Department of Earth and Environmental Sciences

UNIVERSITY of WEST FLORIDA

UWF Engagement with Calhoun County for Phase 1 Environmental Site Assessment Analysis for Affordable Housing following the Impacts of Hurricane Michael

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EXECUTIVE SUMMARY

Introduction

In the Fall of 2019, Calhoun County in partnership with FEMA commissioned the University of West Florida (UWF) Department of Earth and Environmental Sciences, under the auspices of the EPA College Underserved Community Partnership Program (CUPP), to undertake a housing needs assessment for County to assist in the County's efforts to improve its housing post, Hurricane Michael. To continue this work of housing improvement in the Spring 2020 semester, the original project planned was a student conducted phase 1 environmental site assessment (ESA), for a property within Calhoun county. However, due to time constraints and the effects of COVID-19 in the second half of the Spring semester, the project developed into an analysis of the standard phase 1 environmental site assessment guidelines published by ASTM International (ASTM International, 2014) using various case studies.

Students split into five teams and according to the subsections of the ASTM guidelines, and each team reviewed six case studies for how well each case followed (or not) the guidelines. After such a review, each team developed recommendations or best practices to assist Calhoun County commission a certified environmental professional to conduct a phase 1 environmental site assessment for the County. Following are the general recommendations of each student team:

Site Reconnaissance

This team reviewed the physical site inspection aspects of the case studies and for Calhoun County. The team recommended that for housing development the County acquire undeveloped sites or sites that would require little remediation to develop. A selection of three or four potential sites would be ideal for providing options to meet various communal needs. The County should also ensure that these sites are available for purchase from any current landowners and are in proximity to existing infrastructure to reduce costs of (re)development.

Records Review: Historical

This team reviewed the historical records aspects of the case studies for Calhoun County. The team recommended databases such as LABINS, USGS, the Florida Aerial Photography Archive Collection, the University of Florida Map and Digital Imagery Library as useful for Calhoun County's historical records purposes.

Records Review: Environmental and Regulatory

This team reviewed records from various federal, state, regional, and local databases for each of the case studies and Calhoun County. The team recommended employing the services of an information retrieval company to acquire the necessary records for review and to ensure that data query were for federal, state, regional, and local levels.

Interviews: Local (and State) Government Officials and Agencies

This team reviewed the aspects of interviewing local (and where applicable state) government officials and/or representatives of relevant agencies for the case studies and for Calhoun County. The team recommended transparency in interviewing to facilitate trustworthiness of interview information; as well as including the timing, medium, and questions of the interview.

Interviews: Past and Present Owners and/or Occupants

This team reviewed the aspects of interviewing past and present owners and/or occupants of the site (either in-person, via email, or over the phone) for the case studies and for Calhoun County. The team recommended the County request that the interviewers ensure they attempt to engage all relevant site holders and occupants and include the list of questions asked in the assessment report.

Conclusion

Through the review of these case studies, there is a general consensus that when performing a Phase I Environmental site assessment (ESA), the document characteristics can vary based on the property under review. It is possible to perform a satisfactory Phase 1 ESA without strictly adhering to the ASTM guidelines. However, an organization who performs a Phase I ESA and follows the guidelines more strictly produces a more complete and trustworthy document. Since the results the ESA is heavily placed upon the discretion of the Environmental Professional, and therefore it imperative to give good consideration when deciding who will perform the Phase I ESA. A professional environmental site assessment provides the most accurate information regarding the environmental condition to a client's property. It also helps lower the risk of technical errors during the process of construction or restoration of the property, reducing cost and increasing efficiency.

INTRODUCTION

Background

On October 10th, 2018, Hurricane Michael devastated communities located along the Florida Panhandle. The initial assumption was that this hurricane was going to land as a category one hurricane, which would produce maximum speeds around 75 miles per hour. Hurricane Michael eventually entered the Gulf of Mexico as a category one. However the favorable conditions upon landfall fueled the storm. As a result, within 48 hours, the storm increased to a category four hurricane. (US Department of Commerce & NOAA, 2019). The 160 miles per hour winds and deadly storm surge devastated many (inland) coastal communities located in Alabama, Florida, and Georgia. This event left many people without power, including the residents of Calhoun County, and left many with inadequate shelter for weeks. Many people are still struggling to fix their homes as at the year 2020.

In the Fall of 2019, Calhoun County in partnership with FEMA commissioned the University of West Florida (UWF) Department of Earth and Environmental Sciences, under the auspices of the EPA College Underserved Community Partnership Program (CUPP), to undertake a housing needs assessment for County to assist in the County's efforts to improve its housing post Hurricane Michael. To continue this work of housing improvement, for the Spring 2020 semester, a new group of UWF students from the Fall were initially commissioned by the EPA to complete a preliminary phase 1 environmental review of a site proposed by the County for housing construction/improvement. Due to external factors throughout the semester, the project developed into a student analysis of the standard Phase I Environmental Site Assessment guidelines published by ASTM international. The ASTM guidelines are the current industry standard for phase 1 environmental site assessments.

The Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process1 Designation: E1527 – 13 (i.e. ASTM Guidelines) was prepared by ASTM International to outline the best practices for conducting a Phase I Environmental Site Assessment. The purpose of this procedure is to conduct an assessment of a parcel of land and

see if there are environmental factors such as contamination. Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), landowners are responsible for any hazardous material or substance in association with their property, and if those substances pose a threat to the environment or public health. This process Is referred as identifying recognized environmental conditions (RECs). CERCLA requires that all landowners take the necessary steps to mitigate the release of hazardous materials and pollutants in association with their property. (ASTM International, 2014).

RECs are defined in the ASTM standard guidelines as "…the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property:

1) Due to any release to the environment
2) Under conditions indicative of a release to the environment
3) Under conditions that pose a real threat of a future release to the environment." (ASTM International, 2014; p. 1).

RECs are used consistently throughout the standard guideline and the case study analysis provided by the students. CERCLA was created by the EPA to hold industries responsible for any hazardous waste that is released from their property. The ASTM guidelines outline landowner liability protections (LLPs) as "…the practice that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice…" (ASTM International, 2014). This focus on LLPs further advances the intended mission of CERCLA. The ASTM guidelines also warns its users that the guidelines do not outline all laws and regulations in the document and that it is important for users to look up all other relevant legal obligations in accordance with hazardous materials and non-compliance. (ASTM International, 2014).

Objectives

The purpose of this analysis is to help Calhoun County understand the significance of a Phase 1 ESA. An ESA is an important first step in the process of land development. The purpose of an ESA is to gather information that lets developers and property owners' asses any potential

environmental conditions or contaminants that can affect future development or property value.

Thus the intended goal of the analysis is to confirm whether the Phase 1 Environmental Site Assessment (ESA) case studies followed the standard ESA guidelines published by ASTM International. By the end of the spring 2020 term, each team was to produce a final document that contained their analysis, as well as possible future recommendations for Calhoun County.

Methodology and Methods

The students divided into five teams, with each team analyzing a significant section within a typical Phase 1 environmental site assessment document, namely: Site Reconnaissance, Records Review, Historical, Records Review, Environmental and Regulatory, Past and Present Owners, and Occupants, and Local (and State) Government Officials. The students then collectively sourced various examples of completed phase 1 ESAs. Then the course instructor selected six case studies for each student team to examine with respective to their team's focus. The objective of each group is outlined as follows:

Site Reconnaissance: This team's goal was to review the physical site inspection aspects of the case studies and for Calhoun County.

Records Review – Historical: This team's goal was to review the historical records aspects of the case studies and for Calhoun County.

Records Review - Environmental and Regulatory: This team's goal was to review records from various federal, state, regional, and local databases for each of the case studies and Calhoun County.

Interviews - Local (and State) Government Officials and Agencies: This team's goal was to review the aspects of interviewing local (and where applicable state) government officials and/or representatives of relevant agencies for the case studies and for Calhoun County.

Interviews - Past and Present Owners and/or Occupants: This team's goal was to review the aspects of interviewing past and present owners and/or occupants of the site (either in-person, via email, or over the phone) for the case studies and for Calhoun County.

Limitations

Limitation were placed on this project due to external factors throughout the semester. The first limiter faced was time. Calhoun County was unable to procure a property to complete a traditional site assessment by the students within an acceptable time frame given the timeline of the spring 2020 semester. The second limiting factor was the impact of COVID-19, and the mandatory remote instruction and stay at home orders. In March 2020, the decision was made to suspend the site visit which would have assisted many teams to complete their assessment. In order to not waste the work done preceding the review, the bulk of our efforts were shifted from performing a Phase 1 ESA to compiling a comprehensive analysis of six Phase 1 ESA case studies.

CASE STUDY ONE

PHASE I ENVIRONMENTAL SITE ASSESSMENT FOR 908 & 920 BAYSWATER AVENUE AND 108 THROUGH 124 MYRTLE ROAD

The following case study was prepared for Fore Green Development, LLC, and provided by PES Environmental, Inc. A Phase I Environmental Site Assessment was prepared by request for commercial and residential properties located at 908 and 920 Bayswater Avenue and 108 through 124 Myrtle Road in Burlingame, California. Found below you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the of the case study compared to the standard ASTM guidelines. Citations for the original cast study are located in the reference list.

SITE RECONNAISSANCE

The first document for review is the Phase 1 Site Assessment carried out in Burlingame, California by PES Environmental. For the site reconnaissance portion of their review, PES provided an in-depth analysis on a broad range of environmental conditions. Before explaining any other components of their assessment, the reviewers identified the base-level environmental conditions in the first section of their review, including hydrological conditions, geological/mineralogical makeup and physical location and setting (PES Environmental, Inc., 2017). By doing this, the reviewers set a baseline from which to build the remainder of their site assessment, allowing more in-depth analysis of specific components further into the document.

The actual site reconnaissance portion of this site assessment comes near the end, in Section 6 (PES Environmental, Inc., 2017). For each of the specified sites reviewed, reviewers included a paragraph detailing pertinent details to the overall environmental review, including existing structures on the property, any present chemical containers or residue, storage tanks and water pumps and any other relevant details (PES Environmental, Inc., 2017). They included

reviews of each individual parcel of land in the vicinity of the parcel of interest, which bolsters the reliability of the review and includes a buffer of detail to protect against any potential contamination from nearby properties that could affect the parcel under review.

The reviewers also included different sections for specific variables in the review, such as Aboveground Storage Tanks and Undeveloped Areas (PES Environmental, Inc., 2017). There were several of these individual sections detailing materials such as PCB's, radon, asbestos and water damage/mold (PES Environmental, Inc., 2017). For each of these sections, reviewers included details on the presence of these materials at both the site of interest and the adjacent sites, again increasing the scope for potential contamination. A specific example of this is the section detailing PCB's, where reviewers included that an adjacent site had experienced hydraulic fluid leaks previously, but no testing had been done previously (PES Environmental, Inc., 2017). These sections are vital to the site review, as they include extremely pertinent information that could lead to further environmental testing.

RECORDS REVIEW - HISTORICAL

This Phase 1 was conducted for 908 & 920 Baywater Avenue and 108 through 124 Myrtle Road in Burlingame, California. The report is intended to assess "commercial and residential properties located at 908 and 920 Bayswater Avenue and 108 through 124 Myrtle Road in Burlingame, California", meaning that the assessed property is composed of several addresses.

This Phase 1 included "that the site assessed is located in a residential/commercial/light industrial mixed-use area within the City of Burlingame and County of San Mateo, California" as well as types and addresses of surrounding property use (Appendix E, 3). Most historical documents, images and information was in an attached CD-Rom that was attached to the original report. Our team did not currently have access to this CD. This Phase 1 stated that the sources used were "federal, State and local agency databases were reviewed to identify nearby sites that have reported the use, storage, or release of hazardous materials" and that

"regulatory agency records regarding the site and adjacent properties were reviewed" (Appendix E, pg. 1).

The Phase 1 included aerial photographs, topographic maps, and Sanborn Fire insurance maps for the years that they were available. Included in this assessment was: a city directory from 1970 to 2013 in approximately 5-year intervals, a statement saying that current owners, occupants and/or their representatives were interviewed for historical accounts, historical use information for the subject property based on available historical resources, and an acknowledgment that most titles for the land were provided, but not all and the ones that were are included in the CD that was submitted with the report. This Phase 1 seemed to contain all of the guidelines outlined in the ATSM Standard Practice document though the information included may be worded slightly different than the Standard Practice does and the sections may be meshed together. Our team's only suggestion for this document would be to separate current information from historical analysis because it seems to blend together at times and can be confusing.

RECORDS REVIEW - ENVIRONMENTAL AND REGULATORY

In this particular document, this section is organized under paragraph 5.0, 12 pages into the document. This section begins with a short introductory paragraph with what sounds like a canned statement. This paragraph begins with a statement that "we reviewed all applicable Federal, Stale, and local environmental databases for the subject property and vicinity." The actual findings are presented in four subsections below the introductory paragraph. The sections are as follows 5.1 environmental liens, 5.2 Standard environmental record sources, 5.2.1 subject property database listing and Records Review, and 5.2.2 Surrounding area. Section 5.2 contains an exhaustive list of EPA databases searched by the author. This section also states that the databases were searched in accordance with ASTM 1527-13. Section 5.2.1 contains a listing of properties with known USTs in vicinity of the site. Section 5.2.2 contains a list of known sites nearby that could create an environmental condition. There is a short paragraph devoted to each site. The former use of each of these nearby sites is described along with possible environmental issues. This document meets the ASTM

guidelines. The investigating firm completed an investigation of standard sources outlined in the ASTM guidelines to include Sanborn fire insurance maps and USGS topographic maps. The investigating firm also conducted on site interviews of the current site occupant and nearby residents to gather historic information on the site, this fulfills another part of the ASTM guidelines. All obvious uses of the property back to the original development are identified in accordance with the ASTM guidelines.

INTERVIEWS - LOCAL (AND STATE) GOVERNMENT OFFICIALS

Seven legal parcels totaling 1.27 acres were all included in a single ESA, but were thoroughly described individually in section 2.6.1 Structures and Current Use (PES Environmental, INC, 2017; p 4), and section 2.8.2 Historical Review Summary (PES Environmental, INC; p 7). The document states that one of the tasks performed during the ESA include "individuals with knowledge of the site were interviewed" (PES Environmental, INC, 2017; p 1), however at this point the assessment does not specify whether these interviews were administered to occupants or government officials.

Section 3.4 Owner, Property Manager, and Occupant information later clarifies that one occupant was interviewed verbally (PES Environmental, INC, 2017; p10). Lastly section 6.7.5 Water Damage and Mold states that a "Key Site Manager Questionnaire" as described in section 2.4 was administered (PES Environmental, INC, 2017; p 23), but section 2.4 is Geology and Hydrogeology (PES Environmental, INC, 2017; p 4) and does not correspond or indicate any attempt to interview anyone.

Since page 1 (PES Environmental, INC, 2017) vaguely states that "individuals with knowledge of the site were interviewed", it is possible that government officials were actually interviewed, but their responses were not specifically recorded in the ESA report. Due to the lack of information we cannot conduct a proper review of the consultants interviewing of government officials, if the consultants interviewed government officials at all. However, according to the ESA Process guide, section 11.5 Who Should Be Interviewed (ASTM, 2014), a reasonable attempt should be made to interview at least one staff member of the pertinent

local government agencies. Section 11.8 Incomplete Answers (ASTM, 2014) further specifies that while it is acceptable to receive no answer or partial answers, a written record should be kept of the people that the questions were sent out to. Based on these guidelines, we can conclude that the ESA for 908 & 920 Bayswater Avenue and 108 through 124 Myrtle Road Burlingame, California did not comply with the guidelines and/or may have neglected to conduct interviews with state and local government officials.

INTERVIEWS - PAST AND PRESENT OWNERS AND/OR OCCUPANTS

Prepared by PES Environmental for the commercial and residential properties located at 908 and 920 Bayswater Avenue and 108 through 124 Myrtle Road in Burlingame, California. This ESA was conducted for Fore Green Development, LLC. The site (composed of 7 parcels) is located in a residential/commercial/light industrial mixed-use area within the City of Burlingame and County of San Mateo, California. Land uses identified at the subject property consist of:

- Single-family residences (908 Bayswater Avenue and 118, 120, and 124 Myrtle Road);
- Auto repair (Hower Auto Repair; 920 Bayswater Avenue);
- Multi-family residences (108 and 116 Myrtle Road);
- Offices (Vacant; 108 Myrtle Road);
- Paved vehicle storage areas (112 and 114 Myrtle Road) for nearby auto dealers; and
- Paved and unpaved parking areas, driveways, and landscaped areas associated with site buildings.

PES Environmental interviewed “individuals with knowledge of the site” as well as key site managers. PES Environmental provided a copy of the completed Key Site Manager Questionnaires for the property in the assessment to be referenced as needed (although they weren’t included in the shared document for our class). Key Site Manager Questionnaires were completed by subject property representatives. (Fore Green, 2017) Based on the responses to the questionnaires and information provided verbally, the following site conditions were identified:

- 908 Bayswater Avenue - An inspection report for the property (Hill, 2004) reported the presence of asbestos-containing materials (ACM) in heating pipe insulation at that property.
- 920 Bayswater Avenue (Hower Auto Repair) - Specific information is summarized below.
- Former underground storage tanks, former in-ground hydraulic lift, and former waste oil sump were all present at this site.
- According to Mr. Hower, the enclosed auto service bay at the northeast end of the property has historically been subleased to other businesses, including an auto body shop (Steele Auto Body) and a glass shop (B&G Glass).
- A property information disclosure document provided by Mr. Hower indicated some fluorescent lighting in the shop was not functioning, possibly indicating bad/old ballasts.
- 108 Myrtle Road (present-day office and multi-family residences)
- The ground floor front unit at the property was historically used as a blacksmithing shop and subsequently as an office and storage space for a construction company, an art gallery, and a day spa. The unit is currently used by an electrician as an office space.

<u>What the case study did well:</u>

- For the key site managers: a questionnaire was provided with further interviews conducted if the information was pertinent.
- The questionnaire with their responses was provided in the ESA.

<u>What they could have done better:</u>

- Identifying past owners and occupants for questions would have provided more information regarding the site.
- The overall organization was a little messy and difficult to follow for the interviews portion.

<u>How they adhered to the guideline:</u>

- Interviews were conducted with only the key site managers of the properties.

- The questions asked were not specified in this copy of the ESA, but in the official ESA, they provided the list of questions used.
- These questions were asked in person and via phone call, as the guidelines suggest.
- Reasonable attempts to interview were made for the key site holders.

CASE STUDY TWO

PHASE I ENVIRONMENTAL SITE ASSESSMENT VACANT LAND COLE HOLLOW ROAD

The following case study was prepared for Lamont Engineers and provided by Evergreen Testing & Environmental Services, Inc. A Phase I Environmental Site Assessment was prepared by request for vacant land located at the Town of Blenheim, Schoharie County, NY. Found below, you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the case study compared to the standard ASTM guidelines. Citations for the original cast study are located in the reference list.

SITE RECONNAISSANCE

This environmental review focuses on a primarily undeveloped plot of land covered in vegetation. The authors of this site review also include details about baseline environmental conditions in the initial site description at the beginning of the document, including topographic, hydrologic, and other basic data on the land parcel (Evergreen Testing & Environmental Services, Inc., 2015). The actual site review doesn't come until towards the end of the document.

The authors of the site review separated the site assessment by specific variables, similar to the other site assessments included in this review (Evergreen Testing & Environmental Services, Inc., 2015). This makes the site review easy to follow and easy to interpret when deciding future courses of action. However, the authors of this review did not include data from any adjacent parcels of land. While this is not necessarily required for a complete site assessment, it does provide valuable information that could influence decision-making if adjacent parcels are developed or could have the potential for future contamination. Perhaps the authors could have included a short segment explaining that adjacent parcels were undeveloped, or if they were developed, they could have included the adjacent parcels in the

body of the site assessment. The authors included a short section detailing their methodology for the actual site review, which provided insight into the site assessment itself (Evergreen Testing & Environmental Services, Inc., 2015).

Since this site was predominantly an undeveloped site, most of the section simply explained that there was no presence of chemicals, storage tanks, structures, or anything else beyond vegetation (Evergreen Testing & Environmental Services, Inc., 2015). The nature of the site makes for a rather short site assessment, but the assessment provides vital information regardless.

RECORDS REVIEW: HISTORICAL

This report was compiled for a lot of vacant land on Cole Hollow Road Town of Blenheim, Schoharie County, New York. The report seems to follow the Standard Practice for ESAs as much as possible with some deviations and places where it is lacking. Cole Hollow Road Phase 1 includes what may be a legal disclaimer and liability statements that this is just an evaluation. While such a disclaimer is very important, we feel that the document should include the intended purpose of the site to be reviewed for better understanding. This Phase 1 assessment cited the sources at the beginning of each section and said that the “subject site and adjoining properties were obtained from reviewing reasonably ascertainable sources.” Included in this Phase 1 is a summary of the aerial photos utilized for their report as well as the years they were taken with no definite interval in which they were taken as the year's span from 1978 to 2011. This section includes the actual photos because it gave the importance and changes in each, which makes it easier for those who are not trained in aerial photography analysis to know what was important to take away from the images.

Cole Hollow noted that the team attempted to ascertain fire insurance maps and information but was unable to attain “due to the rural character” of the area. This Phase 1 acquired USGS Quadrangles. The report summarized the elevations of 1990 are similar to that of today, that there was no “evidence of a REC in connection with the subject property.” However, there was a change in the adjacent properties becoming residences where they were

vacant. This report gave a nice definition and overview as to what a city directory is and that the team was unable to obtain a city directory for the area. City directories should be located in the nearest library. The Standard Practice suggested local directories, but a city directory is the same. Our team was not certain as to what an Area Descriptive Chain-Of-Use is, but Cole Hollow noted that one was not provided. Current owners, occupants, and/or their representatives were interviewed for historical accounts. While this Phase 1 site assessment did a great job following the standard practice, it did not include: density/population statistics, a clear indication of uses of the property other than it was vacant and now has dumped material, the general-purpose intended of the land, property tax files, recorded land title records, building department records, or zoning/land use records. It was alluded to that the area is rural and that the land may not have a title or have been used, but it is critical to state that the intended land has or has not had property ownership through land titles or property taxes on it as well as what the land is zoned for. It is highly suggested that they should stress the purpose and past ownership of assessed land just as much as legal disclaimers.

RECORDS REVIEW: ENVIRONMENTAL AND REGULATORY

Evergreen Testing & Environmental Services, Inc. Phase I Environmental Site Assessment. Cole Hollow Road Realignment Project Appendix - D Section 6.0 of this document provides a detailed description of the database review process. This section begins with section 6.1, background, which is the statement "The purpose of the regulatory environmental record review is to obtain and review reasonably ascertainable records that will help identify RECs related to the subject property." This section actually contains a detailed description of how this firm went about conducting the environmental record review. This includes a history of Regulatory Review and a description of databases used. A description of each database is provided, along with a statement that no sites were found in each database. Appendix D, the Executive Summary, provides an exhaustive list of all the databases searched. Also enclosed are maps of the area searched for the NPL etc.

This document is noteworthy in that they actually discuss the process rather than just presenting the information. Such an approach is great for the public, as public information and

education are one of the uses of these documents. This report does meet the ASTM guidelines. The report authors fail to conduct an interview with the current owner of the larger portion of the site even though they do attempt to do so. They do conduct a site reconnaissance and note the presence of dumped material. A record review of standard sources is conducted on the site. Interviews with several residents who own portions of the site are also conducted. Maps and supporting documentation are included in the ESA in accordance with the ASTM guidelines.

INTERVIEWS: LOCAL (AND STATE) GOVERNMENT OFFICIALS

An ESA of a vacant lot conducted in Bleinheim, New York, Section 7 (Evergreen Testing & Environmental Services, 2015; p 20-22) comprises interviews with users, owners/operators, federal and state agencies, and local officials. Section 7.3 Federal and State Agencies states that inquiries were made to EPA, and NY State Department of Environmental Conservation (NYSDEC) in order to determine the presence of any hazardous materials, underground bulk storage tanks, known RECs, any prior environmental studies at or near the study site (Evergreen Testing & Environmental Services, 2015; p 21). An Environmental Data Registry report by the EPA is annexed in Appendix D, and all the findings are incorporated in the ESA report.

Section 7.4 Local Officials (Evergreen Testing & Environmental Services, 2015; p 21, 22) show that at least three separate entities were contacted. The first being the Assessor's Office, who confirmed that the site was a vacant property, and it incorporated five separate privately owned land parcels. Three of the properties had assigned street addresses and were owned by a single owner each. The last two parcels were owned by one owner, and one of them did not have a street address. Property classes of the parcels were also provided, and range from single-family residential, to vacant with improvements, and abandoned agriculture land.

The Building Department pointed out that no current files exist regarding the study area and provided building permits and Certificates of Occupancy for the property located to the West of the study area. No documentation was specifically referencing the study site's environmental conditions were provided. Finally, Evergreen clearly states that an attempt was

made to interview at least one person from the Blenheim Hose Company but did not receive a response.

At this point, we can conclude that Evergreen did indeed have a clear objective, and their efforts were efficient, as they were successfully able to retrieve information from the EPA and NYSDEC regarding RECs. Evergreen did follow the ESA Process guidelines, including Section 11.8 Incomplete Answers, by having a written record of the failed attempt to interview the fire department. Although the medium and timing are not clearly stated, we can still see that the results obtained were sufficient and that a reasonable attempt was made to interview the appropriate government agencies at the federal, state, and local levels.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

The subject property is currently vacant land spanning five separate land parcels. A broken-down mobile home is being stored to the north of the property. Remnants of stone walls were observed in the central area of the property, along with possible exposed bedrock. Small areas of surface water were noted at the time of the site reconnaissance. At the time of the site reconnaissance, what appeared to be a significant amount of garbage and unknown waste material was observed along a slope on the west connecting property. It appears this material had been dumped down the side of the slope as a means of disposal. The contents and origin of the dumped waste material is unknown and could possibly consist of petroleum or chemical compounds or containers. While this waste material was not located on the subject property, it was located up gradient of the site. Any petroleum or chemical compounds present would impact the subject property by migrating down slope toward the subject property. Evergreen attempted to contact the owner of this property, Eugene Engle, regarding the dumped material, however Evergreen had not yet received a response to this request at the time of release of this ESA. (Evergreen, 2015)

Current and past owners were identified and an attempt to reach all of them was made by the environmental professional. Since the property spans five parcels, five current owners were

identified. In the questionnaire, all owners were asked for helpful documents and some were provided. A copy of the interview questions was provided for the official ESA document.

- Current owners: Ms. Hauwe informed Evergreen that to her knowledge there were never any buildings on her property, and that it was mostly used as a crossing area for livestock. Evergreen was informed that the land was swampy and therefore not really useful as farmland or pasture. The property has been owned by Ms. Hauwe for 4 years, since the death of her fiance, John Dolker in 2011.

- Current owners: Mr. Engle informed Evergreen that his property is connected to private utilities, including a septic tank and potable water well, but that these facilities are located on the west adjoining property rather than the subject property. Mr. Engle, who has owned the property for about 15 years, explained that, other than the dilapidated mobile home currently stored in the area, there were never any buildings or environmental issues to his knowledge. Mr. Engle had not yet responded to Evergreen's additional request for information regarding dumped material observed on the west adjoining property at the time of release of the ESA.
- Past owners: Other than John Dolker who passed away in 2011, past owners were not identified to Evergreen at the time of this report. According to Mary Ann Hauwe, Mr. Dolker owned her portion of the subject property for about 70 years before he passed away, and during that time it was not used for anything other than partial farmland and for livestock.
- Current and past operators: As the subject property is vacant land, no operators, other than the owners of the separate parcels, exist.
- Occupants: As the subject property is vacant land, occupants do not exist.

<u>What they did well</u>:

- Evergreen, Inc did a fine job interviewing all possible past/present site owners, occupants, and operators.

- Evergreen also did a great job trying to obtain information regarding the contents and details of the waste that was dumped on the adjoining property.
- Helpful documents were obtained.
- Overall organization of the ESA was great and easy to follow.

How they adhered to the guideline:

- An attempt to reach all current owners was made.
- All willing owners were interviewed, and their responses were recorded.
- Helpful documents were obtained and useful to the ESA

CASE STUDY THREE

PHASE I ENVIRONMENTAL SITE ASSESSMENT FORMER OAK PARK/ESCAMBIA ARMS PROPERTY NORTH OF HICKORY STREET, EAST OF PALAFOX STREET

The following case study was prepared for Escambia County, Florida and Pensacola, Florida, and prepared by Terracon Consultants, Inc. A Phase I Environmental Site Assessment was prepared by request for a site within the Former Oak Park/Escambia Arms Property. Found below you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the case study compared to the standard ASTM guidelines. Citations for the original case study are located in the reference list.

SITE RECONNAISSANCE

The objective of the site reconnaissance in this case is clearly stated before further detail is expressed, and this information is helpful because it introduces this section of the entire assessment. One of the first aspects of the Site Reconnaissance of Escambia County's former Oak Park is the record of the site's general information that highlights the weather conditions the assessment team experiences the day of the site visit (Terracon Consultants, Inc., 2015). This general site and weather assessment followed guidelines of similar ESA examples; recording the weather conditions at the time of a site assessment is important because it acknowledges any potential limiting/contributing factors of observations. This site reconnaissance team has also provided an easy-to-follow data section on the types of items, features and structures on the grounds (Terracon Consultants, Inc., 2015). Descriptions like this are favored over classic lists. Overall, this assessment seems to be a reader-friendly example, inclusive of its basic requirements.

RECORDS REVIEW: HISTORICAL

This ESA was developed for the Former Oak Park/Escambia Arms Property in Escambia County, Florida. First and foremost, aerial photographs and USGS 7.5 minute topographic maps were listed. The photographs and maps were accurate, but there was minimal explanation of the changes to the property throughout the years. Also, the gaps in data were extreme regarding USGS 7.5 minute topographic maps with at most 26 years with no reported map. Sanborn maps were not reported, but it was explained that they were requested from EDR (a Sanborn map database) and were told that they were not available for the site. Historical City Directories were reviewed in five year intervals, just as the standards recommend. Site ownership was also listed within the document as U.S. Army Corps of Engineers. A title search was not recorded within the ESA at the client's direction. Use limitations were also reported within the document, this stated that there should be no construction of residential uses on the property, as well as no construction that should create exposure to the contaminated soil. As per the standards, prior ESA's were reported, with a total of 4 reports listed and detailed with explanations.

RECORDS REVIEW: ENVIRONMENTAL AND REGULATORY

Former Oak Park/Escambia Arms Property Phase I Environmental Site Assessment. This assessment evaluates records pertinent to the environmental conditions of Escambia Arms Property. The assessment states that the accuracy of the information included in the records review section is subject to the accuracy of the information provided by EDR, an information services company which was contracted for some of the information gathering. At the beginning of the records review, the limitations in analyzing the groundwater depth and flow direction is a factor which is significant and was clearly noted. Listings available for records and facilities in both federal and state/tribal databases are included in chart format, making sure to stay within the ASTM required search distances relative to the site. The assessment includes more detailed analysis for sites which are on an uphill gradient proximate to the site, analyzing the possibility of contaminated water flowing down into the site.

The regulatory review includes a USGS 7.5 Minute Topographic Map, as per the guidelines. Information on topography and soil content is very thorough, and charts/graphs are utilized to organize the information appropriately. Included with the map is a map findings section, which contains a very comprehensive list of every record that was found and reviewed as well as a detailed summary for any records of significant relevance to the environmental condition of the site. The assessment itself does not include the author's professional opinion on the records reviewed, but it does state that there is a review and analysis done by the company, Terracon, which can be located online The environmental records review for this assessment goes above and beyond in providing the entirety of data significant to the site. The information included more than satisfies the EPA's guidelines and requirements for the records review section of an environmental assessment.

INTERVIEWS: LOCAL (AND STATE) GOVERNMENT OFFICIALS

A property located North of Hickory Street, East of Palafox Street in Pensacola, FL was evaluated by Terracon. The study area is described as a 35-acre area, and part of the EPA Superfund Site having undergone soil remediation. The ESA states in the Scope of Services that interviews including local government inquiries were performed, as applicable.

Section 3.6 Interviews Regarding Current and Historical Site Uses (Terracon Consultants, 2015; p 6) presents a table including contact information, date and time of interview, and the title of the five people interviewed. The interviewees included two Army Corps of Engineers Site Compliance Contractors, one EPA Site Remedial Project Manager, one Professional Geologist, and an Escambia County Brownfields Coordinator. The table was then followed by a detailed account of the interviewees' position, their duties, the documents they have provided, and their findings regarding environmental conditions. One of the findings included an investigation that was unable to identify the source of trichloroethylene, which had been detected in groundwater samples. This investigation was still open as at the time of the report's publication, and Terracon considered it to be a REC.

Section 4.2 Local Agency Inquiries (Terracon Consultants, 2015; p 16 &17) shows that Terracon contacted Escambia County Health Department Petroleum Division, City of Pensacola Fire Department, Escambia County Building Department Code Violations Division, and Escambia County Development Services Department/Environmental Services Review and Permitting Division. The agencies were contacted by phone, and this section provides a brief summary of the information they were able to provide.

Section 6 Five Year Review Process (Terracon Consultants, 2015; p 38) also details interviews to regulatory agencies. This section briefly reviews the main findings of the surveys

Site Name:	**Escambia Wood-Pensacola**	**EPA ID No.:**	**FLD008168346**
Interviewer Name:	**LaTonya Spencer**	**Affiliation:**	**EPA**
Subject Name:	**Glenn Griffith, Brownfields Coordinator**	**Affiliation:**	**Escambia County**
Subject Contact Information:	**(850) 595-3538/** glenn_griffith@co.escambia.fl.us		
Time:	**2:00 P.M.**	**Date:**	**04/25/2012**
Interview Location:	**Escambia County Building, 221 Palafox Place, Pensacola**		
Interview Format (circle one):	**In Person** **Phone** **Mail** **Other:**		
Interview Category:	**Local Government**		

administered to one Escambia County Commissioner, one Escambia County Environmental Manager, one Escambia County Brownfields Coordinator, two Army Corps of Engineers officers. All complete interviews are also included in Appendix C. The full interviews include a header containing all pertinent details regarding the interviewer, interviewee, time, and medium (Figure 1). The survey consisted of seven to ten questions, covering a variety of aspects, and tailored to the interviewee's area of expertise.

Figure 1: *Example header of a local government official interview from the Terracon Consultants, Inc. Phase I ESA.*

Terracon's ESA of the property at hand was extremely extensive, and all the interviews conducted to local government officials and state agencies are appropriate and thorough. All answers, findings, and documents provided during the interview process were well documented and included to the study, and all contact information was recorded in detail. The interviews were conducted through different mediums to accommodate the subject's

preference and the responses were sufficient, so we can conclude that the methods Terracon used were efficient. It seems that this Phase I ESA performed by Terracon Consultants, Inc. does indeed closely follow the recommendations outlined in the *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guide.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

This site is about 35 acres and was vacant from 1940 to 1960. After 1960 the first part of the Oak Park neighborhood was built and in 1973 the Escambia Arms Apartment Complex was constructed. The portions of the site that were never developed on are still heavily wooded. This site is known as the former Oak Park/Escambia Arms residential neighborhood and is listed as a superfund site. In addition, it has undergone soil remediation and removal. Any buildings that were once on the site have now been removed and it is now a vacant lot that is classified as both cleared fenced land and wooded unfenced land. There is still contaminated soil on the site and restrictions and limitations are still in place. No owner was identified by Terracon.

<u>What they did overall:</u>

- They had a section where they summarized the interviews with people impacted but also included complete interviews in the appendix.
- They asked those interviewed how they felt the EPA/other governing bodies dealt with the site, so either good or bad.
- The interviews were formatted very professionally. Showed location/time/date, etc.
- They categorized the interviews by resident, owner, etc.
- They asked people for comments/suggestions/recommendations.
- They also interviewed the relocation staff.

<u>What they did well:</u>

- They kept questions/interviews concise
- They asked similar questions to all interviewees but tailored some questions depending on the person being asked

What they did poorly:

- They did not put all the residents together/all the employees together, etc.

What they could have done differently:

- They could have asked more questions or asked follow-up questions based on answers

How they deviated from the guideline:

- They did not ask how long the residents lived on the site.
- They did not ask questions about helpful documents
- They did not interview a key site manager
- They did not identify an owner

CASE STUDY FOUR

PHASE I ENVIRONMENTAL SITE ASSESSMENT DELAKE DISTRICT NE 1ST STREET

The following case study was prepared for Lincoln City Urban Renewal Agency, and prepared by Maul Foster & Alongi, Inc. A Phase I Environmental Site Assessment was prepared by request for a site at NE 1st Street, Lincoln City, Oregon, parcel 07-11-15-AC-03200-00 (the Property). Found below you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the case study compared to the standard ASTM guidelines. Citations for the original case study are located in the reference list.

SITE RECONNAISSANCE

Site reconnaissance procedures, conducted by Maul Foster & Alongi, Inc. (MFA), at NE 1st Street, Lincoln City, Oregon, parcel 07-11-15-AC-03200-00, primarily involved describing methodology and objectives associated with their actions. In the report, it clearly stated who conducted the site reconnaissance and when it was conducted to make sure the state of the site was accounted for in the necessary timeframe. Also, it seemed as though this assessment was focused on the physical and visual observance of recognized environmental conditions (RECs). As the document states, these RECs include “evidence of underground storage tanks (USTs) and aboveground storage tanks (ASTs), petroleum products, transformers containing polychlorinated biphenyls (PCBs), and use and storage of hazardous material” (Maul Foster & Alongi Inc., 2017, pp. 4). Also, the agency discusses the investigation of adjacent properties as well as the site itself in public records to ensure environmental safety. Photographs, taken during the site reconnaissance, are included in order to provide those reviewing the assessment with some visuals of the features that were accounted for.

Within the “Site Description and Reconnaissance” section of the ESA, there are subsections which identify specific observations (Maul Foster & Alongi Inc., 2017, pp. 4). Some of these sections include “Exterior, Interior, Limiting Conditions, Property Location and Legal

Description, Site and Vicinity Characteristics, Current Uses of Property, Past Uses of Property, Current Uses of Adjoining Properties, Past Uses of Adjoining Properties, Current or Past Uses in Surrounding Area, and Geologic, Hydrogeologic, Hydrologic, and Topographic Conditions" (Maul Foster & Alongi Inc., 2017, pp.4-5). Additionally, a chart identifying the presence of interior and exterior observations, which proves to be an effective visual, is included at the end of the "Site Description and Reconnaissance" section (Maul Foster & Alongi Inc., 2017, pp.5-6).

Included sections do not seem to thoroughly discuss all of the features outlined in "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM International, 2014). However, it is possible that some features were not relevant to the site assessed by Maul Foster & Alongi Inc. such as storage tanks or pools of liquid. Also, it seems that some sections were very short or quickly assessed. For instance, within the section "Current Uses of Property" it states that "the Property is currently used for lake access and as a parking area for a park and boat launch"; a very brief, undetailed description of how the site is utilized (Maul Foster & Alongi Inc., 2017, pp.5). These short descriptions appear to be standard for ESA's, possibly a more efficient way to relay information as displayed in the site reconnaissance of this location in Lincoln City, Oregon.

RECORDS REVIEW: HISTORICAL

The Phase 1 Environmental Site Assessment prepared for the Lincoln City Urban Renewal Agency by Maul Foster & Alongi, Inc. states several ways they conducted the historical records review within the ESA. The data collected by Maul Foster & Alongi, Inc. was primarily state and federal agency record sources, which was open for public use. There was not a regulatory file review conducted due to sufficient information obtained from other sources. The statement within their ESA that they chose not to conduct a regulatory file review implies that they are common practice and expected in an ESA. Another source of historical records in this ESA is the use of historical aerial photographs. There were several photographs taken from the years 1995-2012 that were reviewed. These photographs showed different changes both to the property, and any historical uses the property may have had. Maul Foster & Alongi, Inc. studied

the photographs for evidence of parking lots, land clearings, and any areas that have been blocked off within the property. Maps were also used to identify any historical uses in the area. The use of city directories would highlight if the location has an address, in addition to providing information about the surrounding areas. A helpful resource used to create this ESA is previous ESAs that have been conducted. This can be researched or provided by the client seeking a current or updated ESA.

RECORDS REVIEW - ENVIRONMENTAL AND REGULATORY

A private company was contracted to search federal and state records. For section 8.1.2 there was a one mile, half mile, and quarter mile minimum search distance conducted. The next section reviewed was 4.3.1 - a Historical Aerial Photographs review was carried out. This section included gathering overhead photos of the target property and its surroundings. The dates of the photos used span from 1955-2011. Some were more useful than others due to quality/resolution issues. The section also mentions major changes through the time period using the photographs. The following section mentioned in this example was 4.3.2, a Sanborn Map Review. These maps are used to review the historical uses of the property. The contracted company concluded that the property was vacant in the mid 1950's, but the surrounding properties have had a variety of uses including residential homes and commercial businesses.

Section 4.4 was the next section mentioned in the environmental records review section of this case study was historic documentation which described the properties previous uses. The only major findings from this section was that in the early 1950's the property was used as a drive in containing two buildings and was used for waterfront access. This case study did not carry out section 4.2 (Regulatory File Review) because it was thought that sufficient information was gathered from other sources. This assessment did not include all sections of an environmental records review stated by the ASTM but was deemed adequate by an environmental professional due to the excess information provided by the other sections completed; although it did fall short of the guidelines, the information given proved to be satisfactory.

INTERVIEWS: LOCAL (AND STATE) GOVERNMENT OFFICIALS

A 2.3-acre property in Lincoln City, Oregon was selected for this ESA. The selected area was undeveloped and vacant, with a history of being used as a recreational area. The ESA report notes the property was briefly used as a restaurant and fueling station in 1950-1960. Section 5 Interviews (Maul Foster & Alongi, Inc., 2017; p. 12-13) shows interviews were conducted with the state and/or local government officials. The section only shows one interview, with a local Lincoln County Fire and Rescue Marshall, who said they did not keep any records of decommissioned tanks. The Marshall said he did remember several buildings at the site, but that the site was currently used as a park.

Although it was appropriate to reach out to the fire department, there are other agencies who might have been of help but were not contacted. Since the study site had a restaurant and a fueling station, the building department could have possibly provided some insight as to the previous structures and zoning. The ESA report states that Maul Foster & Alongi, Inc. did not find any RECs. However, an effort should have been made to contact more state or local agencies regarding the tanks. This ESA put some effort into interviewing an appropriate agency, but one single interview does not seem to be sufficient. Furthermore, no details are provided regarding the timing, medium, or questions asked. There are no written records of any failed inquiries or information requests.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

The purpose of the Lincoln City, OR site interviews was to receive information from occupants, current and former managers, owners, and operators. The MFA interviewed local and state governments about the property to assess if there were any hazardous waste of petroleum substances from the site.

<u>Findings</u>:

- Merideth D'Andrea of MFA was directed to Alison Robertson, representative for the current Property. Alison is the Urban Renewal Agency Director for Lincoln City. When interviewed she said that to her knowledge, there were no threatened hazardous substances or petroleum products on the Property. She did not know of any notices from any government agency regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products relative to the Property. According to Ms. Robertson, there are no environmental liens on the Property.
- The interviews with the occupant's section was empty because there were no occupants.
- The interviews with the previous owners, occupants, and operator were not recorded because was not provided or supplied relevant to the assessment.
- The interviews with the state and local governments were also not accurate because the Fire Marshall Doug Kerr with the North Lincoln Fire and Rescue indicated they do not keep tank decommissioning documentation at their facility. He remembers the Property being occupied by several buildings in the 1950s through the 1960s and that the Property was used as a park at this time with swimming facilities.
- Interviews with owners or occupants of nearby properties are required for properties that have been abandoned and that have evidence of potential unauthorized uses or evidence of uncontrolled access. Adjoining properties do not fit this description; therefore, MFA did not conduct interviews with these neighbors.

<u>What they did overall</u>:

- They interviewed the current and former site owner, the key site manager, the current and former site occupants, and the user or the person seeking this site assessment.
- They had a section explaining who they interviewed as well as who they did not interview and why

- They named the key site manager and what questions they were asked, as well as whether or not they had any information regarding pertinent documentation

What they did well*:*

- They provided a set section for the interviews.
- They organized the appropriate interview strategies.

What they did poorly:

- They could have done more research in the occupants portion to see why the site is actually vacant and who the former occupants were.
- They could have put more effort into the owner and occupants interview.
- They could have asked more detailed questions in the interviews.

What they could have done differently:

- They could have given more information in terms of answers from interviewees.
- They could have tried to interview the past occupants from different outlets.
- They could have conducted different strategies for the interviews.
- They could have put more detail and information from every interview.

How they adhered to the guideline:

- The key site manager organized interviews efficiently.
- They went through with a majority of the interviews.

How they deviated from the guideline:

- No reasonable attempt was made to interview any former owners/occupants. They left it as not available.
- Not enough information from any of the interviews.

Possible Questions they could have asked:

- Did you as an occupant notice any suspicious violations or hazardous waste?

- Were any petroleum substances noticed in the past environment at any time?
- Were there any unfamiliar or natural smells in the surrounding environment?

CASE STUDY FIVE

PHASE I ENVIRONMENTAL SITE ASSESSMENT 15690 CALIFORNIA HIGHWAY 89

The following case study was prepared for Sierra Institute for Community and Environments, and prepared by Geosyntec Consultants, Inc. A Phase I Environmental Site Assessment was prepared by request for a site located at 15690 California Highway 89, Crescent Mills, Plumas County, California. Found below you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the case study compared to the standard ASTM guidelines. Citations for the original case study are located in the reference list.

SITE RECONNAISSANCE

Another reviewed ESA was prepared for the Sierra Institute for Community and Environment. It was constructed by Geosyntec for a site located in Crescent Mills, California. Analyzing the "Site Reconnaissance" portion of the document, the section primarily identifies methodologies and limiting conditions. For example, the document specifically states that "Mr. Arthur Forma and Mr. Pete Dennehy of Geosyntec performed a reconnaissance of the Site on 10 November 2016 to assess the environmental conditions on and around the Site" (Geosyntec Consultants, Inc. (Geosyntec), 2017, pp. 39). Also, this portion mentions what the company is searching for as a part of the ESA, including any environmental concerns, and where to locate photographs that were taken of the site during the reconnaissance. Most ESAs appear to include visuals in order to allow individuals to better understand the area and features associated with it.

Other sub-sections, that form the "Site Reconnaissance" section, include " Current Use of Property, Current Use of Adjoining Properties and the Surrounding Area, Hazardous Substances/ Petroleum Products, Hazardous Substances/Petroleum Products in Containers (Not Including Tanks), Hazardous Substances/Petroleum Products in Storage Tanks, Aboveground Storage Tanks, Underground Storage Tanks, Indications of Polychlorinated Biphenyls (PCBs),

Stained Soil or Pavement, Stressed Vegetation, Pits, Ponds or Lagoons, Pools of Liquid, Odors, Septic Systems, Drains and Sumps, Wastewater, Wells, Onsite Solid Waste Disposal and Filled Areas, and Stormwater" (Geosyntec, 2017, pp. 39-43). While these sections are quite extensive, moreso than many other reviewed ESA site reconnaissance sections, there still seem to be features included in the "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" that are not described or elaborated on within the document (ASTM International, 2014).

Descriptions of key site features seem to be more thorough in this site reconnaissance section than in previously reviewed assessments. For example, within the sub-section "Hazardous Substances/ Petroleum Products in Containers (Not Including Tanks)" it states that "Geosyntec observed two possible paint cans on Site. The cans were located along the western fence near the location of the Old Dry Kiln in their original containers and had a capacity of approximately 5 gallons. The cans appeared to be in good condition with no evidence of release" (Geosyntec, 2017, pp. 40). Geosyntec seems to perform site reconnaissance procedures meticulously, unlike previously reviewed ESAs, promoting a high amount of reliability for the company itself. Some features were not included if they were not located on the site, while others were explicitly identified as being absent within the report. It may be useful to include a chart that identifies present and absent features on the site; so, that it is clear what was and was not analyzed during the site reconnaissance.

RECORDS REVIEW: HISTORICAL

This ESA was conducted for a site that throughout history has been used for a multitude of different purposes. When the ESA was being conducted the site assessments team noted that mining operations have been ongoing since the 1950's and as a result an in depth evaluation must be conducted. The environmental site assessment team analyzed aerial photography, topographical data, city records, insurance data, personal testimonials, and soil/groundwater data to review the site. As indicated in the ASTM International guidelines (ASTM, 2014) , this assessment team gathered all relevant information and explained in great

detail as to what was being conducted at the site since its official operation as a mining facility in the 50s. However, the personal testimonial from a local who was alive during the site construction and while mining activities were being conducted at the site provided vague information and even stated “mining tailing could possibly be on site.” The reliability of this information is quite vague, but it allows the research team to conduct more analysis of the site. Further, city officials and property owners throughout the years of the sites history and development were also interviewed, but even the current site owner (in terms of when this document was released) was not aware of any “hazardous material” that could be present on site as a result of previous mining practices.

Comparatively speaking, the ASTM International guidelines (ASTM, 2014) for a historical records review indicate that the personal testimonials, city records review, aerial photography, and topographical data should all be taken into consideration when examining the history of the site. This Phase 1 ESA fully takes into consideration all of these points and utilized current technologies to examine how past flow regimes have contributed to transport of hazardous materials throughout the site and the surrounding areas over time.

RECORDS REVIEW: ENVIRONMENTAL AND REGULATORY

This Phase I Environmental Site Assessment (ESA) was compiled by Geosyntec Consultants, Inc, in which they assessed a site for the Sierra Institute, approximately covering the 26.27-acre property. The Sierra Institute Phase 1 environmental impact assessment relied heavily on the ASTM E1527 – 13 for the assessment. From a comparison of the two documents, the Sierra institute Phase 1 ESA includes all recommended review records that will help identify recognized environmental conditions in connection with the property through EDR reporting and mapping. The information gathered from the report also utilized publicly available sources, along with the use of geographic information systems. The records research results were considered reasonably ascertainable in conjunction with the recommended ASTM guidelines; thus, the majority of the records were pulled from the EDR Database.

Within preliminary assessment of the site, observations of these sites were reported if contaminants or future hazardous wastes could affect the property in the future, and thus marked and recorded within the assessment following the guidelines set by ASTM. Additional record sources such as orphan sites and adjacent site records were compiled using a combination of EDR database research, combined with local interview and records review pertaining to the project site. A note to mention, that the environmental records review was combined with the review of the historical records within this document. Overall, this document is a great example of standard guidelines, and the standard sources and methods gathered by the environmental consultant firm fell under the conditions set by the ASTM Guidelines.

INTERVIEWS: LOCAL (AND STATE) GOVERNMENT OFFICIALS

A Phase I ESA was completed of a 26.27-acre vacant lot, and the study area used to house a lumber mill. Section 6 comprises interviews, including government official interviews. Among the departments contacted in the section was the Plumas County Environmental Health Department (PCEHD), who provided documentation indicating the site had been used as a disposal facility. The report, which can be found in Appendix C states that the site posed little to no potential hazard to public health, safety, or the environment if it remained vacant. PCEHD arrived at this conclusion due to the fact that operations in this site ceased around 1978, before current standards were established for soil in waste disposal facilities, so their practices were unregulated at that time.

The PCEHD representative also indicated he had knowledge of wood waste being generated, stored and disposed of on site. PCEHD was not aware of any illegal dumping, or environmental cleanups on the site. The interviewee added that there was no municipal sewer system within five miles of the site, and the site possesses a septic tank. This representative also pointed that although inspections had been conducted annually, he was aware of rumors regarding the site being filled with material from a local mine. Geosyntec tried to address the mine filling rumors by interviewing a member of the Pumas County Museum, who said that although he had not personally heard the rumors before, it was possible due to Crescent Mills reported problems with sinkholes associated with a gold mining area. A last interview was

conducted with a member of Caltrans, an adjacent property, who shared that grading activities and materials like rock and sand have been stored on the study site.

Geosyntec seems to have made a reasonable effort to contact some appropriate agencies. However, it is unclear why they decided to interview a member of the Pumas County Museum regarding the rumors of possible filling with mining soil. Only one of the interviews, the one with PCEHD, clearly states the date while the timing of the others is not stated. The medium, and questions are also not provided. When compared to the ESA Process guidelines (ASTM, 2014), Geosyntec somewhat follows the suggestions, but deviates quite a lot when it comes to providing details and written documentation of the process.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

The interviews for the TSI case in California were focused on storm water drainage systems. Geosyntec reviewed the general Site setting and condition, including known information regarding the regional and local geologic and hydrologic conditions. Geosyntec also conducted a review of regulatory agency records to obtain information regarding environmental investigations on or near the Site. The records review included retaining the services of a commercial database firm, to provide a listing of publicly documented environmental records for the Site and at nearby properties within a one-mile radius. The purpose of the reconnaissance was to identify, to the extent possible, current uses and improvements of the Site, past uses of the Site, current uses of adjacent properties, and evidence of existing and historical hazardous materials use, disposal, storage, and releases on the Site and/or adjacent properties.

<u>Findings</u>:

- Geosyntec's interview of the owner in this case was more helpful than other cases such as Lincoln city. Greg Lehman was interviewed because he purchased the property in 1999. He said the site was mostly vacant and that the activities on the site were mainly removing and selling compost piles. He said that to his knowledge the site did not release hazardous materials.

- Geosyntec conducted interviews with no current occupants because the site was currently vacant.

- The interviews with the local government officials were the most helpful out of the interviews. Jerry Sipe was interviewed and said that the site was formerly used as a Lumber mill and had solid waste disposal for wood waste. According to Mr. Sipe, there were rumors that the fill material was from tailing originating from the Engle Copper Mine located in the northern portion of Indian Valley. However, he was not aware of any records or documents that could confirm this. He was not aware of any illegal dumping activities, complaints or any AULs regarding the Site. Mr. Sipe noted that there is no municipal sewer system within five miles of the Site and the Site is on a septic system. He noted that there was water supply to the Site. He was not aware of environmental cleanups that had been conducted at the Site.

- Geosyntec interviewed Mr. Scott Lawson of the Plumas County Museum for information regarding the use of mine tailings as fill on and around the Site. Mr. Lawson indicated that he had not heard about the mine tailings before, but that such filling could be possible. He noted that Crescent Mills reportedly had problems with sinkholes from the tunnels caving in under the town that were associated with gold mining in the area.

- Geosyntec interviewed Ms. Mary Ann McCary with Caltrans. Ms. Swezy recommended speaking with Ms. McCrary because she was familiar with the property adjacent to the Site to the east and may have some information about current land uses of the Site. According to Ms. McCrary grading activities have occurred across from the property and materials from this, including rock material, old wood waste, and sand, were stored on the south end of the Site. Ms. McCrary was not aware of any illegal dumping or spills or releases of hazardous substance / petroleum products on the Site.

<u>What they did overall</u>:

- They interviewed the current and former site owner, the key site manager, the current and former site occupants, and the user or the person seeking this site assessment.

- They had a section explaining who they interviewed as well as who they did not interview and why.
- They named the key site manager and what questions they were asked, as well as whether or not they had any information regarding pertinent documentation.

What they did well:

- They provided a set section for the interviews.
- They organized the appropriate interview strategies.

What they did poorly:

- They could have done more research in the occupants' portion to see why the site is actually vacant and who the former occupants were.
- They could have put more effort into the owner and occupants' interview.

What they could have done differently:

- They could have given more information in terms of answers from interviewees.
- They could have tried to interview anyone who had lived on the site.
- They could have conducted different strategies for the interviews.

How they adhered to the guideline:

- The key site manager organized interviews efficiently.

How they deviated from the guideline:

- No reasonable attempt was made to interview any former owners/occupants. They left it as not available.

Possible Questions they could have asked:

- Do you have contact information for any former occupants?
- Were there any strange smells that you noticed from the site whatsoever?

- Did you always see trucks bringing material and leaving with material consistently?
- Local government officials: Do you have any more documents with dates of important events that occurred on or near the site?

CASE STUDY SIX

PHASE I ENVIRONMENTAL SITE ASSESSMENT DC GENERAL HOSPITAL – BUILDING 9, BUILDING 29 AND THE CORE BUILDINGS 1-4, 1900 Massachusetts Avenue, Southeast

The following case study was prepared for DC General Hospital, and prepared by Hillis-Carnes Engineering Associates, Inc. A Phase I Environmental Site Assessment was prepared by request for a parcel of land within an existing complex: Building 9, Building 29 and the Core Buildings 1-4, 1900 Massachusetts Avenue, Southeast Washington, DC 20003. Found below you will find the student compiled student analysis for the case study. Each student group has provided an analysis of the case study compared to the standard ASTM guidelines. Citations for the original case study are located in the reference list.

SITE RECONNAISSANCE

This site reconnaissance section began with a typical methodology section and was followed by general site overviews that includes references to other sections of the document for more detailed diagrams. This document's records are impressively detailed; the different buildings on site were recorded into their own sub-headed sections and details of each were expressed as bullet-point lists (Hillis-Carnes Engineering Associates, Inc., 2018). The section also lists different hazardous materials found on site, as well as the area's current ASTs (Hillis-Carnes Engineering Associates, Inc., 2018). This document followed typical guidelines and separated each subsection to the point of being easily accessible.

RECORDS REVIEW: HISTORICAL

This Phase 1 ESA was created for the construction of multiple buildings at DC General Hospital in Washington, DC. There were many sources reviewed and reported findings that

compare to the ASTM guidelines, including geography and topography of the site with 7.5 minute USGS topographic maps, site vicinity and used/ownership of the properties, aerial photographs with explanations, and Sanborn fire insurance maps with explanations. Each aerial photograph, USGS 7.5 minute map, and Sanborn map was described in detail. This detail included year taken, number of buildings, and how the property may have changed from previous years. Almost everything within the historical records review section of this ESA followed the standard, although there could be some improvements. For example, although there were many aerial photographs, 7.5 minute USGS maps, and Sanborn fire insurance maps listed, there was only one of each actually included within the document. There was only one aerial photograph dated 2011, one USGS 7.5 minute topographic map dated 1979, and one Sanborn fire insurance map dated 2018. According to the standard, the document should have included each and every aerial photograph, USGS 7.5 minute topographic map, and Sanborn fire insurance map.

RECORDS REVIEW: ENVIRONMENTAL AND REGULATORY

This assessment is thorough in its evaluation of DC General Hospital, located in Washington, DC. Some of the information in the records review section was provided by EDR, a contracted information services company. The regulatory review includes a list of every record looked at, a thorough summary of each record's intended use, the database in which it was located, and the source from which the data was derived. The assessment itself does not include the author's professional opinion on the records reviewed, but it does state that the records and information provided by EDR were reviewed, which I assume indicates approval of the information. Any records of significance in relevance to the environmental condition of the site contain a summary detailing the information provided.

Overall, this assessment is quite thorough, and seems to satisfy EPA requirements, though could be more thorough in a couple of areas. There was not a lot of information provided, nor visual tools used, for the physical setting. The information provided is in accordance with guidelines, however the overview of the topography and soil content was somewhat vague and does not address flooding potential on site. In regard to the records

reviewed, Hillis-Carnes Capital Services (HCCS) did not include their professional opinion on the information gathered from the records reviewed. Although the assessment could be more thorough in those areas, this assessment provides strenuous detail regarding most information requirements listed in the guidelines provided.

INTERVIEWS: LOCAL (AND STATE) GOVERNMENT OFFICIALS

A Phase I ESA was conducted regarding building 9, building 29, and core buildings 1-4 of the DC General Hospital in Southeast Washington. Section 7.6 Interviews with Government Officials (Hillis-Carnes, 2018; p 40) indicates that in lieu of interviews, formal written information requests were submitted per the agency's request. These written requests are outlined in Section 5.2.1 (Hillis-Carnes, 2018; p 23) where it shows that Capital Construction Services contacted the DC Department of the Environment, inquiring about any on-site spills, leaking underground storage tanks, illegal dumping, or other environmental incidents. The Department of the Environment did not reply, but a copy of this written request was attached in Appendix B of the original assessment report by Hillis-Carnes Engineering Associates (2018).

Once again, as outlined by the ESA Process guide, it is acceptable to obtain no answer as it is not the agency/government official's obligation to respond. Capital Construction Services made a reasonable attempt to contact the pertinent agency, via their preferred method, and recorded this attempt in writing as it is advised in the guidelines. The ESA report further states the company's intention to notify the user with an amendment letter in the event that the agency replies at a later date.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

This site is about 16 acres and houses three structures as well as paved areas and roads, a playground, storage units, sidewalks and grass covered areas. This assessment found no evidence of any recognized environmental conditions (RECs) although there was a lack of information at the time of completion. For instance, information requested from the DC Department of the Environment had not yet been received when this assessment was finished.

Future plans for this site include tearing down the existing buildings and constructing residential-type structures. Hillis-Carnes did identify the owner of the site.

What they did overall:

- They interviewed the current and former site owner, the key site manager, the current and former site occupants, and the user or the person seeking this site assessment.
- They had a section explaining who they interviewed as well as who they did not interview and why
- They named the key site manager and what questions they were asked, as well as whether or not they had any information regarding pertinent documentation
- They included a questionnaire completed by the owner

What they did well:

- They provided a set section for the interviews.

What they did poorly:

- They did not interview any occupants.
- The only interview they showed that they conducted was in the form of a questionnaire filled out by the site owner.
- They did not give much information regarding the interviews at all.

What they could have done differently:

- They could have given more information in terms of answers from interviewees.
- They could have tried to interview anyone who had lived on the site.
- They could have conducted in person interviews instead of only providing a questionnaire to be filled out.

How they adhered to the guideline:

- The key site manager was identified and was asked about helpful documents.
- In accordance with the guideline, interviews were not conducted with multi-family residential properties (not required). There were no other occupants to interview, therefore no occupants were interviewed or identified.

How they deviated from the guideline:

- No reasonable attempt was made to interview any former owners/occupants. The company felt it was unnecessary because they didn't think those people would give any new information. However, according to the guideline they still should've attempted to interview.

RECOMMENDATIONS

SITE RECONNAISSANCE

The results of this document pertain both to the future students who will be conducting the in-person site assessment and the Calhoun County government. The best next steps for the county would be to select potential sites that are preferably undeveloped or that require little remediation to develop in the future. These sites should be available for the county to purchase and develop on, and preferably in proximity to existing infrastructure to reduce costs of development. A selection of three or four potential sites would be ideal to provide options in the future.

Several of the components for review pertain to industrial waste, industrial debris and other similar hazards, all of which would most likely be absent from such a site. The most pertinent components include all current environmental conditions of the parcel, stressed vegetation, hydrological and topographical conditions, water tanks, existing water pipes, existing electrical wiring, any other existing infrastructure and adjacent property conditions.

A site reconnaissance group will need to visit such a site when the county government approves and compile an extensive visual and written report on the aforementioned conditions. The most prominent limitation to this assessment for the future site inspectors might be the accessibility to the site itself.

Once these sites are selected, the students responsible for conducting the site reconnaissance portion of the site review should follow the guidelines given through the reviews in this document to conduct the in-person inspections of the selected sites. All pollutants or environmental conditions listed in the provided examples should be reported for each of the sites to provide ample detail for the full report, and these should be reported in an organized manner like the reviewed examples.

In order to extensively examine the designated site, tools will be utilized for recording and documentation purposes. All assessment team members should carry notebooks and specified lists of aspects that everyone has been assigned to focus on regarding the site reconnaissance portion of the Phase 1 Environmental Site Assessment (ESA). Team members should take detailed notes about the various aspects outlined in the provided "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" form (ASTM International, 2014). Additionally, a camera can be utilized to capture multiple pictures of the site. Captured photographs can be re-analyzed and included in the final report of findings. Also, Aqua EZ pH test strips can be planned to be implemented in testing any water in the area in order to analyze basic water quality associated with the site.

It was noticed that charts were effective for outlining features that were and were not present on the site based on those identified within "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM International, 2014). Also, it appeared that some ESA site assessments were conducted more extensively than others; but, no more than a paragraph for each of the characteristics associated with the site would be necessary to effectively conduct the reconnaissance. Multiple reports include photographs of the site as well, which prove to be helpful, standard visuals.

After identifying the patterns within these six different studies, our group was able to compile a comprehensive list of necessary information to include in site assessments that can be used by any professional or academic entity to perform any future site reconnaissance with confidence. The documents reviewed came from a broad range of regions with different goals and backgrounds, yet they each followed a distinct layout and included most of the same data from their respective site reviews, indicating a larger pattern that can be applied to any situation to achieve optimal results. This study also serves as an excellent educational tool to inform students how to carry out site assessments easily and methodologically. Although there is already a framework for site assessments, our review only bolsters this framework and confirms its effectiveness within the broader field of environmental science.

RECORDS REVIEW: HISTORICAL

Using our inferencing skills, we decided which sources were viable and useful to the project. Calhoun would need to find information on a potential site that goes back as far as the site has been used or until the 1940's at whichever intervals are available. The optimal interval of information is five years; however, the county may need to accept whatever interval is available.

When Calhoun County conducts their own ESA, then databases such as LABINS and the USGS database would be useful resources. Aerial photography sources can be sourced from Labins.org, the Florida Department of Transportation (FDOT) Florida Aerial Photography Archive Collection, and The University of Florida Map & Digital Imagery Library. Labins.org may have the most current images which are separated by True color and colored Infrared. Infrared can show changes in vegetation and may show signs of soil pollution. It may also make man-made structures easier to see through vegetation, which is useful for Florida's sometimes dense vegetation cover. The Florida Department of Transportation (FDOT) Florida Aerial Photography Archive Collection may be good for historical images because it has digital images that date back to 1951 and aerial footage dates back to 1940 (LABINS (n.d.-b)). The University of Florida Map & Digital Imagery Library may be another good historical source because it is said to house the largest and most complete collection of Florida aerial photographs (~160,000 photos) outside of the National Archives (LABINS (n.d.-a)). These photos are also said to document the dramatic changes in Florida's land use between 1937 and 1990 (LABINS (n.d.-b)).

Labins.org can also be used for land records with certified corner records being available for search on their website which can be searched by Township/Range or Document Number and General Land Office or (GLO). Early records are also available to be searched by Township/Range or by Volume (LABINS (n.d.-b)). As a general rule, the Corner Record is used to document the placement of a survey monument when the marker already appeared on a previously filed Corner Record or on a recorded ROS or a Subdivision Map (LABINS (n.d.-a)). The original survey of Florida is from around 1824 and the data consists of the original township plats, surveyor field notes and original sales plats (LABINS (n.d.-b)).

Flood and fire insurance maps can be found in various ways with Sanborn seeming to be the standard resource, although this may take a bit of digging or asking for permission for information from Sanborn.

Property tax files and Recorded Land Title Records should be available through different county resources such as the property appraiser, clerk of the circuit court and comptroller, and tax collector office. These may or may not be available online and may need to be asked for from the sources in order to avoid paying to access. USGS Topographic Maps should be fairly easy to find through the USGS.gov site once a site is determined. It seems that FDOT.gov has some data for current local street directory maps which may be useful as well. Building Department Records information may be accessible through the department in the county designated for building records. Zoning and land use records will most likely be located in the planning department of the county; these records will need to contain past and present site ownership and the property type, such as residential or commercial. Calhoun County would also need to research and cite any past environmental impact assessments, historical reports, and past Historical Reviews that may have been made for the property. Local newspapers and community social media may also be a resource for the county to tap into, in regards to past incidences or complaints linked to a potential site.

Calhoun County, with the findings and recommendations listed within this document, should have no trouble developing/commissioning a Phase 1 Environmental Site Assessment for a site suitable for housing construction. This group has done its best to compile possible sources and recommendations required for one to conduct a Phase I Environmental Site Assessment that complies with the strict standards set forth within *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM, 2014).

RECORDS REVIEW: ENVIRONMENTAL AND REGULATORY

It is recommended that an environmental specialist reviews the Environmental and Regulatory review portion of the assessment to ensure that sufficient information is included, and time and money is not wasted on irrelevant sources and records. Because record and

source information vary, it will be of the discretion of the environmental professional to decide if sources other than standard environmental records and source information will be beneficial to the assessment. The Environmental Regulatory Review consists of a database query conducted by a specialist data firm. The source of the data is referenced in each individual Environmental Site Assessment. Three of the six studies reviewed employed the services of an information retrieval company (i.e. EDR). As such, Calhoun County could consider contracting out this portion of the assessment out to such a company, if the County decided to do such an assessment on their own. Even if the County contracted the entire Phase 1 Environmental Site Assessment to environmental consultants, which seems to be standard practice, the County could still require the consultants to contract this portion of their assessment out to an information retrieval company (if the consultants do not have the capacity for such information gathering), to ensure data reliability of the data. The database query consists of data from each level of government listed below:

- Federal
- State
- Regional
- Local

A phase one Environmental Site Assessment should also determine if there are liens against a site or existing or potential ownership disputes. The following data sources are for a potential site in Calhoun County, as originally intended. However, the format is similar anywhere in the United States.

Federal:

- U.S. EPA -Region 4
- Environmental Information for Florida https://www.epa.gov/fl/environmental-information-florida

Reviewing Federal regulations will allow the assessment team to understand the environmental standards held by the EPA for the site chosen. This review includes quality standards regarding soil, water, and air.

State:

- Florida Department of Environmental Protection https://floridadep.gov/
- Florida Hazardous Waste Management and Regulatory Program https://floridadep.gov/waste/permitting-compliance-assistance/content/hazardous-waste-management-main-page
- Division of Environmental Assessment and Restoration (DEAR) https://floridadep.gov/dear
- The Division of Water Resource Management (DWRM) https://floridadep.gov/water

The state review will allow the assessment team to gain knowledge regarding any additional laws or processes required by state law. Information provided by state regulatory agencies can give environmental conditions for specific counties.

Regional

- Northwest Florida Water Management District https://www.nwfwater.com/
- Florida Department of Health in Calhoun County http://calhoun.floridahealth.gov/programs-and-services/environmental-health/index.html
- Division of Air Resource Management https://floridadep.gov/air
- The Florida Geological Survey (FGS) https://floridadep.gov/fgs
- Enviro- Atlas https://enviroatlas.epa.gov/enviroatlas/interactivemap/

A review of regional regulatory information will provide specific detail about the site's condition. Enviro-Atlas will also provide additional information pertaining to the site's current environmental condition.

Local:

- Calhoun County Departments https://calhouncountygov.com/departments/
- Public works (20859 Central Avenue East Blountstown, FL 32424)
- Calhoun county land development codehttps://calhouncountygov.com/uploads/2020/02/2010landdevelopmentcode_000.pdf

A review of local law will provide insight on the town/cities local ordinances and laws pertaining to building codes, zoning ordinances, emergency management.

The most thorough and comprehensive records review was conducted by a third-party contractor and exhibited a pattern of following the table created in this document's purpose section. Additional information was occasionally used, such as the Sanborn Map Review and Historical documentation review, both of which provide relevant and substantial information regarding the target property under review. Some of the examples reviewed were able to exclude certain sections such as a regulatory file review; sufficient information was provided by other sections to exempt this part. There were a small number of notable exemptions that could be included, an example being Hillis-Carnes lacking professional opinion on the documents reviewed. Our environmental regulatory records review group has concluded that they all generally follow the recommended guidelines. The Sierra Institute case study for example follows the guidelines with little deviation, while the Lincoln City case study chose to exclude some recommended sources provided by the guideline. We did find that if there was any form of deviation from the standard sources recommended by the ASTM guidelines, that those case studies provided reasonable adjustment and alternatives to the standard sources by the environmental professional.

INTERVIEWS - LOCAL (AND STATE) GOVERNMENT OFFICIALS

Firstly, we researched the local government officials, agencies, and departments that were pertinent to the hypothetical site by accessing the county's official website. We then

gathered contact information for the public health department, emergency management, fire department, property appraiser, and County Commissioner Chairman. These agencies/officials were selected based on the possible insight they could provide regarding the site in terms of safety, legislation, existing concerns or recurring problems with the site.

Once we selected our interviewees, we developed a site-specific questionnaire focused on our areas of interest. The purpose of the questions is to determine the viability of the site in terms of public safety, health hazards, and even financially from the public servant's point of view.

The questionnaire is to be administered via email, over the phone, or in person depending on the subject's preference. Phone and in person interviews should be recorded and then transcribed with informed consent. The questionnaire should have an attached map and aerial photography of the lot in question for reference. Subjects should be advised to answer all questions to the best of their abilities, and a comment section is provided at the end of the questionnaire. The final answers will be screened for any new issues that may have not been previously considered or included in the questionnaire.

The *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guide by ASTM International (ASTM, 2014) that we used as a tool to compare the six Phase I ESAs clearly states it should be followed on a voluntary basis. We recognize that an ESA can absolutely be performed satisfactorily without adhering to the guide's suggestions, however it does seem that those who follow the guides are able to produce a more complete and comprehensive report. Out of the six ESAs analyzed report number 3 (*Phase I Environmental Site Assessment Former Oak Park/Escambia Arms Property* - by Terracon Consultants, Inc) followed the guidelines the closest, but it is worth noting that this assessment evaluated an EPA Superfund site under CERCLA. There was an ongoing investigation regarding an unidentified contaminant source, and current and historical Recognized Environmental Conditions were identified in, on, or at the property.

It is understandable that not all properties will be as complex as the one in report 3, and it is ultimately up to the environmental professional's judgement to determine if/when

interviews with government officials are needed. Report 5 (*Phase I Environmental Site Assessment NE 1st Street, Lincoln City, Oregon* - by Maul Foster & Alongi) presents a very limited government official interview section, with only one interviewee representing the local fire department. The study area for report 5 once housed a fueling facility, so it would perhaps have been appropriate to contact more agencies regarding the status of the site and any possible leaks from underground fuel storage tanks. Currently, this site is used as a recreational facility, but there are no recorded attempts or written inquiries to any environmental departments that could have provided further insight.

Report 1 (*Phase I Environmental Site Assessment 908 & 920 Bayswater Avenue and 108 through 124 Myrtle Road Burlingame, California* - by PES Environmental, INC) evaluated seven parcels, yet they limited themselves to just stating that "individuals with knowledge of the site were interviewed". PES Environmental does not elaborate on who these individuals might be, and whether any of them served in any branch of the local government. Furthermore, it seems the report presents conflicting information when it claims that a questionnaire can be found in section 2.4, but that section presents Geology and Hydrogeology information only.

Overall, the reports that adhered to the guidelines better seem to provide more of an overall sense of trustworthiness and transparency. The reports that included the timing, medium, and questions asked become better examples for others, and allow the user to get more tangible results. Recording failed attempts and unanswered written inquiries helps show that all proper steps were taken, and that due diligence took place. Interviewing government officials is an important step since it can allow us to discover underlying issues that may have otherwise not been disclosed. Local officials may also be able to draw attention to issues not previously evaluated or included in the ESA.

INTERVIEWS: PAST AND PRESENT OWNERS AND/OR OCCUPANTS

Based on this information, we recommend the following for Calhoun County:

- Be sure to provide interviews and questions for past and current property owners, occupants, and operators - not *just* key site holders.

- Create a blanket questionnaire for said persons to answer, but also interview for further information as PES Environmental did. (PES Environmental, 2015)
- Provide the questionnaire used in the official ESA document. (Evergreen, 2015)

Recommended questions for the owner

- Who is your key site manager, or who knows this site the best?
- Are there any previous environmental site assessments that can be provided for us?

Recommended questions for the occupants

- How long have you occupied this site?
- Are there contaminants and if so, can you identify them?
- Is there a potential for this site to be contaminated in the future, if it isn't currently?
- What is the site currently used for? What has it been used for in the past? What do you (the owner or occupant) think it should be used for?
- How has the site changed over time?
- What is the main concern with this site?
- What environmental conditions are connected to this site?
- How did the owner come to own this site, and how did the occupants come to occupy it?
- Why is this site important or unimportant to Calhoun County?
- How do you think this development will impact you and your property?

Interviews with owners and occupants are vital because such interviews help save time since information gleaned from these interviews may be helpful when working on the project in the future. When information is obtained from occupants, such information helps environmental agencies and other relevant stakeholders be more knowledgeable about present

and potential problems. This literature review is important for Calhoun County because it is useful for the county to have different opinions of Environmental Site Assessments in order for them to complete the most fitting and thorough assessment possible for their own sites.

CONCLUSION

The recommendations provided by the UWF students have the intended use of helping break down the components of the standard Guidelines that property owners and environmental professionals need to follow when performing a site assessment. The students have contributed by providing the county an analysis of the standard guidelines of a Phase I Site Assessment. After identifying the patterns within these six different studies, this group of students were able to compile a comprehensive list of necessary information to include in site assessments that can be used by any professional or academic entity to perform any future phase 1 environmental site assessments with confidence. Documents reviewed came from a broad range of regions with different goals and backgrounds, yet they each followed a distinct layout and included most of the same data from their respective site reviews, indicating a larger pattern that can be applied to many situation in hopes of achieving optimal results.

Through the review of these case studies, there is a general consensus that when performing a Phase I Environmental site assessment, the document characteristics can vary based on the property under review. For example, an environmental professional may choose to exclude a guideline recommendation because it does not apply or hold value for the assessment guidelines. It is possible to perform a satisfactory Phase 1 ESA without strictly adhering to the ASTM guidelines. However, it is reasonable to say that an organization who performs a Phase I ESA and follows the guidelines more strictly produces a more complete and trustworthy document. It is imperative to note here that results of the ESA is heavily placed upon the discretion of the Environmental Professional. Therefore it is recommended to give good consideration when deciding who will perform the Phase I ESA. A professional environmental site assessment provides the most accurate information in regard to the environmental condition to a client's property. It also helps lower the risk of technical errors during the process of construction or restoration of the property, reducing cost and increasing efficiency.

This study serves as an in depth example of a best practices review of phase 1 environmental site assessments. The UWF Department of Earth and Environmental Sciences students worked through many factors in the spring 2020 semester in order to provide a detailed analysis of the standard ASTM guidelines of Phase I Environmental Site Assessment. It is our hope that Calhoun County can incorporate the lessons learned into their planning for housing recovery and future improvement post Hurricane Michael.

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