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Landmark Environmental Intern

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COLLEGE OF THE ENVIRONMENT



Internship Title:

Organization Worked For:

Student Name:

Internship Dates:

Faculty Advisor Name

Department

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STUDENT SIGNATURE _____

DATE: _____

Meredith Czoschke

Ed Weber

CENV ESCI Internship

September 13, 2024

Final Report: Landmark Environmental Internship

Introduction

This final report details my internship experience at Landmark Environmental, a small, woman owned business located in Bloomington, Minnesota. My internship took place from June to September 2024. This report provides a comprehensive overview of the activities undertaken, skills developed, and the application of these experiences to the established learning objectives. Additionally, this paper compares the contributions of my coursework to the hands on experience I gained during this internship with regards to my understanding of environmental science.

Landmark Environmental specializes in assessing and remediating chemically contaminated sites, often involving construction or redevelopment projects. Their work is divided into several key aspects: Phase I Environmental Site Assessments (ESAs), Phase II ESAs, and additional remediation activities. This report aims to provide a detailed account of my responsibilities, the skills I acquired, and how these align with my academic background and career goals.

Overview of Landmark Environmental

Landmark Environmental operates conducts environmental assessment and remediation services, for potentially chemically contaminated properties. Their services include:

1. **Phase I Environmental Site Assessment (ESA):** This preliminary assessment involves researching the historical use of a property, reviewing previous environmental reports, and determining the likelihood of contamination. The goal is to identify any potential environmental liabilities associated with the site.
2. **Phase II ESA:** Phase II involves on-site testing. This includes sampling soil, groundwater, and soil vapor to detect the presence and extent of contamination. The results inform the development of potential mitigation strategies.
3. **Remediation:** If contamination is confirmed, Landmark provides recommendations for remediation. This might involve removing contaminated soil, treating groundwater, or installing systems to address vapor intrusion.

As a small business, Landmark Environmental provides a personalized work environment, allowing for direct involvement in all phases of environmental assessments and remediation when working on each project.

Learning Objectives and Expected Outcomes

The internship was designed to meet several specific learning objectives:

1. **Apply Quantitative Skills to Environmental Issues**
 - **Example:** During the internship, I utilized quantitative skills to interpret data from soil and groundwater samples. For instance, I calculated contaminant concentrations and compared them to regulatory standards to determine whether remediation was necessary.
2. **Apply Critical Thinking and Analytical Skills to Environmental Issues**

- **Example:** I analyzed complex data sets to identify patterns and trends in contamination levels. For example, I critically assessed the data from many soil samples to determine the extent of chemical contamination and helped devise strategies for further investigation.
3. **Write and Speak Effectively to Professional and Lay Audiences About Issues in the Field**
- **Example:** I helped draft detailed Phase II reports that summarized contamination findings and recommended mitigation strategies. Additionally, I helped communicate these findings to coworkers and the owners of the sites the reports were composed for.
4. **Use Theoretical Knowledge of Environmental Sciences in Real-World Applications**
- **Example:** Applying some principles from chemistry, I analyzed the potential effects of chemical contaminants and their environmental impact. Knowledge of calculus and statistics was also helpful in computing data and mapping areas of sites.
5. **Incorporate Multiple Disciplines into Environmental Science**
- **Example:** My internship work required combining knowledge from various disciplines. For instance, chemistry and other STEM field knowledge was clearly helpful when analyzing contaminants, but I also exercised my writing skills as well as verbal communication skills when writing reports and emails, as well as when speaking to site owners and coworkers.

The expected outcomes from the internship included:

- **Hands-on Experience:** Gained practical skills in data collection, including soil sampling, groundwater sampling, and soil vapor sampling, as well as the use of GIS for mapping.
- **Collaboration Skills:** Worked effectively with colleagues and people from the companies that owned the sites we worked on, enhancing teamwork and communication abilities.
- **Technological Proficiency:** Improved proficiency with software such as GIS, Excel, and Microsoft Word.
- **Data Analysis and Reporting:** Developed skills in analyzing environmental data and preparing comprehensive reports for a large variety of clients.

Activities and Learning Experiences

Field Work

Fieldwork was a significant component of the internship, providing practical experience and exposing me to various aspects of environmental assessment:

1. **Soil Sampling:** We conducted soil sampling using hand augers and by working with drilling companies. This sampling involved collecting soil from different depths and locations to assess contamination levels. I learned the proper techniques for handling samples, maintaining equipment, and documenting findings.
2. **Groundwater Sampling:** I assisted in collecting groundwater samples from wells installed at various sites. This required knowledge of groundwater flow dynamics and the ability to use sampling equipment accurately.

3. **Soil Vapor Sampling:** Sampling for soil vapor involved using specialized equipment to detect volatile organic compounds (VOCs) beneath building foundations. This process provided insights into contamination sources and potential health risks.
4. **GIS Mapping:** I created GIS maps to visualize sample locations and site features. This involved using software to generate maps that showed the spatial distribution of sampling points and other relevant data.

The **Garden Project** was a notable field experience involving sampling at four separate sites using hand augers. The project presented challenges such as adverse weather conditions, including pouring rain and tons of mosquitoes, which tested the resilience and problem-solving skills of my coworkers and I. Additionally, we lost our company Ipad with our site maps on it, adding to the complexity of the project, and highlighting the importance of adaptability and teamwork.

Office Work

Office tasks complemented the fieldwork and involved various aspects of data management and reporting:

1. **Data Management:** I entered and formatted data tables in Excel, organizing lab results and ensuring accuracy. This task was important for making reliable reports and creating data driven decisions.
2. **Report Writing:** I assisted in drafting Phase II reports, analyzing data to identify significant contamination levels and recommending mitigation strategies. Writing reports involved synthesizing technical information and presenting it in a clear format.

3. **GIS Mapping:** In the office, I used GIS software to create maps that illustrated sample locations and site features. This skill was essential for visualizing data and communicating findings effectively.
4. **Collaboration and Communication:** I worked closely with my colleagues and our client companies, learning to communicate technical information to professional audiences. This work also included participating in smaller company meetings to discuss findings and recommendations.

Comparison of Coursework and Experiential Learning

Contributions of Coursework

My academic coursework provided a foundational understanding that was crucial for my internship:

1. **Chemistry:** Courses in chemistry provided some knowledge on chemical properties, reactions, and contamination mechanisms. This understanding was applied in analyzing lab results and interpreting chemical data from soil and groundwater samples.
2. **Biology:** My biology coursework gave me an understanding of ecological impacts, such as how contaminants affect local ecosystems. This knowledge was applied in assessing the potential effects of contamination during environmental assessments.
3. **Calculus and Algebra:** These courses enhanced my ability to perform quantitative analyses, such as statistical evaluations of data.

Contributions of Experiential Learning

This internship experience allowed me to apply and expand upon the theoretical knowledge gained in coursework:

1. **Application of Theoretical Knowledge:** Practical experiences, such as analyzing soil samples and preparing reports, allowed me to see how academic principles are applied in real world situations. For example, using knowledge from chemistry to interpret contaminant levels and applying biological concepts to assess ecological impacts.
2. **Development of Practical Skills:** Hands on tasks, such as using sampling equipment and GIS software, provided practical skills that complemented theoretical knowledge. This also included learning to navigate field conditions and use technological tools effectively.
3. **Integration of Disciplines:** The interdisciplinary nature of environmental science was seen through the combination of chemistry, biology, english, and math in fieldwork and analysis. This experience reinforced the importance of combining knowledge from multiple disciplines to address complex environmental issues.
4. **Improvement of Communication Skills:** Writing reports and presenting findings to various audiences required clear and effective communication, complementing the skills developed in coursework related to professional writing and presentations.

Reflection and Conclusion

The internship at Landmark Environmental was a highly rewarding experience that provided valuable insights into the field of environmental science. By applying theoretical knowledge from coursework to practical scenarios, I gained a deeper understanding of environmental assessments and remediation strategies. The hands on experience with data collection, analysis,

and report writing complemented my courses at Western and enhanced my skills in critical thinking, problem solving, and communication.

Working in a collaborative environment with experienced professionals allowed me to develop practical skills and build professional connections. The positive feedback from my manager and colleagues, along with the opportunity to continue working with Landmark Environmental, shows I feel, the success of my internship and its alignment with my educational goals.

Overall, this internship was a valuable introduction to the environmental science field, providing practical experience, professional growth, and a solid foundation for my future career. The combination of coursework and experiential learning has prepared me for the challenges and opportunities in environmental science, and I am excited to apply these skills in my future endeavors.