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VIA FED EX

May 6, 1999 993-3928.8

Nassau County Board of County Commissioners
P.O. Box 1010
3163 Bailey Road
Fernandina Beach, Florida 32035

Attn: Mr. Walter D. Gossett
County Coordinator

RE: PROPOSAL FOR LIMITED SOIL BORROW STUDY
DAIRY PROPERTY
WEST NASSAU CLASS I LANDFILL
NASSAU COUNTY, FLORIDA

Dear Mr. Gossett:

Golder Associates Inc. (Golder) is pleased to submit this proposal and cost estimate to Nassau County ("the County") for professional services to perform a limited borrow study for the West Nassau Class I Landfill in Nassau County, Florida. The primary purpose of the borrow study is to determine if specific portions of property located northwest of the existing landfill property contain sufficient amounts of clay that can be accessed and used for the bottom liner of the remaining cell in the active landfill. A secondary objective is to determine the presence of clay on a larger portion of that property for identifying potential future sources of material for the cap for the existing landfill or future landfill development. It is our understanding that the property located northwest of the landfill, referred to herein as "the dairy property", is not currently owned by the County and that only a certain portion of the property will be evaluated during this study (see discussions below). There are certain criteria that the clay must meet in order to be used for the purposes described above. Therefore, as detailed below, this borrow study includes the observation of test pit excavations, collection of soil samples for geotechnical testing, and preparation of a report on the findings.

The currently designed liner configuration for the Phase IV cell at the West Nassau Landfill includes a 2-foot thick clay layer over the approximately 9-acre cell area. If this configuration is constructed, approximately 30,000 cubic yards (cy) of clay will be required for construction of this cell. Therefore, the primary focus of this study will be to identify an area that will provide at least 30,000 cy of clay[1]. The attached Figure 1 shows the approximate area of investigation, according to Mr. Robert McIntyre, Department of Solid Waste Management Director. A rough estimate is that this area covers approximately 260 acres. Based on discussions with Mr. McIntyre, the likely area to be used for the Phase IV cell construction material is the portion of

[1] It is assumed that the clay will have a required recompacted permeability of 1 x 10^{-7} centimeters per second (cm/sec).

APPROVED
DATE 5/10/99

the property nearest Highway 301/US 1, with some established set-back. Additionally, it is assumed that the clay will be encountered within about three feet of the ground surface and will be approximately three feet in thickness. If the thickness of the clay is three feet, the area needed for 30,000 cy of clay is approximately 6.2 acres. Therefore, with input from the County, an area approximately 6 to 10 acres located near the highway will be the focus of this study and will have the greatest concentration of test pits. The remainder of the area to be investigated will have very wide spacing of test pits and will primarily serve to provide limited information on the shallow stratigraphy in the area.

During previous operations at the existing landfill site, it is our understanding that material was stockpiled in an area located near the operating landfill. This material reportedly had some clay, but it is likely mixed with other materials that might render the clay unusable for the liner material. As part of this study, the material in the on-site stockpile will be visually classified and tested to identify the type of soil present and evaluate its potential for use a clay liner material.

Based on conversations with Mr. McIntyre, we have assumed that the County will provide a backhoe and operator for this borrow study. Also, given that the County does not currently own the dairy property, we assume that the County will obtain right of entry to the property. We will coordinate with Mr. McIntyre to schedule the work for use of the equipment and operator and in accordance with any right of entry requirements. It is our understanding that the property is currently used for corn crops and cattle, but that the area to be investigated is primarily planted corn. We assume that the property owner understands the destructive nature of test pit excavations and that some of the corn will be destroyed. We will attempt to minimize the damage to the corn crop and will replace the excavated soil back into the excavation such that the ground surface at the excavation is approximately level with the surrounding ground. Additionally, any obvious wetlands on the property will be avoided for the purposes of this study.

Although not included in the scope of services in this proposal, Golder would like to discuss the issue of potential soil contamination regarding bringing soil to the landfill from other properties. Given that the dairy property, from which clay (and potentially other soils) may be obtained, has had various agricultural activities conducted on it, there is the possibility that the soil contains constituents that could potentially contaminate the soil and/or groundwater where it is placed. For example, if the property has been used as a cattle farm for many years, there is the possibility that there is a cattle dip structure at the site that may contain high levels of arsenic; or that the crops planted have been fertilized or sprayed with pesticides that have leached into the soil. We are not aware of any activities that the County may have undertaken regarding purchasing this property, such as an environmental due diligence investigation that would indicate the potential for previous contamination. However, we believe this issue should be considered at some point before soils are transferred to the landfill property. Because the cost for analytical work can be significant, a more detailed evaluation of potential contamination of the soil would be recommended on specific areas, once the decision has been made to purchase the property and areas have been identified for use on the property. We would be happy to discuss this issue with the County and make recommendations for such a testing program.

The following provides a detailed description of the scope of services to be provided to the County in performing this borrow study. Also included is a schedule for performing the work and an estimated cost for providing these services.

SCOPE OF SERVICES

Task 1 - Test Pit Excavation

This borrow study includes the excavation of test pits in the on-site soil stockpile and at several locations on the dairy property to evaluate the presence, thickness, and quality of clay at these locations. As discussed above, the test pits in the on-site stockpile will be performed to determine if the material is suitable for use as clay liner. Unless a significant amount of clay is encountered, representative samples will be collected from the stockpile for soil classification testing only. As shown on the attached sketch, there are 12 proposed test pit locations on the dairy property; five of which are concentrated in the area adjacent to the highway (locations shown are approximate). Actual locations will be determined in the field and will be based on ease of access and minimizing damage to crops. The area of concentrated test pits is shown for illustration purposes and the actual area for the primary borrow study focus, as discussed above, will be discussed with the County.

The excavation of the test pits will be conducted over approximately two days (weather permitting), with as many test pits as possible (more or less than the 12 shown) to be excavated on the first day. The second day will include the stockpile test pits along with any others on the dairy property that are determined to be needed based on the findings from the first day. It is anticipated that the test pits on the dairy property will be excavated to a depth of approximately 10 feet; this will ensure that if the clay is present within the top 10 feet, it will be encountered, and that the total thickness of the clay at each location will be determined. Golder proposes to provide visual observation and sample collection during the test pit excavation under this task. Shipping of the samples will also be included in this task. A Golder field engineer or geologist will be present during all excavations and will log the stratigraphy of the test pit (note depth to clay, thickness of clay, classify the soils encountered, etc.) and collect samples. A sample of each major soil strata will be collected and stored in a 1-quart plastic bag. Bulk samples (approximately 50 pounds) of clay, if present, will be collected along with a smaller sample placed in an air-tight container for natural moisture content determination. Selected samples will be shipped to Golder's Atlanta, Georgia geotechnical laboratory for testing (see Task 2).

Task 2 - Geotechnical Laboratory Testing

Only select samples will be sent to the Golder laboratory for testing. The actual samples and the properties tested will be determined after visual review of all the samples at Golder's Jacksonville office. Some or all of the following tests will be performed on the samples:

- Grain Size Distribution by Seive and Hydrometer Analysis (ASTM D422)
- Atterberg Limits (ASTM D4318)
- Natural Moisture Content (ASTM D2216)
- Standard Proctor (ASTM D698)
- Permeability (ASTM D5084)

The following table provides a summary of the anticipated number of samples to be collected and the tests to be conducted on each:

Sample Location	No. of Samples	Anticipated Tests
On-site Soil Stockpile	2	- Grain size distribution w/ hydrometer - Atterberg limits
Dairy Property	5	- Grain size distribution w/ hydrometer - Atterberg limits - Natural moisture content - Standard Proctor - Permeability
Dairy Property	7	- Grain size distribution w/ hydrometer - Atterberg limits - Natural moisture content

The permeability tests will be performed at the lowest density and moisture allowed by the specifications[2] to assure that the clay will meet the permeability requirements under worst-case conditions within the specifications.

Task 3 - Reporting

At the completion of the above tasks, the information collected in the field and the geotechnical laboratory results will be presented in a borrow study report to the Board of County Commissioners (Board). This report will include copies of the test pit logs, a sketch showing the approximate location of the test pits, the results of the geotechnical laboratory results, and a discussion/evaluation of the test results.

SCHEDULE

Golder will coordinate the availability of the equipment and operator with Mr. McIntyre once the right of entry has been obtained by the County. Assuming that the right of entry request has been made and that there are no access issues, Golder would be available to perform Task 1 within one week of approval of this task order. Once the field work is completed, the geotechnical laboratory testing will be conducted and take on the order of two weeks to complete. The borrow study report would be prepared following the receipt of the geotechnical laboratory results and would be completed for submittal to the Board within two weeks (approximately 5 weeks after approval of this task order).

COST ESTIMATE

Golder's cost estimate to complete this work is $11,475 based on the scope of services as outlined above. A detailed breakdown of this cost estimate is presented in Table 1, which is attached to this letter.

[2] In accordance with the Specifications, the allowable maximum dry density for the clay will be no less than 90% and the moisture must be greater than optimum, both determined by the Standard Proctor test.

Golder proposes to perform this work on a cost reimbursable not-to-exceed basis in accordance with the labor and unit rates listed in Table 1. The County will only be billed actual hours and expenses incurred on the project for work within the agreed scope of work. Direct expenses will be marked-up 10 percent for administrative purposes. Photocopies, computer and CADD time will be billed at the unit rates listed in Table 1. Travel and communications costs will not be billed to Nassau County as stated in our August 1998 proposal. The cost estimate will not be exceeded without prior authorization from Nassau County.

TERMS AND CONDITIONS

This work will be performed under the Agreement for Consulting Services between Golder and the County, dated February 22, 1999.

Golder appreciates this opportunity to provide engineering services to Nassau County. If you have any questions regarding this proposal, please do not hesitate to call.

Very truly yours,

GOLDER ASSOCIATES INC.

Francis T. Adams, P.E.
Senior Project Manager

Wendy D. Karably
Senior Project Manager and Associate

Attachments

cc: Mr. Robert P. McIntyre, Solid Waste Director

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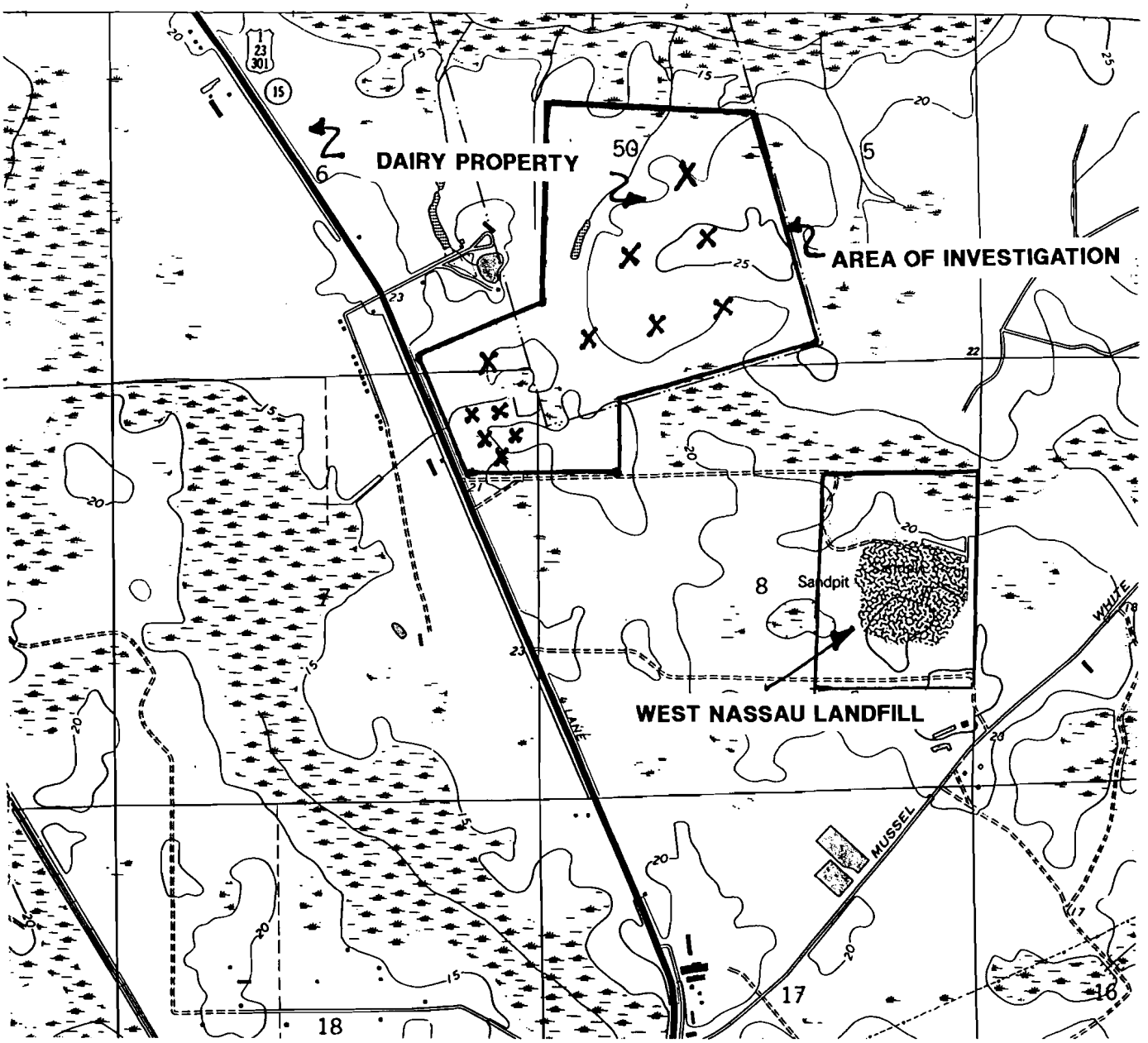
TABLE 1

Cost Estimate
Soil Borrow Study
West Nassau Landfill
Callahan, Nassau County, Florida

LABOR		LABOR CATEGORY AND RATE										TOTAL HOURS	SUBTOTAL LABOR
TASK	DESCRIPTION	Principal $130	Associate $110	Senior Proj. Mgr. $105	Senior Engineer $95	Project Engineer $75	Staff Engineer I $60	Staff Engineer II $55	Drafting $45	Technician $40	Clerical $40		
1	Test Pit Excavation	0	8	4	0	0	24	0	0	0	2	38	$2,820
2	Geotechnical Laboratory Testing	0	2	0	0	0	4	0	0	0	0	6	$460
3	Reporting	0	8	4	0	0	20	4	4	0	8	48	$3,220
	TOTALS:	**0**	**18**	**8**	**0**	**0**	**48**	**4**	**4**	**0**	**10**	**92**	**$6,500**

EXPENSES		Field Vehicle (day) $75	Per Diem (day) $25	Communications (est.)	Mileage (mile) $0.31	Shipping/ Postage (est.)	Lab Testing (est.)	Office Computer (hr) $10	AutoCAD Computer (hr) $20	Photocopying (each) $0.15	Field Equipment (est.)	Subcontractors (est.)	SUBTOTAL EXPENSES
TASK	DESCRIPTION												
1	Test Pit Excavation	2	0	$0	0	$300	$0	2	0	30	$70	$0	$545
2	Geotechnical Laboratory Testing	0	0	$0	0	$0	$4,050	0	0	0	$0	$0	$4,050
3	Reporting	0	0	$0	0	$25	$0	20	4	500	$0	$0	$380
	TOTALS:	**$150**	**$0**	**$0**	**$0**	**$325**	**$4,050**	**$220**	**$80**	**$80**	**$70**	**$0**	**$4,975**

COST SUMMARY				
TASK	DESCRIPTION	SUBTOTAL LABOR	SUBTOTAL EXPENSES	TASK TOTAL
1	Test Pit Excavation	$2,820	$545	$3,365
2	Geotechnical Laboratory Testing	$460	$4,050	$4,510
3	Reporting	$3,220	$380	$3,600
TOTALS		**$6,500**	**$4,975**	**$11,475**



X - Proposed Test Pit Location (Approximate)

Reference: USGS Topographic Map, 7.5 Min. Quadrangle Series: Callahan Quadrangle, Nassau County, Florida

Golder Associates JACKSONVILLE, FLORIDA	TITLE: PROPOSED TEST PIT LOCATIONS			
CLIENT/PROJECT: NASSAU CO./BORROW STUDY/FL	DRAWN: WDK	DATE: 5/6/99	JOB NO.: 993-3928.8	
	CHECKED	SCALE: AS SHOWN	DWG NO.	REV. NO.
	REVIEWED	FILE NO.	SUBTITLE	FIGURE NO.: 1