

### Research Project Tools and Resources

As residents of the Chesapeake Bay Watershed, we are directly affected by the health of the watershed. Through the Gemstone program, we have chosen a project that will hopefully provide insight and treatment into removing some of the pollution in the Chesapeake Bay. Given such a broad topic, our team needed to narrow down our research based on feasibility and time requirements. We chose to investigate wetland solutions because of their proven effectiveness as well as providing a hands-on experience not traditionally available in laboratory settings.

We used a variety of information sources, such as government documents, scientific reports, primary sources, and textbooks, in our research. However, our primary method of obtaining sources was the Research Port on the University of Maryland library system. We sought out two different levels of information: specific and general. For general information, we looked at EPA reports on pollution in the Chesapeake Bay and at textbooks for how certain ecological processes like the nitrogen cycle work. We also found information about wetland function and design through journal articles on Research Port. For specific information, we searched for peer-reviewed experimental studies relating to the various aspects of our project. Recently published articles were desired over more dated articles because of concerns over finding the most up-to-date sources. We focused on articles specific to the Mid-Atlantic region, our desired plant species, our desired carbon substrates, and relevant procedures.

Mr. Bob Kackley, our librarian, helped us greatly with our research. Not only did he read over our paper and provided feedback on our citations, he also familiarized us with research tools that were essential to conducting our literature review - the foundation of our project. Through him, we learned about the University of Maryland library catalog and e-databases. For example, we learned to use Boolean terms like “AND,” “OR,” and “\*” in our keyword searches to get the most relevant information from the biggest pool of articles. We learned to modify our searches to display the most recent academic articles, and learned about library resources and services that we can use, like Interlibrary Loan and book requests. Thanks to Mr. Kackley, we had access to endless resources, strengthening our knowledge and research.

We also received assistance from our supervising professor, Dr. David Tilley. He provided input towards what we should focus on and what sources contain useful information. For example, he directed us to certain textbooks and research articles worth consulting. We also talked to some experts, including Dr. Bruce James, the director of the Environmental Science & Policy program at the University of Maryland. Dr. James made a significant contribution by pointing us in a direction better suited for the time and physical limitations of an undergraduate research study.

Through our experience, we learned techniques to conduct research properly. Proper organization was necessary to manage the sheer volume of resources. We categorized our sources by level of specificity and aspect of the project it related to. We also summarized the articles for quick and easy overviews and access. EndNote, an online source-managing tool, helped us keep track of everyone’s sources by formatting the articles we obtained online. Another important aspect about the research process is to have a continuing literature review. New papers are published constantly, and we must review them to see if there is useful information. As we change aspects of our project, we need to find other relevant articles. Possibly the most useful technique we learned from the research experience is how valuable the library is. We found Research Port to be not only a convenient, but also useful resource that we intend to use for the remainder of our academic career. The usefulness of the library system extends beyond purely an online locale; we frequented the library for various books and scientific journals that are otherwise obtainable, and approached the staff for invaluable assistance.