. Ertman contributed to the development and application of an assessment methodology for assessing the quantity and quality wetland mitigation sites throughout the State of New Jersey for the New Jersey Department of Environmental Protection. Ms. Ertman has been responsible for additional field testing of the WMQA and in 2004 presented the results of the statewide study at the ASWM-sponsored conference: "Developing "Outcome-Based" Wetland Protection and Restoration Programs; Measuring and Monitoring Success".

#### **EXAMPLE PROJECTS:**

**Regional Planning:** NYCDEP, Jamaica Bay Watershed Protection Plan, Queens County, NY. Worked with multi-agency team to develop watershed protection plan for Jamaica Bay. Tasks included review of existing technical and planning documents developed for the area, providing suggestions for additional studies, monitoring, and restoration projects, and research of funding sources for a variety of watershed restoration projects.

**Wetland Assessment:** New Jersey Department of Environmental Protection, Division of Science, Research and Technology, Mitigation Sites Assessment, Statewide, NJ. Environmental Scientist responsible for development of the Wetland Mitigation Quality Assessment (WMQA), a method used to assess the quantity and function of wetland mitigation projects throughout the State. Applied the methodology and data collection on 90 wetland mitigation sites. Assisted in preparation of a report summarizing study findings and data analysis. Reviewed and edited Rutgers University paper regarding independent testing of the WMQA.

Rutgers University, New Brunswick, NJ. HGM Wetland Functional Assessment. Participated as an A-team member in the development of the Hydrogeomorphic Model for riverine wetlands within the Passaic River basin.

**Policy Development:** Florida Department of Environmental Protection, Statewide, Mitigation Banking Review Team (MBRT). Provided input to multi-agency committee responsible for drafting and implementing mitigation banking policy within the State of Florida. Responsibilities included attending regular policy development meeting, technical input, review and comment on mitigation bank siting issues, and assisting in creation of written guidance for the general public regarding mitigation banking policy. Mitigation bank siting policy included review and analysis of existing technical information pertaining to wildlife, plants, wetlands, soils, hydrology, and land use; and determining additional information needs on a statewide level with an emphasis on development hotspots including southwest Florida.

**Project Management:** Florida Department of Environmental Protection, Mitigation Bank Projects, throughout the State of Florida. Responsible for all aspects of multiple mitigation bank permit application review and issuance in the State Florida, including Florida Power and Light's Everglades Mitigation Bank, the Florida Mitigation Bank, Mariner Properties' Little Pine Island Mitigation Bank (located in Lee County, Fl), and

Foster Wheeler's Loxahatchee Mitigation Bank. Responsibilities included preapplication coordination with the interagency Mitigation Bank Review Team; technical review of permit applications; writing of permits, including construction, management and maintenance, success criteria, financial responsibility and land preservation requirements; post-issuance review of construction, monitoring, maintenance, and compliance/enforcement; participated in revision and redrafting of statewide mitigation banking rule; represented FDEP at local and regional conferences about mitigation banking procedures and policy.

**Wildlife:** South Jersey Transportation Authority, EIS for Master Plan, Atlantic City International Airport, Egg Harbor Township, Atlantic County, NJ. Environmental Scientist responsible for wildlife surveys of grasshopper sparrows and upland sandpipers. Tasks included visual and auditory identification and classification of habitat types.

NJ Highway Authority, Garden State Parkway 50 mile Widening Project, Ocean, Burlington and Atlantic Counties, NJ. Environmental Scientist responsible for wildlife surveys of pine barrens tree frogs and gray tree frogs. Conducted call-and-response field studies and prepared written reports.

**Expert Testimony:** Gave testimony as an expert witness on wetland systems, impacts to wetlands, wetlands permitting, and wetlands delineation during various permitting-related hearings in the State of Florida.

### **Employment History**

**Amy S. Greene Environmental Consultants, Inc..** – Environmental Scientist, 1999 – to present. Wetland delineation, mitigation, and assessment, environmental reports and permitting, wildlife surveys.

**Department of Environmental Protection** – Environmental Manager, Jan 1998-Nov. 1998.

**Department of Environmental Protection** – Environmental Specialist III, 1995-1997.

**Department of Environmental Protection** - Environmental Specialist II, 1993-1995.

**Florida State University** – Research Assistant – 1990-1993.

**LILIANA CECAN**

**Civil and Environmental Engineer**

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**CREDENTIALS**

M.S. Civil and Environmental Engineering, Rutgers University, New Jersey, 1994

Ph.D. Electromechanical Engineering, Polytechnic University of Bucharest,  
Romania, 1986

B.S. Electromechanical Engineering, Polytechnic University of Bucharest,  
Romania, 1977

**REGISTRATIONS**

Professional Engineer – New Jersey - GE4510

**SPECIAL TRAINING**

OSHA 40-Hour Hazardous Waste Site Activities Health and Safety

**FIELDS OF SPECIALIZATION**

- Groundwater and Air Modeling.
- Statistical Analysis.
- Decision Tree Analysis.
- Remedial Investigations/Feasibility Studies.
- Risk Assessments.

**EXPERIENCE SUMMARY**

Dr. Cecan has completed groundwater flow and transport models for numerous sites in support of Remediation, Litigation Support and Brownfields Redevelopment. Dr. Cecan has prepared several proposals and work plans, in which conceptual site models were built and groundwater models were proposed to evaluate site-specific issues. She has built, and reviewed unsaturated and saturated flow and transport models, prepared several technical reports and given presentations to clients, community groups and regulatory agencies.

## **EXAMPLE PROJECTS:**

### **Groundwater Modeling Optimization**

Converted the existing Finite Element Model (FEFLOW), built for a major chemical company to a Finite Difference Model (MODFLOW); recalibrated the model to the existent conditions at the site (recharge, wetlands, pumping), and optimized the pumping scheme (MODOPT and BRUTE FORCE) for a better capture zone at a lower pumping rate – Bridgeport, New Jersey.

### **Brownfields Redevelopment**

Managed the development of the groundwater flow (MODFLOW) and fate and transport (MT3D) model, to evaluate the changes in the flow and solute transport after installation of a groundwater control system to prevent lateral migration of a coal tar plume at the site - Edgewater, New Jersey.

### **Vadose Zone Modeling and Groundwater Flow and Contaminant Transport Modeling for Remediation**

Managed the development of the groundwater flow model (MODFLOW), and fate and transport model (MT3D) with dual domain and residual sources, used to select appropriate containment solutions for the site; vadose zone model, used to evaluate site-specific risk-based soil cleanup levels; and, optimization of the pumping system design for containment and site cleanup – Hollister, California.

### **Litigation Support**

Prepared a groundwater flow (MODFLOW) and transport model (MT3D) to provide litigation support for a major food company, in a case involving evaluation of the contribution of the potentially responsible parties (PRPs) - Confidential Client in Los Angeles, California.

### **Vadose Zone and Groundwater Modeling Peer Review**

Reviewed the vadose zone model (HELP) and the saturated flow and transport model (MODFLOW/MT3D) prepared by URS for a major steel company – Australia.

## **EMPLOYMENT HISTORY**

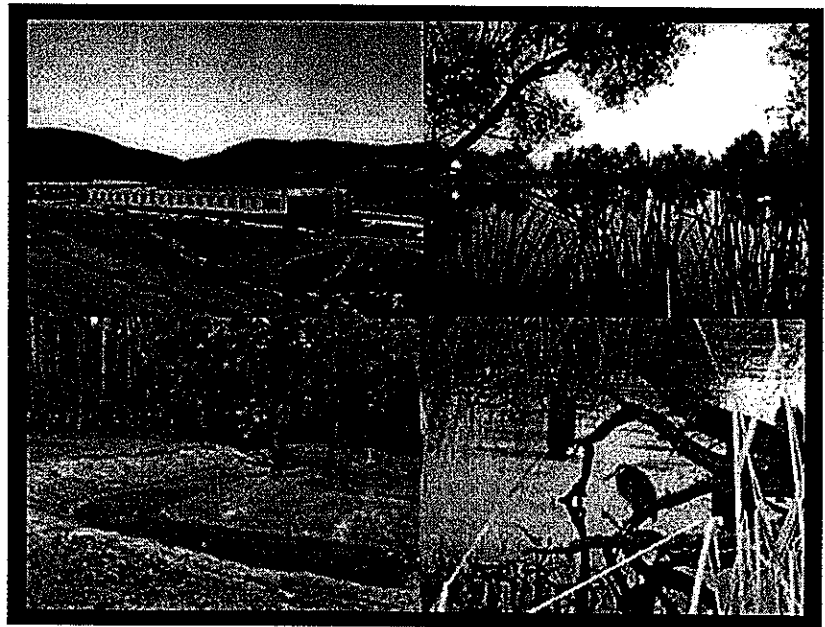
**McLane Environmental** - Director of Technical Services, April 2006 – to present.

**Arcadis, G&M** – Principal Engineer, April 2005 – March 2006.

**ENVIRON International Corporation** – Senior Associate, January 1991 – March 2005.

*Proposal for*

**Density Reduction / Groundwater  
Resource Area (DRGR)  
Study Review and Compilation**



**Shannon & Wilson, Inc.**  
400 North 34th Street, Suite 100  
Seattle, Washington 98103

21-2-15905

October 26, 2006



October 26, 2006

Mr. Pete Winton  
Assistant County Manager  
Lee County  
Lee County Administration Building, P.O. Box 398  
Fort Myers, FL 33902-0398

**RE: DENSITY REDUCTION/GROUNDWATER RESOURCE AREA (DRGR) STUDY  
REVIEW AND COMPILATION**

Dear Mr. Winton:

Shannon & Wilson, Inc. is pleased to submit our response to your Request for Proposal for the DRGR Study Review and Compilation project. I will be the Project Manager for this project, and will lead a team of in-house experts and our teaming partner, Parametrix, to accomplish your goals for this project.

Shannon & Wilson has a long history of assisting public agencies and municipalities with issues related to hydrogeology and wetlands. Shannon & Wilson has successfully completed numerous projects with similar goals and scope, including: (1) A peer review for the City of Issaquah of groundwater, stormwater and slope stability issues for a large development, (2) Reviewing Natural Resource Plans for the SeaTac Third Runway project, one of the largest public works projects undertaken in Washington State, and (3) Reviewing numerous consultant reports to determine if they met the definition of Best Available Science for the Snohomish County Critical Aquifer Recharge project. In each case, we presented our findings to our client in an easy manner to understand, often in meetings open to the public.

As required, we will be unbiased in our peer review; neither Shannon & Wilson nor our teaming partner Parametrix have worked in or have a current or previous stake in any specific development, general growth or environmental objective in Lee County, Florida, or its contiguous counties.

We appreciate the opportunity to submit our proposal and qualifications, and look forward to working with you on this project. If you have any questions, please don't hesitate to contact me at 206-695-6787.

Sincerely,  
Shannon & Wilson, Inc.



Richard J. Martin, LHG, CGWP  
Associate



## Introduction

This proposal presents our qualifications and approach for completing the Density Reduction/ Groundwater Resource Area (DRGR) study review and compilation for Lee County, Florida. We understand that the purpose of this project is to complete an unbiased peer review of the multi-disciplinary documents and studies listed in the Request For Proposal (RFP), which address groundwater, natural resource, and stormwater issues for the Lee County area. The peer review will evaluate the quality and applicability of the documents and studies, and summarize the important and relevant issues in a non-technical fashion to be used by Lee County staff during planning of future development.

Our proposal has been organized to demonstrate our experience, expertise, and approach to successfully complete the peer review of studies and documents compiled for the Density Reduction/Groundwater Resource Area (DRGR) based on the requirements included in your Request For Proposal (RFP). Initially, we briefly describe Shannon & Wilson and provide a summary of the expertise we bring to this project. We then demonstrate our qualifications and experience by describing similar projects that we have successfully completed. Next we introduce the project team, all of whom are committed to making sure that Lee County Commissioners have a full understanding of the issues described in studies and documents for the DRGR. Our approach describes how we will address the objectives for the peer review listed in the RFP. Finally, we provide a timetable that satisfies your four to six month schedule.

## Section 1 | Firm Profile / Expertise

Since 1954 Shannon & Wilson has been a pioneer in developing effective solutions to complex environmental and geotechnical problems. We have successfully completed over 20,000 projects throughout the United States and have played a key role in the design of many challenging public and private endeavors. Shannon & Wilson specializes in hydrogeology, wetland delineations, natural resources, environmental services, geologic investigations and geotechnical engineering. Our resources include staff from our corporate headquarters in Seattle, Washington, and branch offices in Colorado, Oregon, Alaska, Missouri, and our recently opened office in Jacksonville, Florida— 240 staff company-wide. Shannon & Wilson provides individualized, client-focused service and solutions that are tailored to meet the needs of each project. We focus on the critical elements of a project to assure that it is accomplished on schedule and within budget and to the satisfaction of all interested parties.







## Hydrogeology

Shannon & Wilson's Groundwater Group offers complete hydrogeologic services to assess, develop, manage, remediate, and protect groundwater resources. The group provides expertise to both environmental and geotechnical projects. Our hydrogeological services include:

- ◆ Wellhead protection planning
- ◆ Surface water/groundwater continuity evaluation
- ◆ Groundwater quality evaluation & protection
- ◆ Groundwater resource development and management
- ◆ Well drilling, design, and testing
- ◆ Hydrologic budget and aquifer yield evaluation
- ◆ Groundwater contamination assessment
- ◆ Product recovery and aquifer remediation
- ◆ Groundwater flow and transport modeling
- ◆ Construction dewatering system design

Our hydrogeology group provides services primarily in water supply development, aquifer resource evaluation, and construction dewatering system design. With the recognition of the need to protect the groundwater resource and drinking water supplies from contamination, we have expanded our services in the development of wellhead protection plans and the identification of aquifer protection areas. More recently we find ourselves often evaluating the relative impacts of development projects on groundwater systems. We have conducted exploration and assessment studies of groundwater systems on both a site specific and regional scale for government and industrial clients. Our staff provides full capabilities for groundwater development, with related, state-of-the-art knowledge of water well technology. We have assisted numerous municipal agencies and industries with the development of large-scale groundwater supply systems.

## Natural Resources

Shannon & Wilson has an outstanding record of performance on projects for public agencies, local municipalities, and private industry. We understand the needs, requirements of new development and redevelopment projects, and can advise you how the current regulations influence your site or project development. Our range of natural resources services include:

- ◆ Permitting / Regulatory Compliance
- ◆ Wetland Delineation and Mitigation
- ◆ Biological Assessments
- ◆ Plant and Animal Surveys
- ◆ Fisheries/Stream Restoration Studies
- ◆ Habitat Surveys and Restoration
- ◆ Water Quality Analysis
- ◆ Stormwater/Watershed Management
- ◆ SEPA/NEPA studies

Because we often work with the development community, we have had many opportunities to prepare wetland, stream and buffer mitigation plans. Our experience with a variety of wetlands and critical habitats guides our judgment and helps us design cost effective mitigation plans. We know when circumstances call for standard or innovative concepts. You can rely on us for cost-saving, dependable solutions.



## Section 2 | Project Experience

Shannon & Wilson has participated in peer reviews on projects that involve large, complex developments. Following the Camp Creek Landslide in 2004 in Issaquah, WA, we have been serving as an independent peer reviewer for the City of Issaquah on the Issaquah Highlands development. We have reviewed 10 additional stormwater projects as they relate to site stability and groundwater infiltration, including conformity with the Critical Areas rules. The Shannon & Wilson Team has a long history of working with municipalities on projects with comparable scopes. The following highlights some our relevant experience and attachment 2 has complete project descriptions of projects referenced in this table:

Municipality / Agency	Project Name	Project Highlights	Public Involvement
WA Dept. of Ecology	Third Runway Mitigation Plan Review	<ul style="list-style-type: none"> <li>◆ Reviewed Natural Resource Plans for one of the largest public works projects undertaken in Washington State.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Provided expert testimony</li> </ul>
City of Bellevue	Sensitive Areas Update	<ul style="list-style-type: none"> <li>◆ Developed wetland mitigation banking opportunities.</li> <li>◆ Made recommendations for revisions to regulations that govern the natural resources aspects of development code.</li> </ul>	<ul style="list-style-type: none"> <li>◆ City Council GMA committee briefing</li> </ul>
Snohomish County	Critical Aquifer Recharge	<ul style="list-style-type: none"> <li>◆ Reviewed numerous consultant reports to determine if they met the definition of Best Available Science.</li> <li>◆ Prepared written responses to public questions and comments about the proposed ordinance</li> </ul>	<ul style="list-style-type: none"> <li>◆ Attended Planning Commission &amp; public comment meetings</li> </ul>
City of Issaquah	Issaquah Highlands Peer Review	<ul style="list-style-type: none"> <li>◆ City Council briefings</li> <li>◆ Ongoing review for code compliance for Sensitive Area Development</li> </ul>	<ul style="list-style-type: none"> <li>◆ City Council and Committee briefings</li> </ul>
Pierce County	On-call Wetland Review Services	<ul style="list-style-type: none"> <li>◆ Reviewed over 50 wetland reports</li> <li>◆ Reviewed fish and wildlife habitat reports</li> </ul>	
University of Washington	Wildlife Survey for the Golf Driving Range EIS	<ul style="list-style-type: none"> <li>◆ Year-long four season survey of all bird species that used the area in and around the project site</li> </ul>	
City of Des Moines	Shoreline Master Program	<ul style="list-style-type: none"> <li>◆ characterized ecosystem-wide processes</li> <li>◆ characterized geology, surface and groundwater flow</li> </ul>	



## Section 3 | Project Staff

Shannon & Wilson has assembled a small team of scientists and engineers that have the expertise to effectively review and provide an easily understandable summary of the issues described in the studies and regulatory documents. As needed, the project team will be supported by the numerous scientists and engineers available at Shannon & Wilson.

### **Richard Martin, LHG, CGWP**

For this project, your main point of contact and Project Manager will be Richard Martin, Manager of Groundwater Services for Shannon & Wilson. His experience working on groundwater projects throughout the country and his expertise in computer modeling of groundwater systems will allow him to efficiently review groundwater studies in Lee County. With the ongoing growth in Washington State, he has frequently been involved with reviews of potential impacts of development and transportation projects on groundwater, often participating in public meetings. Currently he is involved with one of the largest and most controversial projects in Washington, the Alaskan Way Viaduct and Seawall Replacement project in Seattle, Washington. Richard was also recently asked to assist the City of Seattle in developing groundwater policy for new development and construction throughout the city.

### **Katie Walter, PWS**

Katie will be the managing biologist responsible for oversight and review of all biological aspects of the project review. Her experience conducting wetland delineations, developing mitigation plans, conducting natural resource inventories, and completing third party reviews for public agencies provides a strong foundation for the Lee County project needs. She has spent many years completing biological compliance reviews. For Washington State Department of Ecology, she acted as an extension of their staff, completing the review and approval of a multi-million dollar wetland mitigation project. The project was highly contentious and was appealed to the hearings board. Her review and testimony contributed to the Ecology 401 permit being upheld by the board and the project is currently under construction.

Richard and Katie will be working closely with other Shannon & Wilson staff, in particular, **Dan McHale** and **Becki Kniveton**. Dan is a hydrogeologist with over 10 years of experience at Shannon & Wilson, specializing in the impacts of transportation projects on aquifer systems and computer modeling of groundwater flow and contaminant transport. Becki is a biologist with over 8 years of experience, specializing in wetland peer reviews for local municipalities and environmental site assessments.

In addition to the primary staff members listed above, Greg Fisher will serve as Principal-in-Charge for Shannon & Wilson, providing senior technical review and ensuring that appropriate resources are available to Richard and Katie. Greg is a Vice-President with Shannon & Wilson and a Florida-registered professional engineer.

Stormwater issues will also need to be reviewed for Lee County including Total Maximum Daily Loads and Best Management Practices. Although Shannon & Wilson provides many stormwater services, we decided that Lee County would be better served in these areas by adding the expertise of Parametrix, an environmental and civil engineering firm that has partnered with Shannon & Wilson on numerous projects, most recently the **Gog-le-hi-te saltwater marsh restoration project in Tacoma, Washington**. We are also working closely with Parametrix as part of the project team developing the **Environmental Impact Statement (EIS) for the Alaskan Way Viaduct and Seawall Replacement project in Seattle, Washington**.



The primary staff member from Parametrix for this peer review is **Julie Brandt**, a civil engineer, specializing in stormwater management, planning, and hydraulic modeling. Julie has extensive project experience working with municipal clients to help them understand the subtle nuances that often the key to successful implementation of stormwater management designs.

Resumes for all key staff for this project are included in Attachment 1.

## Section 4 | Approach

This section describes our proposed approach to completing the Density Reduction/Groundwater Resource Area (DRGR) peer review of groundwater, natural resources, and stormwater related documents and studies that have been completed in the Lee County area. The review will be summarized in a non-technical report for Lee County staff, which can be used for planning purposes during future development. In your RFP, you identified several objectives for the peer review, which we have used to provide a framework for our approach and development of a final report. The approach is also based on our experience with other successful projects of a similar nature.

We propose to have a kickoff meeting with Lee County staff in your offices to discuss the peer review. This will provide us with the opportunity to ensure that we have a full understanding of the project requirements and the County's concerns. We will also discuss the guidelines for the review including the limits of the review from a technical standpoint, the documentation that the County will expect with our final report of findings, and approach to maintaining our unbiased status. Attending the meeting from the Shannon & Wilson team will be the primary leads for the review, Richard Martin and Katie Walter. Following the meeting we will do a reconnaissance of the study area to gain a better perspective on the physical aspects that will be considered during our review.

Following our kick-off meeting and site reconnaissance, we will complete an overview of the documents and studies that are listed in the RFP. The purpose of this overview is to: 1) to become familiar with the project area and the issues that need to be addressed as part of the peer review, 2) identify any obvious areas of concern that the County should know about immediately, and 3) identify other documents or studies that will be more useful and valuable in assisting Lee County understand the important issues for future planning. We will have a conference call with Lee County staff to discuss the results of our overview, prior to starting the detailed review.

For the detailed review, we will first determine if the studies are accurate and up-to-date by confirming that they were completed using Best Available Science (BAS). BAS is generally defined as science that has the characteristics of valid scientific process, and is becoming a standard approach in the development of regulatory documents. BAS sets a reasonable standard to ensure that defensible processes and data are used to reduce the chances of incorrect or flawed technical conclusions and recommendations. For those studies that do not meet BAS, we will provide recommendations for additional studies, where warranted.

Our review will identify the most important issues for the area as they relate to future development in Lee County. We will identify issues that are common among the studies and the data that is most applicable for making decisions and for planning purposes in the Lee County area. We will complete the review by evaluating the data quality used to support the conclusions in the documents and studies, determine if the



data is applicable, and identify data gaps. If significant data gaps are identified, we will provide recommendations for additional studies for collecting the data. We will also discuss the use of these data to construct GIS-based maps multi-disciplinary overlays, such as water flow, animal habitat, geology and soil.

The results of our review will be presented to Lee County in a non-technical report describing our review process, presenting a summary of the information contained in the documents and studies, and providing recommendations for additional data or study needs for the DRGR.

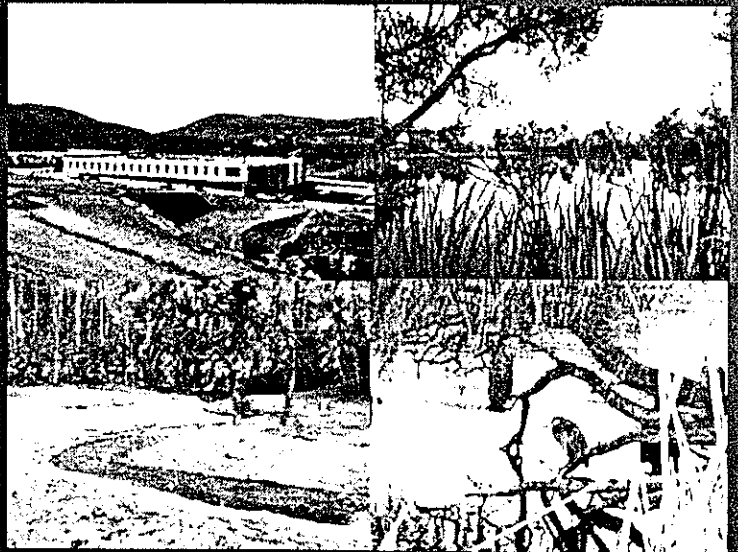
We propose to present our findings to the Lee County Commissioners in person at the Lee County offices. Our presentation will summarize our report and provide an opportunity for Lee County to ask questions about the peer review and the studies and documents. We will then incorporate our responses into our final report.

## Section 5 | Schedule

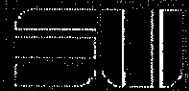
In the RFP, you requested four to six month schedule for completion of the project, including review of documents, compiling a summary report, and presentation of our findings to the Lee County Commissioners. Based on our experience with these types of peer reviews, the actual time for review is dependent on a number of variables including the need to discuss information with study/document authors, obtain additional data/documents, and meet with our clients.

We developed the following timeline assuming a five month schedule to allow for flexibility during the review and process and still meet the overall schedule of four to six months. We have assumed a November 1, 2006, start date for the project.

- ◆ November 1, 2006 – Initiate Project, Begin Compiling Documents/Studies
- ◆ November 13, 2006 – Begin Preliminary Review
- ◆ December 4, 2006 – Initial Meeting with Lee County Staff
- ◆ December 11, 2006 – Begin In Depth Review
- ◆ January 8, 2007 – Status Phone Call
- ◆ January 29, 2007 – Summary of Findings to Date Memorandum
- ◆ February 22, 2007 – Draft Report to Lee County
- ◆ March 5, 2007 – Present Findings to Lee County Commissioners
- ◆ March 12, 2007 – Respond to Lee County Comments
- ◆ March 30, 2007 – Issue Final Report to Lee County



**Attachment 1**  
Resumes





## **Richard Martin, LHG, CGWP**

### **Education**

M.S., Hydrogeology, Wright State University (pending)

B.S., Geology, Wright State University, 1989

### **Registrations**

Certified Groundwater Professional: NGWA (145838) 2001

Licensed Hydrogeologist: Washington (No. 337) 2002

With 16 years of experience as a hydrogeologist, Richard Martin is Manager of the Groundwater Services Group at Shannon & Wilson. Richard has been involved with all aspects of hydrogeologic studies, including evaluation of groundwater resources, design and implementation of aquifer testing, delineation of wellhead protection zones, assessment of groundwater/surface water interactions, evaluation of soil and groundwater remedial systems, and determination of historical contaminant plume movement. He also provides hydrogeologic support for geotechnical projects including development of construction dewatering plans, evaluation of groundwater seepage for slope stability problems, evaluation of soil infiltration capacity for stormwater control design, and estimation of groundwater inflows to tunnels and excavations.

**City of Issaquah, Issaquah Highlands Peer Review, Issaquah, WA.** Richard is Project Hydrogeologist on the peer review team that is working with the City of Issaquah to review the operation of stormwater infiltration systems as part of the stormwater management program for the Issaquah Highlands development. The City requested the review following the January 30, 2004, Camp Creek Landslide. Richard reviewed soil and groundwater conditions associated with infiltration structures at Issaquah Highlands, provided comments regarding the "White Paper" and other documents prepared by the City and their consultants, responded to public comments regarding the landslide and infiltration operations, and presented his review to City Council. He concluded the primary cause of the landslide was excessive infiltration above Camp Creek, and provided recommendations for future infiltration operations for the Issaquah Highlands development. Richard continues to work with the City of Issaquah reviewing and commenting on additional groundwater and stormwater management issues associated with the development.

**Review of Critical Aquifer Recharge Areas Ordinance, Snohomish County, WA.** Richard was Project Hydrogeologist to assist the Snohomish County Planning Department in reviewing proposed Critical Aquifer Recharge Areas (CARAs) ordinance for the county. CARAs are geographic areas that are primary sources of recharge to aquifers that provide potable drinking water supplies. The ordinance is designed to protect CARAs by managing development and land use activities in those areas. Richard reviewed numerous consultant reports that provided the basis for developing the ordinance to determine if they met the definition of Best Available Science. He attended several Planning Commission and public comment meetings to respond to technical groundwater questions at the meetings, prepared written responses to public questions and comments about the proposed ordinance, and prepared a brief report summarizing his opinions and recommendations.



**Seattle Public Utilities, Greenwood Groundwater Study, Seattle, WA** Richard is Project Hydrogeologist for a study of soil and groundwater conditions in the Greenwood area of Seattle, Washington. A portion of the Greenwood area is underlain by peat and soft soils, and as a result of loading of these soils and declines in groundwater levels, ground settlement has occurred, which has damaged buildings and infrastructure in the area. Richard evaluated the groundwater conditions and determined that both short-term and long-term declines in water levels from drainage of the area, groundwater losses to the storm drain system, reduced infiltration, and construction dewatering have contributed to the settlement. Richard provided recommendations to help limit future settlement including limitations on drawdown as a result of dewatering during future development, and completing a groundwater monitoring program to establish baseline conditions by which future declines can be identified. As part of the overall evaluation of the hydrogeologic system, Richard completed a preliminary evaluation of the relationship of groundwater input to Piper's Creek from the Greenwood area.

**California Department of Water Resources, Peer Review for Jones Tract Levee, Stockton, CA.** Richard is Project Hydrogeologist to review a repair project and to evaluate seepage conditions for the Jones Tract Levee on the Middle River. In June of 2004, a 250-foot wide levee breach flooded the 12,000-acre Jones Tract. An emergency repair closed the breach, however ongoing seepage near the toe of the levee caused concern about future stability of the repaired section. Richard has developed a three-dimensional computer seepage model to evaluate hydraulic gradients through the repair to determine if there is piping of native soil underneath the levee. The results of his analysis will be used to decide if additional work is necessary to control seepage through the repaired portion of the levee and may provide a basis for design of future levee repair projects in the area.

**Washington State Department of Ecology, Embankment Fill Monitoring Plan Review, Seattle-Tacoma International Airport Third Runway Project, Seattle, WA.** Richard was Project Hydrogeologist for review of a proposed Embankment Fill Monitoring Plan, which was completed as part of the 402 Water Quality Certification for the Sea-Tac Third Runway project. Construction of the third runway included building a large embankment with imported fill adjacent to the existing runways and local wetlands. The Port of Seattle developed a seep and groundwater monitoring to evaluate the impact of the embankment on water quality in adjacent wetlands, local groundwater, and nearby Miller Creek. Richard assisted Ecology in reviewing the monitoring plan, consultant reports prepared for the airport, a groundwater flow model prepared for the project, and existing water quality data. He provided Ecology with an opinion on the technical basis for the plan and recommendations for modifications to the plan. Richard met with both Ecology and the airport's consultants on multiple occasions to finalize a plan that would support Ecology's position on the project during public review.





## **Katie Walter, PWS**

### **Education**

B.A., Botany, University of Washington, Seattle, Washington, 1990

B.S., Psychology, University of Washington, Seattle, Washington, 1990

### **Registrations**

Certified Professional Wetland Scientist, Society of Wetland Scientists/1996

Certified Senior Biological Assessment Writer, WSDOT

Certified Wetland Delineator, U.S. Army Corps of Engineers/1994

Katie Walter is a biologist and botanist with 16 years of experience conducting wetland delineations, developing mitigation plans, conducting natural resource inventories, and permitting large complex multi-jurisdictional projects. She has provided support to municipal and government clients conducting reviews of wetland delineation and mitigation projects for compliance with current codes. This work involved reviewing permit applications, making determinations if proposed activities occurred within wetlands or their buffers, performing and reviewing wetland delineations, and approving or denying permits for wetland delineation and mitigation projects. In addition, her technical expertise in mitigation design and applied ecological concepts has helped clients plan for expected permit requirements, implement permissible project designs, and meet project schedules.

**Washington State Department of Ecology, Natural Resources and Mitigation Plan Review Services, Seattle-Tacoma International Airport Third Runway Project, Seattle, WA.** Katie was project manager for natural resources and mitigation plan review services associated with the proposed Sea-Tac Third Runway project. The scope of work included developing 401 water quality certification conditions. This project was done for the State DOE as an extension of their staff. Katie completed review of the Natural Resources Mitigation Plan and supporting documentation. She provided documentation of findings and deficiencies and reviewed additional submittals. Federal 401 water quality certification conditions were drafted.

### **Pierce County Planning Department, Wetlands Management Program, Tacoma, WA**

Katie served as wetland biologist for the Pierce County Planning Department responsible for administering the Wetland Management/Regulations. She administered the process through site inspections to verify the presence of wetlands, categorize wetlands, and determine if activity will occur within the wetland or buffer boundary; delineate wetlands, and prepare, review, approve, or deny noncompensatory and compensatory wetland mitigation reports; and determine reasonable use exemptions and take cases to the hearings examiner

**South Anchorage Super Store, Alaska.** Katie acted as the project manager for a bird survey completed in Anchorage. The survey was conducted to evaluate the different species, habitat attributes, and conditions in the bird-use area. Field surveys identified 21 bird species using the site's wetlands and pond for a variety of functions, including breeding, foraging, roosting, and hunting. The assessment and report was necessary for the proposed development permit applications to the Corps and the City of Anchorage.



**Wetland Delineation and Mitigation, Graham, WA.** As wetland project manager, Katie completed a delineation and mitigation plan on a site in Graham. The client had cleared and filled more than 8 acres of the 10-acre site. The activity impacted both the wetland and its buffer and was completed without permits from Pierce County. Katie worked to bring the client into compliance with the existing ordinance. The delineation was difficult due to the clearing and filling. The disturbed area methodology was used to locate most of the wetland edge. The mitigation plan was developed with input both from Pierce County and the client. The project was reviewed and accepted by Pierce County.

**City of Mount Vernon, Sensitive Areas Inventory, Mount Vernon, WA** As task manager, Katie inventoried wetland and streams using aerial photos and site reconnaissance. She developed maps using aerial photos as a baseline, showing wetlands and streams with the city limits and the urban growth area. She developed riparian enhancement standards and a conceptual mitigation bank to help the City plan development that will be allowed under the Grown Management Act. She assessed five sites for mitigation banking possibilities and rated them for their future use for mitigation sites for proposed capital projects.

**City of Kent, Wetland Inventory, Kent, WA.** Using digital orthophotography and field reconnaissance, Katie updated an inventory of wetlands within the City of Kent. Katie inventoried wetland areas from aerial photography and digital orthophotographs, delineated these areas onto maps, and then conducted field reconnaissance to define the boundaries. The final maps have been digitalized by the City of Kent and added to the wetland inventory. Katie supplied wetland classification according to Cowardin et al and wetland rating according to the City's Management Code category. The final product included an Excel database with attributes for each wetland. The revised inventory will facilitate the City's effort to manage development and also protect wetland resources. Katie served as project manager

**University of Washington Wildlife Survey for the Golf Driving Range EIS, Seattle, WA.** Katie was the project manager for a study to identify wildlife species that may be influenced by the proposed upgrades to the University of Washington golf driving range. The project addressed potential impacts to birds, mammals, reptiles and amphibian from increased net height, changes in lighting and potential increases in noise. Comparative evaluations were conducted at the University site, and three similar ranges in Seattle. The initial phase of the work was a year-long four season survey of all bird species that used the area adjacent to and within the driving range. The second phase of the study analyzed how birds and other wildlife seen in the vicinity of the University Driving Range and three other comparable sites used the areas and found that the golf driving range infrastructure does not negatively impact wildlife.

**City of Kenmore, Bastyr University Expansion Draft Environmental Impact Statement, Kenmore, WA.** Katie was the project manager for the Bastyr University Draft Environmental Impact Statement. She was the field biologist and provided technical review for the wetlands, wildlife, streams, vegetation, and fisheries sections of the DEIS. The site is part of the largest undeveloped tract of land adjacent to Lake Washington. We delineated wetlands on and near the site, completed a stream assessment for five tributaries in three sub-basins for Lake Washington and assessed the wildlife and vegetative habitat on site. We assessed impacts associated with four development alternatives, and a no action alternative.



## **Dan McHale, LHG**

### **Education**

M.S., Hydrology, University of Idaho, 1998

B.S., Water Resources, State University of New York at Oneonta, 1991

A.S., Mathematics, Hudson Valley Community College, 1989

### **Registration**

Licensed Geologist/Hydrogeologist, Washington

Dan McHale has over ten years of experience as a Hydrogeologist. He has been involved in all aspects of hydrogeologic studies, specializing in aquifer testing and assessment, slug testing, tidal studies, dewatering designs, groundwater management studies, computer modeling, remediation investigations and designs, and well design. Dan has also performed groundwater flow and contaminant transport modeling, thermal transport modeling, analyzed groundwater chemistry, performed and analyzed geophysical surveys, delineated wellhead protection areas, and assessed groundwater/surface water interactions.

**Issaquah Highlands, WA.** Assessed the stormwater distribution and infiltration system for a new development in Issaquah. Work included assessing groundwater infiltration impacts to landslide zones and development of alternative stormwater management plans. Acted as a hydrogeologist on the peer review team that is working with the City of Issaquah to review the operation of stormwater infiltration systems as part of the stormwater management program for the Issaquah Highlands development. Reviewed soil and groundwater conditions associated with infiltration structures at Issaquah Highlands, provided comments regarding a "White Paper" study and other documents prepared by the City and their consultants, responded to public comments regarding the landslide and infiltration operations, and presented a review to City Council. Provided recommendations for future infiltration operations for the Issaquah Highlands development.

**Alaskan Way Viaduct and Seawall Replacement Project, Seattle, WA.** Hydrogeologist. As part of the project Environmental Impact Statement, Dan evaluated groundwater conditions along the proposed project alignment. He developed a groundwater flow computer model to evaluate construction impacts on the groundwater system. Dan used the groundwater model to assess potential impacts both during and after construction. To assess impacts during construction, he simulated groundwater drawdown caused by dewatering operations that could lead to ground settlements in the vicinity of existing structures such as buildings and roads. To assess impacts after construction, Dan used the model evaluate the potential for groundwater buildup (mounding) on the upgradient portions of the tunnels and seawall and possible related impacts on the groundwater contribution to the Sound. We also evaluated the potential for groundwater mounding to negatively affect existing structures upgradient of the tunnels and seawall, such as by flooding basements.

**Orcas Island Landfill, San Juan County, WA** Hydrogeologist. Evaluated hydrogeologic reports, boring logs and water level data to develop a hydrogeologic conceptual model and to assess groundwater flow directions, gradients and groundwater divides. Performed quarterly evaluations of water level data and evaluated changing groundwater flow directions observed over time. Synthesized existing groundwater and chemistry data in order to develop a work plan that could be approved by the Washington State Department of Ecology and San Juan County. The work plan includes installation of additional monitoring wells and gathering additional water level and chemistry data. Oversaw field installation of new monitoring wells.



## **Becki Kniveton, WPIT**

### **Education**

B.S., Environmental Science, Huxley College of Environmental Studies, Western Washington University, 1998

Minor in Chemistry, Emphasis in Botany, Western Washington University, Bellingham, Washington, 1998

### **Registration**

Certified Junior Biological Assessment Writer, WSDOT

Wetland Professional in Training (Society of Wetland Scientists)

Becki Kniveton is a wetland biologist with eight years of experience performing wetland delineations, and reconnaissances, conducting water quality monitoring projects, and providing wetland mitigation cost estimates for commercial clients and private landowners. Becki has performed wetland delineations using the Washington State Wetlands Identification and Delineation Manual (1997), the Corps of Engineers Wetland Delineation Manual (1987), and the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989) methodologies. Her work has included researching the project sites, interviewing local government officials, conducting field investigations, and providing a written report documenting the site conditions. In addition, Becki has conducted reviews of wetland delineation projects for compliance with current codes for the City of Kent and has assisted in sensitive areas inventory projects for local municipalities, including Kent and Kirkland.

**City of Kent Public Works, Kent Wetland Delineation Peer Review, Kent, WA** As project Wetland Biologist, Becki reviewed wetland delineation reports prepared by others to determine whether the reports were in compliance with City of Kent codes. Becki was responsible for reviewing the report, performing a site visit, interviewing the authors of the reports, and determining whether the reports were acceptable or needed to be revised.

**Pierce County Department of Planning and Land Services, Wetland Monitoring Peer Review, Pierce County, WA** Shannon & Wilson provided on-call services for Pierce County Planning and Land Services (PALS) to assist the County in reviewing backlogged wetland mitigation monitoring reports. As project Wetland Biologist, Becki performed this work as an extension of the county's staff, and was responsible for administering their wetland and stream critical areas regulations. Although not part of our original scope of work for this project, Becki also reviewed backlogged fish and wildlife habitat assessment reports and performed wetland verifications for Pierce County.

**Island County Public Works, Bayview Road Wetland Delineation, Whidbey Island, WA** The proposed development included the widening of Bayview Road for several miles near Langley. For this project, Becki conducted a wetland delineation for wetlands located within the 100-foot right-of-way of Bayview Road in the project area. This work included reviewing previous wetland delineations for properties located in the project area, delineating and flagging wetland boundaries identified on site, and preparing a detailed wetland delineation report for the Island County Public Works Department.



## **Julie Brandt, PE**

### **Education**

B.S., Civil Engineering, 1997

### **Registration**

Certificate of Training, Const. Site Erosion & Sediment, 2005

Registered Professional Engineer, WA and OR

Julie is a stormwater engineer in the Water Resources Division of Parametrix with experience in water resources and air quality engineering. Julie uses her strong organizational skills and problem solving abilities in urban stormwater management, water quality treatment planning and design, hydrologic and hydraulic modeling, and construction water quality management, and is a Certified Erosion and Sediment Control Lead through WSDOT and Ecology. Julie is skilled at writing comprehensive plans, reviewing stormwater plans and reports, stormwater control plans, EISs, and technical reports to support NPDES permits. She is well versed in both analytical and computer modeling of surface water and storm systems.

**Port of Seattle, Development Review Services, Seattle, WA** Julie was manager of on-call services for design plan review for the Port. She evaluated design plan drawings, specifications, hydraulic reports, and stormwater pollution prevention plans for the airport and provided comments relating to environmental impacts to water resources (streams and wetlands), TESC, and stormwater management issues (water quality treatment, flow control, and conveyance), as applicable to the project design. Her reviews included compliance assessments with the requirements of the Washington Administrative Code, the Ecology Surface Water Design Manual for Western Washington, the WSDOT Hydraulics Manual, the King County Surface Water Design Manual, the City of SeaTac Municipal Code, the Gilliam and Des Moines Creek Basin Plans, the Sea-Tac Airport NPDES Permit, the Section 401 Water Quality Certification for the Sea-Tac Airport Master Plan Update, and the Port of Seattle Comprehensive Stormwater Management Plan.

**City of Kirkland, Comprehensive Stormwater Management, Kirkland, WA** Parametrix updated the City of Kirkland's comprehensive stormwater management program. This effort included preparation of conceptual designs and cost estimates for capital improvement projects for the purpose of reducing local flooding and improvements to stream habitat and water quality. Julie assisted with stream flow modeling by analyzing the hydraulic properties of water bodies within the stream system. As part of this effort, she developed a stage-storage-discharge profile of Totem Lake using KC Backwater software. She also developed a unit-area runoff analysis using WWHM software that was used for planning of future development and mitigation. She summarized the modeling results and recommendations in a technical memorandum.

**OBEC, I-205 Willamette River/Pacific Highway, Clackamas County, OR** The Oregon State Department of Transportation contracted OBEC and Parametrix to assist in the planning and design of the SR 205 road widening just south of Portland. Julie developed a StormSHED model of vicinity watershed to compare existing and future highway runoff changes resulting from the proposed road widening. This effort included drainage basin delineation, land cover and soil mapping, and impervious area calculations. Hydrographs for contributing drainage basins were simulated and routed through the Saum Creek vicinity reaches using StormSHED modeling software. The model results and project stormwater analysis findings were documented in a technical report.



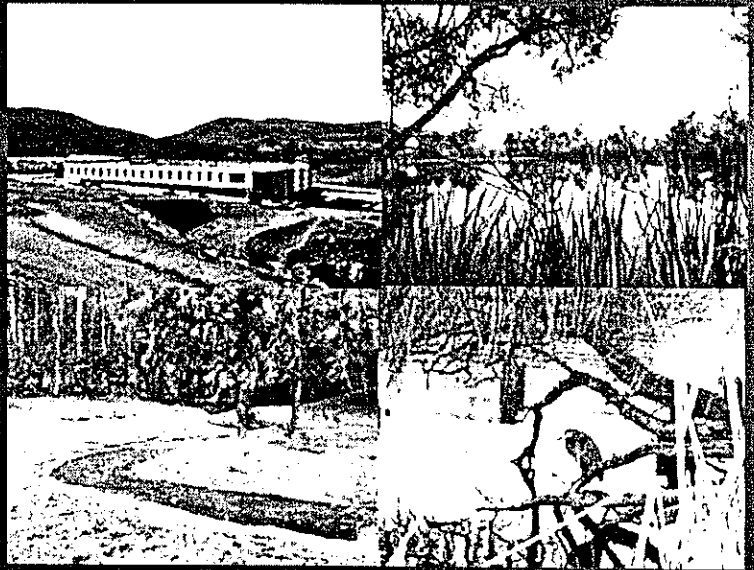
**WA State Dept. of Transportation, Trans-Lake Washington Project WO #6, King**

**County, WA** Julie developed a stormwater pollution load analysis based on Federal Highway Association methodology. She estimated annual pollutant loads of hydrocarbons, metals, and particulates for the SR 520 corridor across Lake Washington, Lake Union, Lake Sammamish, and other sensitive receiving waters. Julie summarized findings in a technical memorandum.

**WA State Dept of General Admin, Environmental Consulting Services, WA** Parametrix is assisting the Washington State Department of Ecology to review the permit applications for development of the Tukwila South Property. The proposed site is located on an approximately 500-acre property adjacent to the Green River in Tukwila, Washington. Development would involve conversion of the area from agricultural use to a large-scale commercial technology campus. Julie reviewed the applicant's EIS and provided comments to Ecology regarding proposed surface water flow control, water quality treatment, and construction erosion and sediment control. She provided detailed technical advice to Ecology regarding proposed hydrologic modeling and flow control design approach. She also participated in multiple coordination meetings between Ecology and the applicant.

**Lorig Salishan, LLC, Salishan Redevelopment Areas 2 and 3 Design, Tacoma, WA**

Parametrix is providing site civil engineering, surveying, environmental, and permitting services for the Salishan HOPE VI redevelopment located in the eastside neighborhood of Tacoma. The 200-acre redevelopment project involves the complete demolition of all residential units and construction of between 1,270 and 1,500 housing units, as well as revitalization and construction of new community infrastructure, facilities, and services. The design of the redevelopment focuses on locating homes and services in close proximity; providing mixed-housing types and sizes within one neighborhood; and integrating community focal points and open spaces within walking distance of most homes. Parametrix's design for the site infrastructure includes streets, sidewalks, utilities, and a system of bioswales for stormwater collection and infiltration using low-impact principles. Julie provided technical advisement to the design team regarding requirements of local regulations and water quality treatment parameters. She reviewed proposed site layouts and provided water quality planning and design recommendations based on the site's soil properties, hydrologic characteristics, and treatment facility capabilities. Julie developed a runoff analysis using WWHM software and evaluated bioinfiltration swale sizes. She also provided conveyance system design checks.



**Attachment 2**  
**Projects**





### **Camp Creek Landslide Peer Review, Issaquah Highlands, WA**



Following a major landslide that threatened a freeway on-ramp, Shannon & Wilson was retained by the City of Issaquah to review the operation of stormwater infiltration systems as part of the stormwater management program for the Issaquah Highlands development. We served as an independent peer reviewer of the infiltration systems that caused the landslide, providing critique of a "White Paper" prepared by the City and their consultants, evaluated the decision-making process that eventually led to the landslide, participating in a public City Council meeting to provide expert testimony, responded to public comments regarding the landslide and infiltration operations, and provide recommendations for repair of the landslide and safe operation of future infiltration structures. We also reviewed the stormwater management approach for the development in meeting the Environmental Impact Statement

requirements of recharging the underlying aquifer, maintaining the hydrology of local wetland and streams, and preserving slope stability.

Currently, we are working with the City to review and comment on additional stormwater management issues, including those related to the repair of Washington State Department of Transportation stormwater structures, which were impacted by the Camp Creek Landslide. We are also supporting the City on evaluating the potential impacts of a large infiltration structure on the underlying aquifer, which provides drinking water supplies to local jurisdictions. At every stage, a Shannon & Wilson geologist and hydrogeologist have presented their opinions to either the full City Council or the council committee charged with major development oversight.

### **Natural Resources Mitigation Plan Review, SeaTac Airport Third Runway Project, SeaTac, WA**

Shannon & Wilson provided natural resource mitigation plan review services associated with the proposed Sea-Tac Third Runway project to develop Clean Water Act 401 water quality certification conditions. This project was done for Ecology as an extension of their staff.

Our work included reviewing the mitigation plan proposed by the Port of Seattle to offset wetland and stream impacts resulting from the proposed Third Runway. This is one of the largest public works projects ever attempted in the state of Washington.

The third runway will be located west of the airport's two existing runways. More than 17 million cubic yards of fill will be used to construct the 8,500-foot-long project. Three salmon-bearing creeks - Des Moines, Miller and Walker - are contiguous to the planned runway site. In addition, nearly 20 acres of wetlands will be filled, but the project proposes to replace or enhance wetland functions in each creek basin and create a new 60-acre wetland next to the Green River in Auburn. Overall the project will create or enhance over 200 acres of wetlands and aquatic habitat. In addition, nearly 6,500 linear feet of Miller Creek will be enhanced to provide better wildlife habitat, and eliminate much of the negative urbanization effects from the area.

Through our review of the Natural Resource Management Plan (NRMP) and its subsequent revisions, we





identified areas of concern within the proposed plan and worked with the Port's consultants to find a beneficial solution. The unprecedented size, scope and complexity of the project and its potential effects on water quality and the natural environment are enormous. The Port agreed up front that the project should meet the highest environmental standards. Through the 401 Water Quality Certification conditions, we ensured that those standards were achieved. The 401 permit was issued by Ecology in September, 2001. Because of the contentious nature of the project, the 401 permit was appealed. Shannon & Wilson provided both written and oral expert testimony for the judicial hearing supporting the Port's permit before the Washington State Pollution Control Hearings Board. The 401 permit conditions were upheld, having withstood appeals at the state Supreme Court level.

Our review provides Ecology with reasonable assurance that the Federal 401 Water Quality Certification permit issued protects water quality and meets state water quality laws.

### **Snohomish County Critical Area Regulations, Snohomish County, WA**

Shannon & Wilson was recently requested by the staff of the Snohomish County Planning Department through our on-call environmental and geotechnical contract to provide technical review of the County's draft Critical Areas Regulations. The proposed regulations provide a basis for identifying and managing development in areas that have important environmental functions and processes and may impact land-use. Shannon & Wilson's review of the ordinances was performed to aid Snohomish County in decision-making during deliberations for finalizing the regulations.

Shannon & Wilson reviewed and provided comments for the Critical Aquifer Recharge Areas and Geologically Hazardous Areas ordinances. During our review we evaluated numerous consultant reports that provided the basis for developing the ordinances to determine if they met the definition of Best Available Science. The reviews were summarized in brief reports with our conclusions and recommendations. We also responded to questions and comments from both the public and the Snohomish County Planning Commission. Shannon & Wilson geologists and hydrogeologists attended public meetings and Planning Commission deliberations to provide expert testimony on the proposed ordinances.

### **Pierce County On-call Contract, Wetland Review Services, Pierce County, WA**

Shannon & Wilson provided on-call services for Pierce County Planning and Land Services (PALS) to assist the County in reviewing backlogged wetland mitigation monitoring reports. We performed this work as an extension of the county's staff, responsible for administering their wetland and stream critical areas regulations. Although not part of our original scope of work for this project, Shannon & Wilson also reviewed backlogged fish and wildlife habitat assessment reports and performed wetland verifications for Pierce County.

Our work included reviewing Pierce County project files; interviewing Pierce County biologists that had worked on the projects in the past; interacting with property owners and their consultants; performing site visits to review wetland boundaries, vegetation, and overall establishment of the wetland mitigation plan; and writing letters with our findings and recommendations. Shannon & Wilson reviewed over 50 monitoring reports in five months and provided additional assistance by reviewing fish and wildlife habitat assessment reports and performing wetland verifications.



Due to our efficient use of time and resources, Shannon & Wilson was able to provide these additional services under the original budget for the project. We were able to eliminate the work backlog for Pierce County biologists, which was the direct goal of our contract. We also expanded our scope to review fish and wildlife habitat assessment reports and perform wetland verifications.

### **Shoreline Master Program, Landscape Scale Analysis, Des Moines, WA**

Shannon & Wilson partnered with Adolfsen & Associates to characterize ecosystem-wide processes and the shoreline jurisdiction of Des Moines as a basis for updating the city's Shoreline Master Program to comply with the Shoreline Management Act. Shannon & Wilson characterized geology, soils, surface and subsurface water flow, aquifer recharge areas on a watershed scale, and nearshore processes and geologically hazardous areas along the shoreline environment. Shannon & Wilson assessed opportunities for conservation and restoration of ecological functions within Des Moines.

### **South Anchorage Super Store, Alaska**

A Bird Survey was conducted as part of the Section 404 Individual Permitting process to evaluate the different species, habitat attributes, and conditions in the bird-use area. Field surveys identified 21 bird species using the site's wetlands and pond for a variety of functions, including breeding, foraging, roosting, and hunting. The field survey also evaluated the habitat characteristics of the wetlands and pond and determined that the vertical stratification found in the tree communities and abundance of edge areas found on site are conducive to healthy bird and wildlife species diversity. The small size of the wetlands and pond, however, likely limit the number and diversity of species that the site can support because it is surrounded by industrial zones with little or no vegetation. For this same reason, the wetlands and pond of the site are likely the preferred location for wildlife in the immediate area.

### **University of Washington Wildlife Survey for the Golf Driving Range EIS, Seattle, WA**

Shannon & Wilson, Inc was asked by University to complete a study to identify wildlife species that may be influenced by the proposed upgrades to the University of Washington golf driving range. We addressed potential impacts to birds, mammals, reptiles, and amphibian from increased net height, changes in lighting and potential increases in noise. Comparative evaluations were conducted at the University site, and three similar ranges in Seattle. Because wildlife issues associated with proposed changes were perceived to have the most potential impact to the EIS outcome an in-depth study was warranted.

The initial phase of the work was a year-long four season survey of all bird species that used the area adjacent to and within the driving range, and in a natural area preserve adjacent to the range. We were able to identify a diverse species list of over 200-birds and identify the ways the areas were used by all of these species during each season.

The second phase of the study looked at three existing driving range sites in Seattle, which had similar attributes as those that were being proposed at the University site. We completed an analysis of how birds and other wildlife seen in the vicinity of these sites used the area and found that the golf driving range infrastructure does not negatively impact wildlife. The behavior of birds and wildlife in the presence of the existing netting, lighting and noise, revealed adaptations or acclimatization to the systems to the point of having incorporated the infrastructure into their activities. The EIS conclusion found that the proposed University range upgrades would be minor and are projected to create no perceptible changes for wildlife.

**PROPOSAL FOR THE REVIEW AND SUMMATION OF VARIOUS STUDIES  
CONDUCTED IN  
THE DENSITY REDUCTION/GROUNDWATER RESOURCE AREA  
  
LEE COUNTY, FLORIDA**

**INTRODUCTION**

Malarkey Consulting, Inc. and its associates are pleased to submit this proposal to conduct thorough reviews, summations and an oral presentation of studies that apply to the Density Reduction/Groundwater Resource Area (DRGR) in the Estero Bay watershed. As the attached professional biographies demonstrate we have the range of training and experience to successfully conduct this project. Malarkey Consulting, Inc. and associates have an average of 30 years environmental and engineering consulting experience in all facets of such work having provided consulting support to government and industry virtually from the inception of much of the enabling legislation associated with such land use issues. It is this hands-on experience and knowledge that we believe uniquely qualifies us to conduct this work. We can conduct this project without bias, not having performed any related work in Lee County.

**PROJECT UNDERSTANDING**

Review of Comprehensive Master and Mitigation Plans, Resource Evaluations and Feasibility Studies require broad knowledge of the regulatory programs and initiatives on which they are based, as well as multi-disciplinary experience and understanding of the physical and ecological interrelationships involved as a result of the disruptive consequences of land development. Malarkey Consulting, Inc. and associates have had such involvement from the early days of the Federal Clean Water Act, and more recently with the new and/or strengthened initiatives under the recent Clean Water Authority Restoration Act (proposed to ensure that all U.S. waters are protected by the Clean Water Act); and the USEPA 2003 – 2008 Strategic Plan. In fact, three out of the five goals in the Strategic Plan relate directly to clean water, land restoration and healthy communities and ecosystems – all principal criteria for evaluation under the proposed Plan reviews. The consequent and interrelated impacts of land use development in Lee County, as for most development scenarios, will unavoidably involve the assessment of affected habitats and ecosystems in order to ensure protection of natural and biological resources, as well as economic value and stability.

We are well versed in groundwater resource assessments for municipal, commercial and industrial clients. This has included development-oriented aquifer characterization through pumping tests, bedrock fracture analysis, laboratory water quality analysis, computer modeling and other such groundwater assessment techniques. These techniques will likely be employed or reported for land use activities in Lee County. We have likewise conducted

peer reviews of hydrogeological investigations by others for local regulatory/municipal agencies.

Regardless of their scope and complexity groundwater-related assessments/ investigations have the same basic objectives:

1. Determine the safe (sustainable) yield of the aquifer.
2. Determine the groundwater quality by comparison to established potable water standards.
3. Determine the impact of future groundwater use, in terms of groundwater availability and quality, on existing groundwater users.
4. Determine the impact on groundwater use by current and future land use practices.

These basic objectives apply to studies done for local residential subdivision as well as regional watersheds.

Based on our experience with planning and conducting field investigations in support of environmental investigations/remediation, we know what is required for their success and credibility. We have the hands-on knowledge and ability to evaluate similar studies in Lee County.

Malarkey Consulting, Inc.'s associates have also participated in the renewed emphasis on ecosystem/habitat issues associated with both industrial and commercial/residential development, and their affect on recreational resources and activities involving fish, plants and wildlife. We have also managed projects involving ecosystem-scale protection and restoration of natural areas. This project experience has included withdrawal impacts/mitigation from large once-through-cooling reliant plants (e.g., CWA Section 316(b) studies), wetlands/habitat creation, shoreline enhancement, beneficial reuse studies, habitat conservation projects for endangered, threatened and at-risk species, and assessment of viability of/risk from invasive aquatic species.

We have also been involved in the assessment of nutrient discharge criteria, water body sedimentation, biological impact measurement and ecological evaluation to support assessment of water conditions on a watershed as well as regional scale. This work has included the development and use of indicators (both physico-chemical and biological) for water quality based trading (similar to air credits), and emphasis on the watershed as a whole, not simply on local waterbody mixing zones; as well as performance based permitting for environmental results, not merely meeting site specific standards and criteria.

Malarkey also has experience with NPDES based permit requirements related to thermal discharges, stormwater runoff, waste water discharges, combined sewer overflows, and concentrated animal feed operations as they affect beneficial use water quality for aquatic organisms. One major driver in our work in this area has been the nationwide increase in the severity and frequency of fish tissue contamination and the need for public

advisories/limits on fish consumption. There may also be a strong crossover potential for many of these issues to be evaluated in the context of emerging attention to Natural Resource Damage Assessment and resource economics, both areas in which Malarkey associates have also participated.

Other contributing experience to assess our capability to perform this work includes: dredged material management at ports and harbors including evaluation of disposal sites; pathogen assessment; and biological monitoring and assessment related to Total Maximum Daily Loads (TMDLs). In that regard, CWA Section 303(d) requires states to develop lists of waters that do not meet water quality standards and to assess pollutant loadings to protect beneficial uses for fish and shellfish. Impairment is based upon evaluation of chemical, physical, or biological integrity, determined by qualitative assessment, physical/chemical monitoring, bioassay tests, and/or other biological monitoring. Federal emphasis will be on reducing contaminant sources, improving water quality and developing models, indicator species and biological performance measurement, particularly as a function of pesticides, metals (particularly mercury), PCBs, industrial and agricultural pollutants, and pathogens/biosolids from wastewater treatment. Consequent State-mandated (including Florida) strategic targets (assumed for 2008) will require significant local government regulatory/permit requirement based support. Malarkey Consulting, Inc. and its associates are prepared to provide whatever level of consulting support that may be required by Lee County in developing standards and strategies for compliance with this new, impending legislation.

In addition, under its "Healthy Communities and Ecosystems" initiative, US EPA is promoting protection of wetlands, critical aquatic habitats, the Great Lakes and key estuaries in the National Estuary Program. Although the Estero Bay Watershed is not included in this program, our involvement with the Chesapeake Bay and other national estuaries provides a basis on which to apply our understanding of this program relative to current Lee County Estero Bay initiatives. Key components of the federal program, including research, methods development and improved screening techniques/use of risk indicators can be used to address impacts and support review of the Estero Bay Watershed Program.

Malarkey Consulting, Inc and associates, for these study reviews, has the working knowledge of the impacts, contamination sources, physical and natural resource interactions/ interdependencies and mitigation options involved in order to best assess their value and dependability to support necessary decision making by the County.

### **CONTRACTUAL AGREEMENT**

Lee County will enter into a contractual agreement with Malarkey Consulting, Inc., a woman-owned business located at:

1429 Shaner Drive  
Pottstown, Pennsylvania 19465

Relevant study areas and associated clients (significant overlap between study area and clients not indicated) with whom Malarkey Consulting, Inc. and associates have been involved include:

- Peer Review of Hydrogeological Investigations
  - Clients: North Coventry Township, Brecknock Township, Billet & Connor (law Firm), MDC Systems
- Groundwater supply assessment and development
  - Clients: Upper Saucon Township, Whitehall Township Authority, Toll Bros. Developers, Tredyffrin Township,
- Section 316 studies
  - Clients: PSE&G, PP&L, AEP, Champion Paper, PASNY, Allegheny River
- FERC Relicensing
  - Clients: BG&E, PP&L, PECO, PG&E,
- Ecological assessment
  - Clients include Anchor Glass Container Corporation (based in Tampa), State of NY, Con Edison, Kerr McGee, DOE, and DOD
- NPDES water quality/permitting
  - Clients: City of Kennebunkport, AGCC, Ciba Specialty Chemicals, P&G,
- Fish tissue bioaccumulation, contaminant assessment and risk communication
  - Clients: Con Edison, GE, Rollins, Petroleos Mexicanos, Occidental, Thule AFB
- Water body sedimentation
  - Clients: Columbian Chemicals, PSE&G, US Corps of Engineers, PP&L
- Soil, groundwater and remedial engineering
  - Clients: Advanced GeoServices, Somerset Anchor, Ensign-Bickford, Allied Signal, Ecocalpin
- Brownfield Developers
  - Clients: Starwood Cerruzzi, Marshal Granor, Mignatti
- Federal Agency
  - Clients: USEPA, USCOE, DOE, DOD, F&WL, NOAA, NRC

Most of these projects also included significant interaction with State agencies throughout the US, including Florida.

### **PRIMARY CONTACT**

Joseph S. Tomalavage, P.G., registered in Florida as a professional geologist, will be the primary contact and project manager for this project. Mr. Tomalavage can be reached at:

Malarkey Consulting, Inc.  
1429 Shaner Drive  
Pottstown, PA 19465

Phone: (610) 326-2949  
Fax: (610) 326-0530

Email: [joe@malarkey.us](mailto:joe@malarkey.us).

A brief summary of Mr. Tomalavage's professional experience is attached.

### **SECONDARY CONTACT**

Kenneth J. Salamon, Ph.D. will be the secondary contact, and project manager, in the event that Mr. Tomalavage is unavailable. Dr. Salamon can be reached at:

Praxis Environmental, Inc.  
619 Westbourne Road  
West Chester, PA 19382

Phone: (610) 399-3484

Fax: (610) 399-0787

Email: [kjsalamon@praxisenvironmental.com](mailto:kjsalamon@praxisenvironmental.com)

A brief summary of Dr. Salamon's professional experience is attached.

### **PROJECT APPROACH**

Our approach will be to hold an initial meeting with you to reach a common understanding of the goals of our project, assign responsibilities, both ours and yours, and determine the schedule for this project.

As Part of the initial meeting we would gather the reports and/or studies we will review, and evaluate each for the necessary experts to respond. Appropriate staff would be assigned, based on the issues involved in each case and discipline-specific summaries prepared, organized and summarized to provide a seamless, holistic response to each study assessment.

Our team will perform the document reviews with emphasis on the specific assessment, impact, restoration and mitigation aspects described in the various studies, and any study recommendations made to support, reject or reevaluate the proposed development. Each of the development plans and associated studies are expected to have significant surface and groundwater, ecosystem, organism specific and/or NRDA related components, as driven by associated declines in water quality, habitat/wetland loss, eutrophic conditions, sediment contamination, fish/benthic health, etc.

The need for possible habitat enhancement, replacement or restoration will also be evaluated, in conjunction with other mitigation as dictated by state laws. For example, in New York, large industrial dischargers must meet Best Technology Available (BTA) requirements for which restoration and site specific determinations do not qualify, while California has retained mitigation/restoration as a development option, but is requiring that

it be standardized for habitat production, mitigation for net impact (i.e., differences from target reductions), and in-kind mitigation.

Based on our working knowledge of the possible study areas indicated and/or expected, the Malarkey team will conduct this project with the same due diligence and professionalism as applied numerous times before. The end result and final product will consist of a scientifically defensible, yet easy to understand written summary of the work reviewed and, as necessary, an oral presentation to the Lee County commissioners.

We will provide weekly progress reports by email and/or telephone as determined in our initial meeting with you.

### **SCHEDULE**

At this time, we anticipate that approximately five to ten man-days effort for review, analysis and summation will be required, per report, depending on the size of each report. An additional five to ten man-days of effort may be necessary for preparation of the text and graphics if an oral presentation is required. In addition, more involved or complex reports and issues may require a site visit/walk-through and interviews with associated parties. Much of the review work will occur concurrently, and as indicated above, progress will be reported to you on a weekly basis. Although we understand that this work may be on-going, based on the reports currently identified, we anticipate that this project can be completed in approximately four months.

### **RÉSUMÉS**

Below are brief résumés of the likely principle participants for this project.

#### **Joseph S. Tomalavage, P.G. (Primary Contact)**

Mr. Tomalavage has over 30 years of technical and managerial experience in environmental-related problem solving. This experience includes water resources development/availability of groundwater for water supply on a regional or site-specific basis; hydrogeologic evaluations of groundwater contamination problems, including those resulting from landfills, spray irrigation, and well contamination; and hazardous waste investigations, soil and groundwater remediation, regulatory agency negotiation and permitting. Skill areas include groundwater resource evaluation, wellhead protection, soil and water pollution assessment, work plan development/implementation, remediation technology evaluation, remediation operations and maintenance, and regulatory compliance. Mr. Tomalavage has performed remedial investigations, corrective actions, Brownfields studies, and regulatory compliance programs for the chemical, utility, and manufacturing industries, and for government clients. Mr. Tomalavage is a Registered Professional Geologist in the states of Pennsylvania, California, Georgia, Indiana, Florida, Tennessee and Virginia, and is certified as a Hydrogeologist by the American Institute of Hydrology.



**Kenneth J. Salamon, Ph.D. (Secondary Contact)**

Dr. Salamon has twenty-five years of experience in the design, implementation and management of complex environmental and engineering studies, particularly related to investigation, assessment and mitigation of environmental impacts in the marine, estuarine and freshwater environments. This has included, among many issues, wastewater discharges, fisheries, facilities engineering, toxic effects, sediment transport, estuarine biology and oceanography. Related experience includes environmental agency negotiation, implementation of remedial action and contaminated site-closure work plans; assessment of environmental and human health impacts and mitigation alternatives; assessment and management of operational or disposal aspects of hazardous chemicals and wastes; design and management of remedial investigations and actions related to large-scale soil and groundwater contamination programs; multidisciplinary environmental permitting programs; and broad-based experience in regulatory compliance analysis, agency negotiations, and site closure/re-use strategy development, management and disposition. Dr. Salamon has extensive experience as expert witness in various contamination assessment cases, and as consultant and investigator for chemical/petrochemical, electric utility, pharmaceutical, incineration, glass packaging, pulp and paper, biomedical, and wastewater treatment industries, and for the US Departments of Energy and Defense.

**Charles J. Dobroski, Jr.**

Mr. Dobroski has 30 years of varied experience in the environmental field. He has directed and/or managed numerous risk assessments for hazardous waste sites for both CERCLA and RCRA projects, focusing on both human health and ecological aspects of the process. He has been the lead on many comprehensive risk assessments and managed numerous field investigations in support of risk assessments and ecological evaluations. Mr. Dobroski has worked on numerous PCB, volatile organic and metals contamination projects including the Letterkenny Army Ammunition Plant in Pennsylvania and the Housatonic River in Massachusetts. Mr. Dobroski also has extensive experience in development, coordination and management of human and ecological risk assessments and environmental assessments for issues under NDA, CWA, CERCLA/SARA, NEPA, TSCA, and FIFRA. This has included sediment toxicity testing, amphibian reproduction and developmental toxicity testing, fish reproduction toxicity testing, benthic community evaluation multi-trophic level bioaccumulation studies, and wildlife population ecological and economic evaluations.

**Ronald Ragan, P.E.**

Mr. Ragan has more than twenty-one years of management and technical experience in water resources engineering and watershed management. This experience includes stormwater management, floodplain management, point and nonpoint source pollution assessment, design and application of best management practices (BMPs), site development engineering, land use planning, and design of small community wastewater collection, treatment and disposal facilities. Mr. Ragan has performed as the lead technical consultant and managed project teams responsible for entire watershed level studies and site-specific applications for proposed

development and remediation projects. Skill areas include stormwater, floodplain and water quality modeling; design of stormwater management facilities including BMPs; and development of geographical information system (GIS) water resources applications, and watershed level assessments. Mr. Ragan has experience using the Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) model developed by EPA to develop watershed-wide Total Maximum Daily Load (TNDL) levels. This model is the latest technology integrating spatial and relational data to state-of-the-art water quality models being promoted by EPA for doing water quality assessments and evaluating NPDES discharge requirements.

**Ronald D. Wagner**

Mr. Wagner has more than fifteen years of technical experience in flora and fauna field studies, wetlands assessments, and groundwater monitoring and sampling programs conducted for the environmental consulting industry. He is a certified Field Ecologist with extensive experience as a wetland delineator in the determination of jurisdictional wetland boundaries. Mr. Wagner also has specific training and experience in endangered species assessments and avian identification and impact, including evaluation of habitat quality and receptor identification in association with ecological risk assessments for remedial investigation, impact assessment and feasibility studies. His research and field experience includes the conduct of natural resource evaluations/damage assessment, ecological site characterizations, and long-term water quality and fisheries monitoring for NPDES permits and FERC utility licensing.

**Kurt R. Philipp, Ph.D.**

Dr. Philipp has worked as a consulting ecologist for over 20 years providing environmental management and design of large-scale projects involving wetlands investigation, mitigation, creation and restoration; wetlands delineation and permitting; community ecology; environmental impact assessment; and hazardous waste facility siting and impact assessment relative to disturbances of wetlands, riverine and coastal ecosystems. He has managed and participated in stream restorations, including bank stabilization, plantings oversight, and riparian vegetative recovery and monitoring. This experience includes creation of a trout stream section, and associated ecosystem infrastructure. Dr. Philipp has also served as a Wetlands Expert with the Adaptive Management Team of the Estuary Enhancement Program for the restoration of over 20,000 acres of tidal wetlands in the Delaware River and Bay in New Jersey, and was wetland design manager for thousands of acres of tidal wetland creation and restoration sites nationwide.

**Julie Brooks Hiller, P.G.**

Ms. Hiller has more than 15 years of technical and professional experience implementing geological and hydrogeological investigations for industry and government. Skill areas include hazardous waste site investigations and assessments; experience in management of overburden and bedrock drilling and borehole logging operations; monitor well design,

installation and abandonment; task planning for assessment of subsurface soil and groundwater contamination; and project organization, data reduction, management, and electronic file format procedures. Her management experience includes complex sampling programs utilizing various collection methods for surface soil, subsurface soil, bedrock, surface water, and groundwater sampling. Ms. Hiller's specific technical experience includes geological field logging; soil classification and profile analysis; core analysis and bedrock characterization; borehole log interpretation; hydrogeological field investigations; groundwater monitoring system design, installation and abandonment; chemical and physical field analyses of samples; aquifer mapping; contaminant transport analysis; and data interpretation, reporting and presentation.