

May 21, 1993

Caroline Kwan
Project Manager
U.S. Environmental Protection Agency
Region II
26 Federal Plaza, Room 737
New York, NY 10278

Re: Summary of April 27 and 28, 1993 Meetings Concerning the Tutu Service Station Investigation in St. Thomas, U.S. Virgin Islands.

Dear Ms. Kwan:

On behalf of the Tutu Environmental Investigation Committee (TEIC), Geraghty & Miller, Inc. has prepared this letter to confirm the agreements reached at the April 27 and 28, 1993 meetings, at the Nisky Center in St. Thomas, U.S. Virgin Islands between representatives of the U.S. Environmental Protection Agency (USEPA), the U.S. Virgin Islands Department of Planning and Natural Resources (DPNR), and the TEIC. These meetings were held to discuss the USEPA's comments on the first draft of the Technical Memorandum II of the Tutu Service Station Investigation in St. Thomas which was submitted to the USEPA by TEIC on March 1, 1993. The USEPA's comments were provided in an April 20, 1993 letter from Ms. Carole Peterson, USEPA Chief, New York/Caribbean Superfund Branch II to Ms. Ana Gloria Ramos, Designated Coordinator for the TEIC.

The following people attended these two meetings on behalf of the TEIC, which consists of Esso Standard Oil Co. and Texaco Caribbean Inc.: Ms. Ana Gloria Ramos (TEIC Coordinator), Mr. Daniel Nachman and Mr. Thomas Danahy (Geraghty & Miller, Inc. - Consultants for TEIC), and Mr. Jose Agrelot (Soil Tech, Inc. - Consultants for TEIC). Ms. Caroline Kwan (USEPA Project Manager), and Mr. Henning Moe (CDM Federal Programs) attended both meetings on behalf of the USEPA. The April 27 meeting was also attended by Mr. Adrian Schottroff (DPNR), and Mr. Alberto Gutierrez (H+GCL Inc. - Consultants for Texaco). The April 28 meeting was also attended by Mr. Andrew Praschak (USEPA), Mr. Clifford Croke (DPNR), Mr. Francis Torres (Goldman, Antonetti, Cordova, and Axtmayer), Mr. R. Scott McCay (Texaco), Mr. Otto Miguel Bustelo (Esso - In-House Legal Counsel), Ms. Nancy D'Anna (representing L'Henri Inc.), and Ms. Belinda Price (IT Corporation - Consultants for L'Henri).

It was agreed that Technical Memorandum II will be revised to incorporate the USEPA's comments and the revised memorandum will be submitted to the USEPA by May 24, 1993.

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After this meeting, Mr. Andrew Praschak, USEPA attorney, provided additional comments to TEIC. His most notable comment was to identify the locations of all sampling locations when discussed in the text. In response to this comment, Section 4.0 Soil Quality, will be rewritten to discuss the soil results for each property individually. Due to the additional comments, the USEPA agreed to extend the submittal date of the revision of Technical Memorandum II to June 1, 1993.

For ease of reference, the numbering of the comments in the USEPA's April 20, 1993 letter will be followed to summarize the items discussed and agreements reached at the April 1993 meetings.

GENERAL COMMENTS

Comment 1.

Based on the maps, it appears that the upgradient extent of petroleum contamination can be delineated without the three additional wells proposed in the Technical Memo. However, one well might be warranted to the west of Western Auto, to establish whether that facility contributes to groundwater contamination. The locations of the proposed wells should be plotted on a map. Several questions remain as to the sources of chlorinated volatile organic compounds (VOCs) in groundwater. There are apparently at least two sources of chlorinated VOCs at the site - one in the vicinity of the Curriculum Building and, possibly, Tillet Gardens; the second in the vicinity of O'Henri cleaners. A shallow well should be installed south of MW-12D to identify and delineate the southern extent of the VOCs plume to the northern extent of the VOCs plume and to ascertain if the northern and southern plumes are connected.

Response 1.

The locations for the proposed additional monitoring wells were field checked by the USEPA and TEIC representatives after the meeting on April 27, 1993. The proposed locations for the four additional shallow monitoring wells MW-15 through MW-18 are shown on Figures 1-1, 1-2, and 1-3 (enclosed).

Comment 2.

EPA has compared the analytical results of our split sample analyses with Geraghty & Miller (G&M's) results. All the split and PRP data compare within acceptable limits.

Response 2.

The USEPA analytical split samples "compare within acceptable limits." No response is necessary.

Comment 3.

For the pumping tests, it is customary to present the following data graphically: background water level fluctuations; rainfall and barometric pressure data, if collected; and all measured water levels in all wells monitored during testing.

Response 3.

Additional information for the pumping tests (i.e., graphs of background water levels, rainfall, and barometric pressure) will be included in the Remedial Investigation (RI) Report. These data are not necessary for the purposes of the Technical Memorandum II. Hourly barometric pressure data will be requested from the weather station at Truman Airport, St. Thomas and included in the RI Report. A weather station at Fort Mylner, which is closer to the site, has rainfall records, but hourly barometric pressure data is not recorded.

Comment 4.

It would be useful to present subsurface soil data from borings and monitoring wells on the same map in the RI report to create a more integrated picture of soil contamination.

Response 4.

The soil analytical results will be compiled onto one map for the revision of Technical Memorandum II.

Comment 5.

Detailed core logs and drillers logs have not been provided. Though not crucial for this technical memorandum, they should be presented in the RI report.

Response 5.

Detailed core logs and drilling logs will be included in the RI Report.

Comment 6.

The VIHA supply wells should definitely be included in the next round of groundwater sampling. A schedule of pumping should be included, if available.

Response 6.

The USEPA requested that the Virgin Islands Housing Authority (VIHA) supply wells be included in the next ground-water sampling event. The pumps and piping installed in these wells are preventing access for sampling because the pumps are inoperable. The TEIC agreed

to include Supply Wells VIHA I and VIHA III in the next sampling event for the monitoring wells if the VIHA will remove the pumps and piping. Mr. Adrian Shottroff agreed to assist with this effort. If the pumps are removed prior to July 1, 1993, Geraghty & Miller and Soil Tech personnel will purge these wells using a portable generator and a submersible pump. Ground-water samples will be collected using a pre-cleaned Teflon bailer. Analyses will be performed for volatile organic compounds (VOCs) using the modified version of USEPA Method 524.2, Revision 3.0. The pumps and piping should be removed by the VIHA prior to the next sampling event (estimated to begin July 12, 1993).

To evaluate the apparent pumpage effects noted in Monitoring Wells MW-1D and MW-13D, the TEIC agreed to check the water meters at the VIHA wells for pumpage information. Additionally, the TEIC agreed to install pressure transducers in Monitoring Wells MW-1D and MW-13D and record water levels for at least two weeks during the next phase of fieldwork (June or July).

SPECIFIC COMMENTS

Comment 1.

Page 2-1, Paragraph 2, first sentence - The other principal contaminants of concern (i.e., PCE, TCE, and DCE) should be named.

Response 1.

The other contaminants of concern (i.e., tetrachloroethene, trichloroethene, and 1,2-dichloroethene) will be specifically named throughout the text of revised Technical Memorandum II.

Comment 2.

Page 2-2, Paragraph 1 - The logs in Appendix A do not show blows/foot or HNu readings as indicated in this paragraph.

Response 2.

Soil and core logs with HNu readings and blow counts will be included in revised Technical Memorandum II.

Comment 3.

Page 2-2 - The fact that EPA's contractor, CDM-FPC, split a number of samples with G&M and sent them to a separate laboratory for confirmatory analysis should be mentioned in the QC sample discussion in the RI report. (As mentioned in General Comments, the results of the separate analyses are comparable).

Response 3.

The collection of samples split by USEPA's contractor will be mentioned in revised Technical Memorandum II.

Comment 4.

Page 2-3, Section 2.2.1 - The outcrop descriptions are not provided.

Response 4.

The detailed descriptions are still being evaluated. These will be provided in the RI Report.

Comment 5.

Page 2-4, Paragraphs 1 and 2 - Downhole drilling pressure, rate of penetration per foot and water circulation observations are not provided, nor are the bedrock coring logs.

Comment 6.

Page 2-4, Section 2.2.3 - The downhole geophysical logs (caliper and sonic) are not provided in this technical memorandum.

Response 5 and 6.

The drilling parameters and downhole geophysical logs will be provided in revised Technical Memorandum II.

Comment 7.

Page 2-6, Paragraph 2, last sentence - The sentence should read that well MW-12D was completed as a deep, not a shallow, well.

Response 7.

The text will be corrected to indicate that Monitoring Well MW-12D is a deep well.

Comment 8.

Page 2-12, Section 2.4, Paragraph 2 - G&M needs to mention that the maximum aquifer test pumping rate was constrained by the capacity of the on-site water treatment system. Thus the aquifer was not stressed as much as it could have been.

Comment 9.

Page 2-13, Paragraph 1 - G&M should specify the frequency of manual water level measurements collected during the test.

Comment 10.

Page 2-13, Section 2.4.2, first sentence - The text should make clear that the two wells were not pumped simultaneously.

Response 8, 9, and 10.

The discussion of the pumping tests in the Revised Technical Memorandum II will include statements about the treatment system limitations, the frequency of manual water-level measurements (hourly), and the fact that two separate pump tests were performed (at different times).

Comment 11.

Page 3-2, Section 3.1.2 - How do the volcanic sandstone and siltstone described equate to the formations described under regional geology?

Response 11.

The bedrock descriptions (volcanic sandstone and siltstone) have been renamed and reclassified (to volcanic breccia and tuff, respectively); these descriptions match the regional mapping description of the Louisenhoj Formation.

Comment 12.

Page 3-10, Paragraph 4, last sentence - Two possible explanations exist for the difference in heads observed between the shallow and deep wells: (1) local perched conditions may exist; or (2) a recharge source exists in the vicinity.

Response 12.

As explained at our April 27, 1993 meeting, the water levels in the shallow monitoring wells are consistent between wells and define the expected water-table elevation (i.e., potentiometric surface) for the fractured bedrock unit. The abnormally low water levels measured in Monitoring Wells MW-1D and MW-13D are not likely to be due to a perched water table or recharge, but are more likely to be depressed due to pumpage of nearby supply wells which draw water from fractures that are intersected by the deep monitoring wells. To further evaluate this interpretation, fieldwork is planned as outlined in Item 6 above.

Comment 13.

Page 3-12, Paragraph 1, last sentence - The wells for which the data are not usable should be specified.

Response 13.

No further drawdown was noted after the rainfall began. Several wells showed a rise in water levels. Water levels collected after rainfall began were not used for calculations of aquifer characteristics. This will be noted in the revision of Technical Memorandum II.

Comment 14.

Page 3-12, Section 3.3.1 - Drawdown data should have been superimposed on a variety of type curves to assess the type of aquifer before determining that the Cooper-Jacob straight-line method was the appropriate one to use.

Response 14.

The drawdown data were compared to type curves (i.e., Theis and Bolton curves); however, the data did not fit these curves. The Cooper-Jacob straight line method was then used. Based on the interpreted aquifer test characteristics (i.e., unconfined, non-steady state conditions) the Cooper-Jacob method was appropriate. This information will be included in the revision of Technical Memorandum II.

Comment 15.

Page 3-12, Section 3.3.1, 6th sentence - The test states that correction of drawdown values was not necessary, but on the associated figures, the y-axis is labelled "corrected drawdown."

Response 15.

The figures will be revised to illustrate "drawdown" on the y-axis.

Comment 16.

Page 3-14, Section 3.3.2 - If the data for the pumping test of MW-6D is not useable due to the rainfall as stated on Page 3-12, then G&M should qualify the discussion and numbers presented in this section. Based on figures 3-8 and 3-9, EPA believes that steady state conditions had not been reached after 24 hours of pumping and that the shape of the drawdown curves indicate that the system is being dewatered.

Response 16.

Steady-state conditions were not reached during the pumping test. The Cooper-Jacob method used for analysis is appropriate for non-steady state (i.e., transient) conditions. See response No. 13 Re: Rainfall.

Comment 17.

Page 3-15 - The "drawdown" measured in well MW-7 is less than 0.1 foot. This change may not be due to the pumping well, located 230 feet away.

Response 17.

The pre-pumping trend hydrographs and the timing of the drawdown noted at Monitoring Well MW-7 illustrate that the 0.09 foot of drawdown at is most likely due to pumping.

Comment 18.

Page 4-1, Section 4.1 - The results from the soil boring samples should be considered in conjunction with those from the monitoring wells because they are really the same medium. Treating them separately makes it harder to assess the distribution of contaminants in subsurface soil.

Response 18.

Section 4.0 will be rewritten to include discussion of all the soil analytical results, rather than to provide a separate discussion of borings, wells, and surface soil samples.

Comment 19.

Page 4-3, Paragraph 2, item 2 - Total Petroleum Hydrocarbon (TPH) results are often elevated in fine-grained soils because the extraction method is more efficient due to the greater surface area from which the solvent can extract the TPH. This effect, however, does not result in "false positives."

Response 19.

Generally low values of total petroleum hydrocarbons (TPHs) were reported. False-positives may result from fine-grained sediments (i.e., silt and clay) that remain suspended after extraction and create interference with the infra-red spectroscopy. The revision to Technical Memorandum II will provide more discussion of the range of TPH values detected and compare them with guidance levels.

Comment 20.

Page 4-6, Section 4.3.1, Paragraph 1, fourth sentence - Only sample SS-5 is from the Tillett property; Sample SS-3 is from the Curriculum Building.

Response 20.

Surface soil sample SS-3 was collected at the former drum disposal area at the Curriculum Center. The text will be revised to reflect the correct location.

Comment 21.

Page 4-7, Section 4.5 - The analytes that are present above background concentrations should be listed, especially if any of them are contaminants of concern from a health perspective.

Comment 22.

Page 4-8, Section 4.6 - See preceding comment.

Response 21 & 22.

Metal concentrations above background will be listed.

Comment 23.

Page 6-1, Last Paragraph - G&M should try to obtain more information on which supply wells are pumping and at what rates.

Response 23.

Geraghty & Miller has tried to obtain information regarding supply well pumping. Without meters and/or record-keeping, the current estimates of usage cannot be defined more accurately. The DPNR has expressed an interest in requiring ground-water users to install meters and submit records of actual pumpage. If these data become available, they will be included in the RI Report.

Comment 24.

Page 6-2, Section 6.2, Paragraph 2, last sentence - G&M has not provided adequate evidence for "false positive" TPH concentrations. TPH is certainly not unexpected in a service station study. Furthermore, as stated earlier, fine-grained soils may result in elevated concentrations due to more efficient extraction, but should not result in false-positive values.

Response 24.

The conclusion regarding TPH false-positive results will be amended according to Item 19 above.

Comment 25.

Page 6-2, Section 6.2, Paragraph 3 - The focus of the BNA discussion should not be on the possible laboratory artifacts, but rather on the polynuclear aromatic hydrocarbons that were detected at a number of properties.

Response 25.

The text regarding the base neutral acid extractable compounds (BNAs) discussion will be revised to include a discussion of the polynuclear aromatic hydrocarbons detected.

Comment 26.

Page 6-3, Paragraph 3 - According to the maps, arsenic was detected at 185 ppm in boring B-13 on the O'Henri property. This is three orders of magnitude higher than background.

Response 26.

The elevated arsenic value in soil at the O'Henri Dry Cleaners (O'Henri) property, Boring B-13, will be discussed.

Comment 27.

Page 6-5, Paragraph 3 - Based on the groundwater results presented in this report, it appears that the upgradient extent of petroleum constituents can be defined with the existing data. Additional wells might be warranted to conclusively establish liability with respect to chlorinated compounds.

Response 27.

As discussed at the meetings, the potential impact of the underground storage tanks (USTs) west of Western Auto in the Four Winds Plaza warrants the installation of the two additional monitoring wells, shown as Monitoring Wells MW-16 and MW-17 on Figure 1.

The proposed Monitoring Well MW-15 at Ramsay is necessary to evaluate the potential impacts to ground-water quality, in light of the elevated BNAs detected in Boring B-2.

Comment 28.

Page 7-1, item 2 - EPA Region II only accepts total, but will consider dissolved, metals results in remedial investigations. Total metal values are used both in the assessment of groundwater risk and in evaluating remedial technologies.

Response 28.

Both total metal and dissolved (i.e., filtered) metals will be collected and analyzed in the second sampling event of the monitoring wells. BNAs will be added to the second sampling event parameter list.

Comment 29.

Figure 3-1 - The labelling of geologic units from well to well is inconsistent on this diagram.

Response 29.

The geologic unit labels on Figure 3-1 will be corrected.

Comment 30.

In Section 7 of the Technical Memo II, recommendation for future activities include resampling of all monitoring wells, installation of three monitoring wells near Western Auto and Ramsay Auto property. As stated in the general comments above, one additional well is needed west of Western Auto instead of two wells proposed in the Technical Memo II. Instead, MW-9 and MW-2 could serve the same purpose of the two additional wells proposed. For the VOCs plumes, a shallow well is required to identify and ascertain the extent of the southern VOCs plume to the northern VOCs plume.

Response 30.

As agreed at the meeting, four additional shallow monitoring wells (Monitoring Wells MW-15 through MW-18) will be installed. The rationale and purpose of proposed Monitoring Wells MW-15, MW-16, and MW-17 have been presented in Item 27 above. Monitoring Well MW-18 will be installed between existing Monitoring Wells MW-11D and MW-12D to (1) evaluate concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) in shallow ground water downgradient of existing Monitoring Wells MW-9 and MW-9S; and (2) evaluate chlorinated hydrocarbon concentrations in shallow ground water in the area.

OTHER MEETING ITEMS

Several miscellaneous items were discussed, as follows:

1. The Toxicity Characteristic Leaching Procedure (TCLP) analysis and Resource Conservation and Recovery Act (RCRA) waste characteristics of the drilling cuttings indicate that these cuttings can be disposed as a non-hazardous solid waste. A copy of Geraghty & Miller's March 2, 1993 letter to Ms. Caroline Kwan which describes the sampling procedures and analytical results is enclosed.

Pursuant to our meeting discussion, these cuttings may serve as useful daily cover at the Bovoni Landfill in St. Thomas. The TEIC would like to receive confirmation from the USEPA and the DPNR that these cuttings are appropriately classified as non-hazardous solid waste. Ms. Caroline Kwan agreed to coordinate a response letter with Mr. Clifford Crooke. After confirmation is received by Ms. Ana Gloria Ramos, the shipment will be arranged for disposal at the Bovoni Landfill. Some of the 55-gallon drums will be reused to contain the cuttings from the four boreholes of the proposed additional monitoring wells.

2. The USEPA suggested that the O'Henri monitoring wells be included in the second sampling event. Apparently, two or three monitoring wells are present at O'Henri. The TEIC agreed to evaluate the USEPA's suggestion; however, the fact that there are at least two separate areas of ground water impacted by chlorinated VOCs (identified in Technical Memorandum II) should be considered. O'Henri has not provided any well construction details for their monitoring wells. The TEIC would like to consider the usefulness of this additional sampling after reviewing the following:

- Boring/geologic logs (to evaluate hydrogeologic setting).
- Soil chemistry data (to evaluate the potential for local sources and impacts to ground-water quality).
- Well construction details (to determine if wells were properly constructed and to determine the screen interval).
- All previous sampling results (to determine expected concentrations, number of previous sampling results, consistency of results, depth to water, and need for further sampling).

It would be premature to sample these monitoring wells prior to obtaining and evaluating the information outlined above. These wells were installed prior to June 1991. In March 1993, IT Corporation (ITC) reportedly repaired one monitoring well that had been damaged. A description of this repair and the current well construction log should also be included for evaluation. ITC reportedly sampled these wells in March 1993.

3. The escrow agreement for the alternate water supply via trucking will be revised by Mr. Francis Torres based on the USEPA's comments.

If you have any questions or comments concerning the items presented in this letter, please call Ms. Ana Gloria Ramos at (809) 749-8943.

Sincerely,

GERAGHTY & MILLER, INC.

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RAMSAY

RAMSAY
MOTORS

DRUM
STORAGE

⊕ MW-15
(PROPOSED)

MW-14

ANTILLES
AUTO
REPAIR

PAVED P/A

AUTO
REPAIR

MW-3

LEGEND

- ⊕ PROPOSED WELL
- EXISTING WELLS

SCALE

0  30 FT



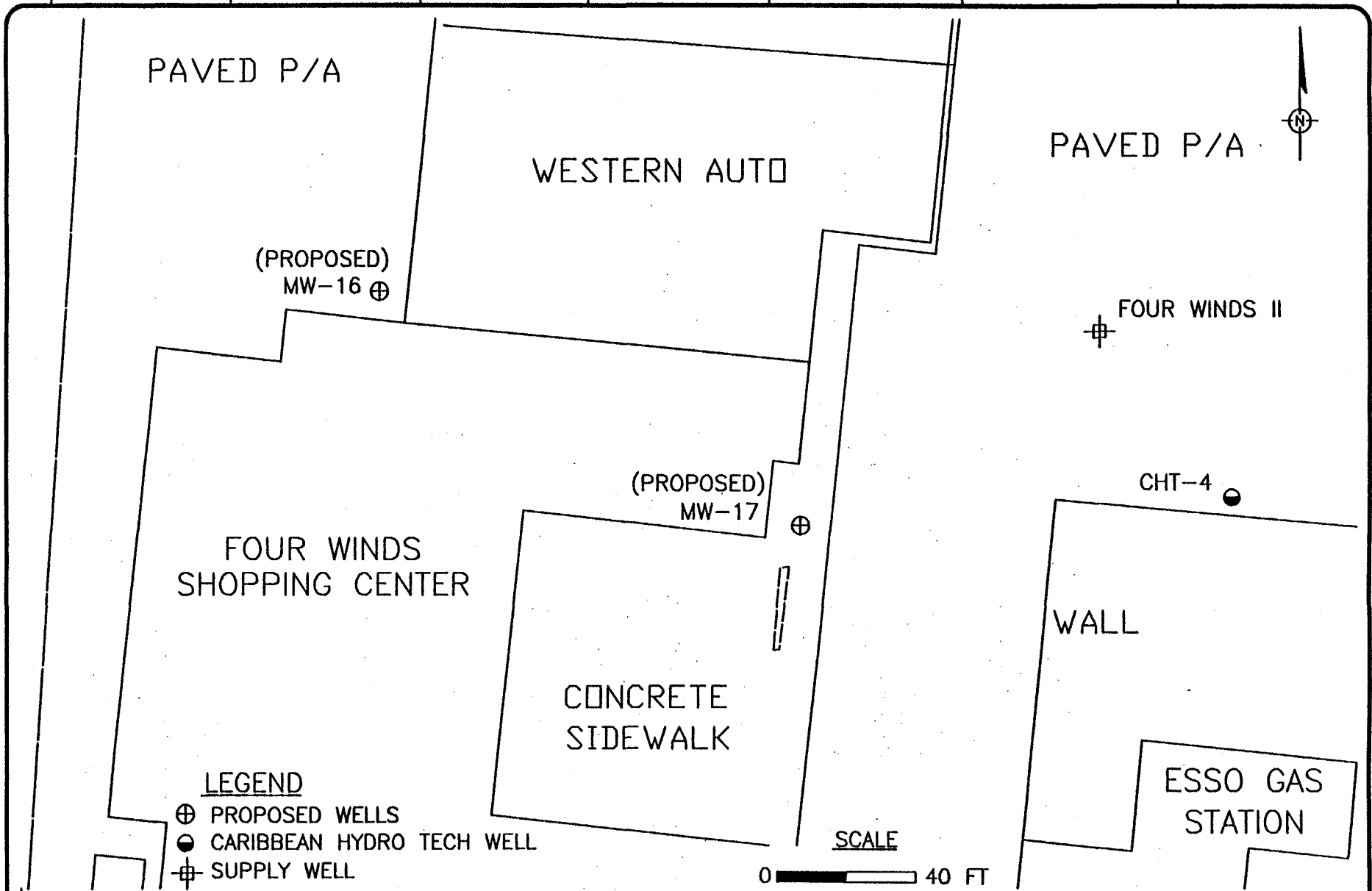
**GERAGHTY
& MILLER, INC.**
Environmental Services

**LOCATION OF PROPOSED MONITORING
WELL MW-15**

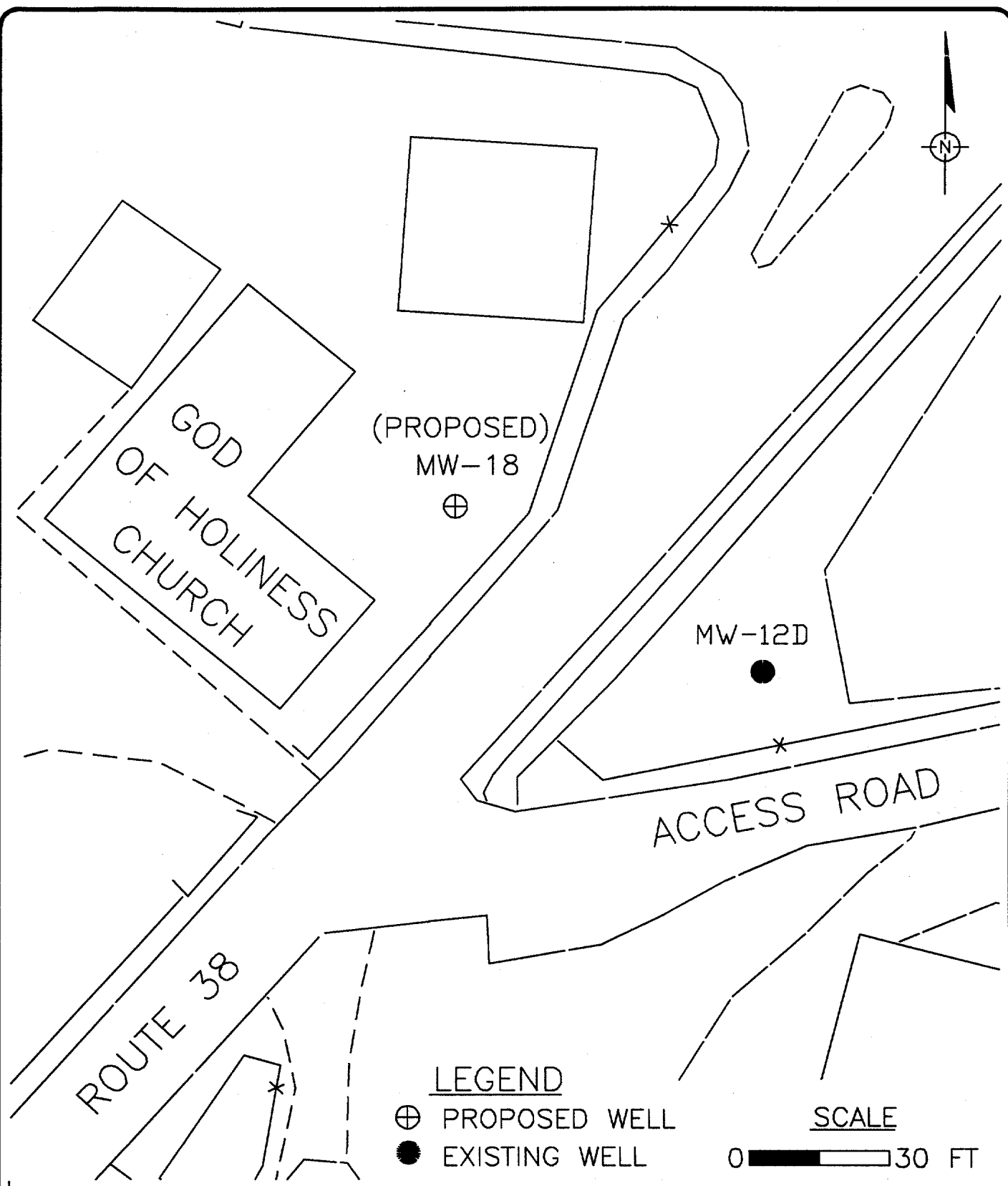
TUTU SERVICE STATION INVESTIGATION
ST. THOMAS, U.S. VIRGIN ISLANDS

FIGURE

1-1



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LOCATION OF PROPOSED MONITORING WELL MW-18

TUTU SERVICE STATION INVESTIGATION
ST. THOMAS, U.S. VIRGIN ISLANDS

FIGURE
1-3