

July 1, 1993

Ana Gloria Ramos
Designated Coordinator
Tutu Environmental Investigation Committee
P.O. Box 364269
San Juan, Puerto Rico 00936-4269

Re: Technical Rationale for Proposed Monitoring Well MW-15 at Ramsay Auto Property,
Tutu Service Station Investigation, St. Thomas, U.S. Virgin Islands

Dear Ms. Ramos:

In response to the May 25, 1993 letter to Andy Praschak, U.S. Environmental Protection Agency (USEPA) legal counsel, from Carol Ann Rich, legal counsel for Ramsay Auto, Geraghty & Miller, Inc. has prepared this letter to address Ms. Rich's concerns by describing the technical rationale for the installation of proposed Monitoring Well MW-15. This monitoring well was proposed to be installed south of the drum storage area and underground storage tank (UST) located at the Ramsay property (see enclosed Figure 1-1).

Ms. Rich's May 25 letter raised three technical concerns:

- technical justification for evaluation of the ground-water quality at Ramsay,
- the potential influence of adjacent properties on ground-water quality,
- location, depth, and purpose for proposed Monitoring Well MW-15.

The technical justification or rationale for this proposed monitoring well and an assessment of influence of adjacent properties is based upon previous work, which is discussed below. The location, depth, and purpose of the proposed monitoring well is presented below with a detailed description of the proposed work.

TUT 006 1429

PREVIOUS WORK

Geraghty & Miller has reviewed the Preliminary Assessment (PA) of Ramsay Motors dated March 24, 1989 which was prepared by NUS Corporation (NUS) for the U.S. Environmental Protection Agency (NUS Corporation 1989). Geraghty & Miller prepared Table 1 (attached), which summarizes this PA. Based on their February 15, 1989 site reconnaissance, NUS identified two waste management areas including: (1) twenty-five 55-gallon drums of waste oil, and (2) a UST used for waste oil storage.

At the time of the NUS site reconnaissance, the 25 drums of waste oil were being stored in the maintenance garage. According to the NUS report (NUS Corporation 1989), the drums of waste oil were "...not properly stored or contained. Many of the drums are open and there is oil pooled on the floor." NUS also observed oil leaking into the soil around the maintenance garage "in a few areas" during the February 1989 reconnaissance of the Ramsay Property. It was also reported that soil samples analyzed by Cenref Labs indicated the presence of ethylbenzene, xylene, 2-hexane, and toluene in soil (NUS Corporation 1989). No other details regarding this soil sampling (i.e., location, concentration, methods, etc.) were provided by NUS.

The waste oil UST at the Ramsay property is located beneath the maintenance garage (also referred to by NUS as the workshop area), which is used for automotive repairs and servicing (Figure 1-1). The age, volume, and construction of the UST is unknown. Although NUS (1989) stated "[t]here is no information that indicates that the tank is leaking; therefore, there is little potential for contaminant migration...", NUS recommended "the tank should be tested to ensure that it is sound and not leaking" (NUS Corporation 1989). Considering that very little is known about the UST construction and integrity, Geraghty & Miller believes an assessment of the impact of this UST on ground-water quality is warranted. This assessment can be accomplished by installing a monitoring well (proposed Monitoring Well MW-15) downgradient of the UST (Figure 1-2), similar to the monitoring wells that have been installed downgradient of the USTs located at the Texaco and Esso Service Stations.

Previous samples of waste oil, soil, and ground water have been collected by USEPA subcontractors for laboratory analysis (see Table 2 attached). On August 17, 1988, waste oil from the Ramsay UST was sampled by Roy F. Weston, Inc. (Weston) and U.S. Virgin Islands Department of Planning and Natural Resources (DPNR) personnel. The sample holding time was exceeded on the volatile organic compound (VOC) analysis, and the analytical results

obtained should be qualified as estimated. Detected VOCs included 2-butanone (also known as methyl ethyl ketone [MEK]) (150 milligrams per liter [mg/L]), benzene (210 mg/L), toluene (1,400 mg/L), ethylbenzene (290 mg/L), and total xylenes (1,700 mg/l) (Weston 1988).

On June 8, 1989, Camp, Dresser and McKee (CDM) Federal Programs personnel also sampled the waste oil from the Ramsay UST. Analytical results obtained by CDM included estimated concentrations of benzene (64 mg/L), toluene (450 mg/L), ethylbenzene (130 mg/L), total xylenes (1,200 mg/L), and 2-hexanone (also known as methyl butyl ketone [MBK]) (180 mg/L) (CDM Federal Programs 1989).

On September 8, 1988, CDM Federal Programs personnel sampled the ground water from the Ramsay Supply Well, which was stored in the on-site holding tank (CDM Federal Programs 1989). Tetrachloroethane (PCE) was detected in this ground-water sample at 11 mg/L (see Table 2 attached). This reported PCE concentration is consistent with the results of seven sampling events conducted at the Ramsay Supply Well by Geraghty & Miller (1992b), which reported chlorinated VOC concentrations of PCE, as well as, 1,2-dichloroethene (1,2-DCE), and trichloroethene (TCE). Ground-water samples collected at several supply wells indicate that PCE and its breakdown products (i.e., 1,2-DCE, TCE and vinyl chloride) are present throughout the Tutu area (Geraghty & Miller, Inc. 1992b). At least two separate sources of ground-water contamination by chlorinated VOCs have been identified (Geraghty & Miller, Inc. 1993).

On September 8, 1988, CDM also collected two soil samples (Samples eR-07s and eR-08s) near the southern portion of the Ramsay property (see Table 2 enclosed). These soil sampling locations were placed in the vicinity of a reported release of waste oil draining from what is currently the Antilles Auto Parts facility south of the Ramsay Property. The soil results (see Table 2 attached) reported by CDM are possibly indicative of the release from the Antilles (former Gassett) facility because petroleum compounds were detected (i.e., benzene, toluene, ethylbenzene, and propylbenzene). This area also receives drainage of surface water from the Curriculum Center (former Laga Building) during rainfall events. A grass-covered drainage ditch runs east to west, allowing drainage to enter a storm-sewer catchment located on the east side of Route 384.

The Antilles facility was formerly known as Gassett Auto Parts, and prior to that it was known as Consolidated Auto Parts. Automotive servicing and repairs have been and are still performed at this property south of Ramsay.

More recently, during a site visit on June 5, 1991 Geraghty & Miller personnel observed drums of waste oil stored outside the Ramsay maintenance garage adjacent to the south wall of the garage. This is the area identified as the Drum Storage Area on Figure 1-1. An area of stained soil approximately 4 feet by 6 feet was observed around the drums. The stained soil area consisted of unvegetated soil (i.e., with no grass cover) with black oily stains. Thick grass cover was present throughout the area surrounding the stained soil area. Two drums were observed in the grass southeast of the Drum Storage Area. One of these drums (at the location of Soil Boring B-3; see Figure 1-1) was lying on its side with an open bung hole. This drum was approximately two-thirds full of a black oily liquid presumed to be waste oil. Near the open bung hole, a stained soil area approximately 0.5 foot by 1 foot was noted. Apparently during late 1991 or early 1992, Ramsay constructed a concrete slab with curbing over the area of stained soils noted at the Drum Storage Area, as described above. This concrete slab is currently used for the storage of 55-gallon drums containing waste oil.

On August 3, 1992, Geraghty & Miller performed two soil borings (Borings B-2 and B-3 on Figure 1-1) near the Ramsay property as part of the Tutu Service Station Investigation, which was conducted according to a USEPA-approved Work Plan (Geraghty & Miller, Inc. 1992a). At each boring, continuous soil samples were collected to refusal using decontaminated split spoons. Each 2-foot interval was screened in the field using a calibrated HNU photoionization detector (PID). Soil samples from each 2-foot interval were collected for headspace VOC analysis in the field using an on-site PhotoVac 10S-Plus Gas Chromatogram (GC). As specified in the Work Plan, the soil sample with the highest HNU reading from each boring was sent for laboratory analysis. If no HNU readings were detected above background concentrations, the soil sample immediately above bedrock (or the water table, whichever was encountered first) was to be collected for laboratory analysis. Laboratory analysis included Target Compound List (TCL) VOCs, TCL base neutral acid (BNA) extractable compounds (i.e., semi-volatile compounds), Target Analyte List (TAL) metals and cyanide. Laboratory analytical results and the accompanying data validation performed by Geraghty & Miller were presented in Technical Memorandum II (Geraghty & Miller, Inc. 1993). Copies of the sample/core logs for Borings B-2 and B-3 are enclosed. Table 4 presents a summary of the field GC analytical results.

Boring B-2 was drilled at the Drum Storage Area. Because of the concrete slab and curbing at the Drum Storage Area, Boring B-2 was drilled immediately south of the stained soils noted during the June 5, 1991 site visit. Boring B-2 was advanced to refusal at 3.5 feet below land surface (bls) without encountering HNU readings above background concentrations in the

two split-spoon samples collected. Since no HNU readings were recorded above background concentrations, the soil sample from 2.0 to 3.5 feet bls (above bedrock) was collected for laboratory analysis. Although the actual sampling interval was noted on the sample/core logs, soil sample intervals were rounded to 2-foot intervals for easier reference. Therefore, this sample was labeled as Sample B-2 (2-4').

Laboratory analysis of Soil Sample B-2 (2-4') reported VOC concentrations of methylene chloride at 17 micrograms per kilogram (ug/kg) (equivalent of parts per billion [ppb]) and acetone at 14 ug/kg. Both of these VOCs are common laboratory contaminants. BNA analysis reported estimated concentrations of benzo(a)pyrene at 270 ug/kg, benzo(g,h,i)perylene at 290 ug/kg, and pyrene at 220 ug/kg. Total petroleum hydrocarbon concentrations (TPH) of 110,000 ug/kg were also detected in Soil Sample B-2. Table 3 presents a summary of the laboratory analytical results for Soil Samples B-2 and B-3.

Although the only petroleum compounds detected in the laboratory analyses were BNA compounds, other petroleum compounds may have also been released with the waste oil spilled near the Drum Storage Area. VOC compounds detected in waste oil from the Ramsay UST included benzene, toluene, ethylbenzene, and total xylenes. These compounds have likely been released to soil, as well as the BNA compounds. These VOC compounds are more volatile, biodegradable, and soluble than BNA compounds. Therefore, these VOCs may have been dissolved with infiltration and migrated to the water table in the bedrock unit.

Field GC analysis of the two soil samples collected at Soil Boring B-2 indicated the presence of PCE at concentrations of 2 ppb in Sample B-2 (0-2') and 4 ppb in Sample B-2 (2-4') (see Table 4 attached). Field GC analysis also indicated the presence of cis-1,2-DCE, benzene, and toluene at undetermined concentrations below the method detection limit (BMDL) of approximately 1 to 3 ppb for these parameters. Because all of the field GC results are equal to or less than 4 ppb, these reported results may be due to soil gas derived from contaminated ground water. VOC soil concentrations up to approximately 10 ppb may be derived from contaminated ground water.

A comparison of the VOC analyses performed by the laboratory (Table 3) and by the field GC (Table 4) for soil samples collected near the Ramsay property demonstrates that the field GC analyses reported the presence of more VOC parameters than the laboratory analyses. For instance, the field GC detected 1,2-DCE, benzene, toluene, and PCE, whereas the

laboratory analysis detected PCE, methylene chloride, and acetone. (Methylene chloride and acetone are common laboratory contaminants). This is consistent with analytical results for other sampling locations. This may be attributed to the shorter holding time of field GC samples (a few hours) versus the laboratory sample holding time (a few days), resulting in detection of trace concentrations by the field GC. Also, the different extraction methods and analytical instruments may cause these differences. The field GC analyzed a vapor extraction and the laboratory analysis was performed on a liquid extraction. Geraghty & Miller's review and assessment of the field GC data is still in progress; the results and conclusions regarding the field GC results are preliminary until this assessment is completed. A complete assessment of the field GC data will be presented in the Remedial Investigation (RI) report.

Soil Boring B-3 was drilled approximately 75 feet west of Soil Boring B-2, near a 55-gallon drum that was lying on its side with an open bung hole. Boring B-3 was advanced until refusal at a total depth of 3.3 feet bls. Sample B-3 (0-2') had an HNU reading 0.2 ppm above background, so this sample was collected for laboratory analysis. The laboratory analysis of Soil Sample B-3 (0 to 2 feet) reported VOC concentrations of methylene chloride at 26 ug/kg, and acetone at 6 ug/kg. As mentioned previously, these two compounds are common laboratory contaminants. TCE was detected in Soil Sample B-3 at an estimated concentration of 6 ug/kg. This reported TCE value may be due to volatilization of TCE from contaminated ground water. No other chlorinated VOCs, BTEX VOCs, BNAs, or TPH concentrations were detected in Soil Sample B-3 (Table 3).

The field GC analysis of the two soil samples collected at Soil Boring B-3 indicated the presence of PCE at a concentration of 2 ppb in both the shallow (0 to 2 feet) and deeper (2 to 4 feet) sample. Field GC analysis also indicated the presence of trans-1,2-DCE, cis-1,2-DCE, benzene, and toluene. These reported trace amounts (1 to 3 ppb) may be due to soil gas derived from contaminated ground water.

The Ramsay Supply Well is located approximately 165 feet north of the proposed location for Monitoring Well MW-15 (see Figure 1-1). Based on the reported non-potable usage (i.e., car washing), Ramsay's consultant, Cooper Environmental, has estimated that this supply well is currently pumped at a rate of approximately 7 to 100 gallons per day (gpd). This well is permitted by DPNR to withdraw up to 500 gpd.

Based on the existing ground-water contour map for the site (Geraghty & Miller, Inc. 1993), shallow ground-water flow is generally from north to south at the Ramsay property (see Figure 1-2 enclosed). The water levels measured in existing shallow monitoring wells near the Ramsay property appear to be unaffected by the operation of the Ramsay Supply Well, which is reported to be 105 feet in depth. Based on the existing ground-water flow data (see Figure 1-2), Monitoring Well MW-15 is proposed at a location downgradient of the Drum Storage Area and the Waste Oil UST. Water-level measurements obtained from proposed Monitoring Well MW-15 will improve the definition of shallow ground-water flow conditions at the southern portion of the Ramsay property.

PROPOSED WORK

The main objective of the proposed work at the Ramsay property is to determine the impact of the Drum Storage Area and the Waste Oil UST on ground-water quality. The soil sampling at Boring B-2 indicates that a release of petroleum compounds (i.e., BNA compounds) has occurred, which has impacted soil quality. The proposed scope of work is intended to determine the distribution of petroleum contaminants in ground water. The proposed scope of work for the investigation is presented in detail below.

INSTALLATION OF MONITORING WELL MW-15

To evaluate the ground-water elevation and ground-water quality in the bedrock unit, Geraghty & Miller proposes to install Monitoring Well MW-15 (see Figure 1-1). This monitoring well should be located near Boring B-2, where detectable concentrations of BNAs were encountered. After a 10-inch diameter boring is advanced to bedrock using the hollow-stem auger method, approximately 4 to 5 feet of 6-inch diameter steel casing will be grouted in the borehole to seal off the unconsolidated soils from the bedrock unit during further drilling. After allowing the grout to set for 24 hours, drilling will proceed into bedrock through the steel casing using an 8-inch diameter down the hole-hammer bit. Drilling will be continued to approximately 15 feet below the water table, and proposed shallow Monitoring Well MW-15 will be completed with an open borehole approximately 20 feet long. This is consistent with construction of other shallow monitoring wells that will be installed during the upcoming phase of the Tutu Service Station Investigation.

SAMPLING AND ANALYSIS

No soil samples are recommended for laboratory analysis from the boring for proposed Monitoring Well MW-15 because soil quality has been sufficiently characterized by Soil Boring B-2. After allowing the ground water to equilibrate for at least 2 weeks following well development, ground-water sampling at this monitoring well will be performed during the second ground-water sampling event for the Tutu Service Station Investigation. Analysis will include TCL VOCs, TCL BNA compounds, TAL metals, cyanide, and TPH, as specified in the Tutu Service Station Investigation Work Plan (Geraghty & Miller, Inc. 1992a). At least two rounds of water-level measurements will be collected from this monitoring well after well development.

We hope this has addressed all of Ms. Rich's concerns. If you have any questions, or if we can provide you with any additional information, please call.

Sincerely,

GERAGHTY & MILLER, INC.

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Jose Agrelot, SOIL TECH

PR01301-WP4/60493.LTR/df

REFERENCES

- Camp Dresser & McKee (CDM) Federal Programs Corporation 1989. Letter to Caroline Kwan, U.S. Environmental Protection Agency Re: CLP Sample Analysis Data Summary of the 104 (e) Letter Response Sampling, Tutu Wellfield Area, Work Assignment 648, March 31, 1989.
- Geraghty & Miller, Inc. 1992. Tutu Service Station Investigation Work Plan, St. Thomas, U.S. Virgin Islands, March 1992.
- Geraghty & Miller, Inc. 1993a. Seventh Sampling Event Report, Tutu Wells Site, St. Thomas, U.S. Virgin Islands.
- Geraghty & Miller, Inc. 1993b. Technical Memorandum II, Tutu Service Station Investigation, St. Thomas, U.S. Virgin Islands, May 1993.
- NUS Corporation 1989. Final Draft Preliminary Assessment Ramsey Motors, St. Thomas, U.S. Virgin Islands. Prepared under Technical Directive Document No. 02-8902-42, Contract No. 68-01-7346, for the Environmental Services Division, U.S. Environmental Protection Agency, March 24, 1989.
- Roy F. Weston, Inc. (Weston) 1988. Summary of Laboratory Results for Oil and Water Samples Collected from Tanks, Storm Drains and Sumps at Gasoline Stations and Auto Body Shops in Tutu, St. Thomas, U.S. Virgin Islands on August 17, 1987. Prepared for USEPA, Region II, Response and Prevention Branch, Edison, New Jersey. Prepared by Weston/Spill Prevention & Emergency Response (SPER) Division, Region II Technical Assistance Team, Edison, New Jersey.

PR01301-WP4/60493.LTR/df

Table 1. Summary of NUS Corporation Preliminary Assessment Report of Ramsay Motors, St. Thomas, U.S. Virgin Islands.

Site Data	
Site:	Ramsay Motors.
Report:	Preliminary Assessment Report, Ramsay Motors, St. Thomas, U.S. Virgin Islands, NUS Corporation, March 24, 1989.
Site Reconnaissance Date:	February 15, 1989.
Site Information:	No RCRA permit. Active status. Operation: unknown to present. Owner: Rita Ramsay.
UST Location	Waste oil UST located under ground below the workshop area.
Record of Tank Leaks:	No record or indication of tank leaking.
Disposal Procedures:	Waste oil stored on site. Report indicates no other disposal procedures.
Areas of Concern:	Waste oil drums: ● Unknown age. ● Drums located inside an overhanging garage in the northeast corner of Ramsay Motors property. ● Twenty-five 55-gallon drums of waste oil observed during NUS Corporation site reconnaissance. ● Drums contain automotive waste oil. Substances such as gasoline, kerosene, and degreasing solvents may also be present in the drums. ● Drums located over a concrete floor. No berms or curbs observed during NUS Corporation site reconnaissance. ● Many drums were open during site reconnaissance. Waste oil UST: ● No RCRA permit. ● Unknown age. ● Unknown volume. ● No evidence of tank leaking. ● UST contains waste oil from automotive repair and servicing activities. Drainage ditch at Gassett property line: ● Waste oil discharging onto Ramsay Motors property from Gassett Motors.

Table 1. Summary of NUS Corporation Preliminary Assessment Report of Ramsay Motors, St. Thomas, U.S. Virgin Islands.

Site Data	
Potential Sources to Soil and/or Ground Water Identified:	Waste oil drums: ● Potential of release to ground water. Some minor oil spills observed on the concrete floor of the garage area, and at the drum storage area during site reconnaissance. Waste oil UST: ● There is no indication of tank leaking. Waste oil was observed discharging from an oil pool at Gassett property into a drainage ditch on Ramsay property. This ditch discharges into the storm sewer.
Sampling of Areas of Concern:	HNU and OVA readings of open drums ranged between 10 to 90 ppm (HNU) and 60 to 300 ppm (OVA). Soil and ground-water samples were collected, but NUS did not report when this sampling occurred. Soil samples were analyzed by Cenref Labs. No laboratory information for ground-water sample analysis was provided by NUS.
Sample Results:	Detected in soil: Toluene, ethylbenzene, xylene, and 2-hexane. Detected in ground water: Tetrachloroethane, ethylbenzene, and xylene.

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Table 2. Summary of Volatile Organic Compound Analyses for Oil, Ground-Water, and Soil Samples Collected at Ramsay Motors, August 1987 through June 1989, St. Thomas, U.S. Virgin Islands.

Analyte	Sample ID: Sample Location: Sample Type: Sample Date:	3239B-20 * Waste Oil Storage Tank Oil 8/17/87	e-02 ** Holding Tank Water 9/8/88	eR-07s ** South Border Ramsay Soil 9/8/88	eR-08s ** South Border Ramsay Soil 9/8/88	eR-01-02a ** Waste Oil UST Oil 6/8/89
2-Butanone		150	--	--	--	--
Benzene		210	ND	ND	0.006	64 J
Toluene		1,400	ND	0.0002	ND	450 J
Ethylbenzene		290	ND	ND	0.018	130 J
Xylene (total)		1,700	ND	0.001	0.007	1,200 J
2-Hexanone		--	ND	0.055	ND	180 J
9-Methyl-2-pentanone		--	ND	0.008	ND	--
Tetrachloroethane		--	0.011	ND	ND	--
Propylbenzene		--	ND	ND	0.07 JN	--
2Methoxy2,4,4Triptanone		--	ND	ND	0.1 JN	--

Analyte concentrations in milligrams per kilogram for solid samples and in milligrams per liter for liquid samples (parts per million [ppm]).

UST Underground storage tank.

J Estimated value.

N Presumptive evidence for the presence of this material.

ND Not detected.

-- Not analyzed.

* Samples collected by Region II Technical Assistance Team (TAT), Weston/SPER Division of New Jersey, and St. Thomas Department of Planning and Natural Resources (DPNR) personnel. Sample analysis reported in Summary of Laboratory Results for Oil and Water Samples Collected from Tanks, Storm Drains, and Sumps at Gasoline Stations and Auto Body Shops in Tutu, St. Thomas, U.S. Virgin Islands on August 17, 1987, USEPA Region II Technical Assistance Team, Weston/SPER Division, February 23, 1988. Samples received in S-Cubed Laboratories on September 15, 1987. Holding time for VOCs were exceeded.

** Samples collected by Camp, Dresser & McKee (CDM) personnel and reported in a letter from Scott B. Graber, TES III Regional Manager, CDM Federal Programs Corporation to Caroline Kwan, USEPA on March 31, 1989.

Sample e-02 collected from holding tank with water removed from an on-site well. Area behind mechanical garage.

Sample eR-07s collected at south border at Ramsay & Gassett (Consolidated Auto Parts).

Sample eR-08s centered between tree line and road, appears to be drainage pathway from Curriculum Center (i.e. former Laga Building).

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Table 3. Summary of Detected Analytes in Soil Samples B-2 and B-3, Collected at Ramsay Auto in August 1992, Tutu Service Station Investigation, St. Thomas, U.S. Virgin Islands.

Analyte	Sample ID:	B-2	B - 3
	Depth (in feet):	2 to 4	0 to 2
	Sample Date:	8/3/92	8/3/92
Methylene Chloride		17 J	26 J
Acetone		14	6 J
Tetrachloroethene		ND	6 J
Benzo(a)pyrene		270 J	ND
Benzo(g,h,i)perylene		290 J	ND
Pyrene		220 J	ND
Total Petroleum Hydrocarbons		110,000	ND

Analyte concentrations in micrograms per kilogram (parts per billion [ppb]).

J Result is detected below the reporting limit and/or is an estimated concentration.

ND Not detected at the corresponding reporting limit.

Analyses were performed by Enseco—East of Somerset, New Jersey, using March 1990 Contract Laboratory Program (CLP) protocols.

All results were validated and reported in Technical Memorandum II (Geraghty & Miller, Inc. 1993).

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Table 4. Field Gas Chromatograph Detected Results for Soil Samples Collected at Ramsay Motors, Tutu Service Station Investigation, St. Thomas, U.S. Virgin Islands.

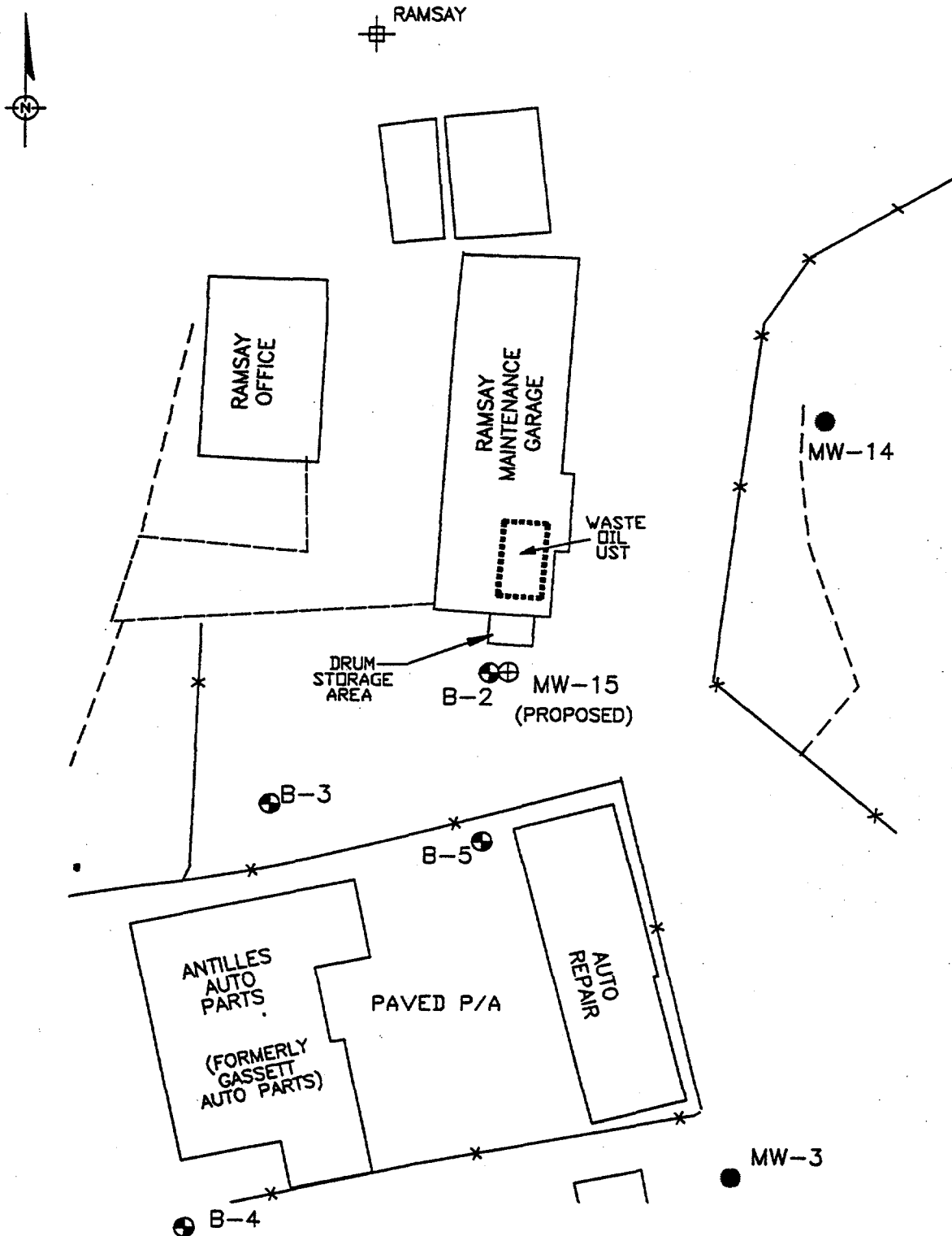
Sample Location	Sample Depth (in ft bls)	Trans1,2-DCE	Cis1,2-DCE	Benzene	TCE	Toluene	PCE	Ethylbenzene	M,P-Xylene	O-Xylene
B-2	0 to 2	ND	BMDL	BMDL	ND	BMDL	2	ND	ND	ND
B-2	2 to 4	ND	BMDL	ND	ND	ND	4	ND	ND	ND
B-2 (dup.)	2 to 4	ND	BMDL	BMDL	ND	ND	4	ND	ND	ND
B-3	0 to 2	BMDL	BMDL	ND	ND	ND	2	ND	ND	ND
B-3	2 to 4	ND	BMDL	BMDL	ND	BMDL	2	ND	ND	ND

Analyte concentrations in micrograms per kilogram (parts per billion [ppb]).

DCE 1,2-Dichloroethane.
TCE 1,1,1Trichloroethane.
PCE Tetrachloroethene.
ft bls Feet below land surface.
ND Not detected.
BMDL Below method detection limit.
dup. Duplicate.

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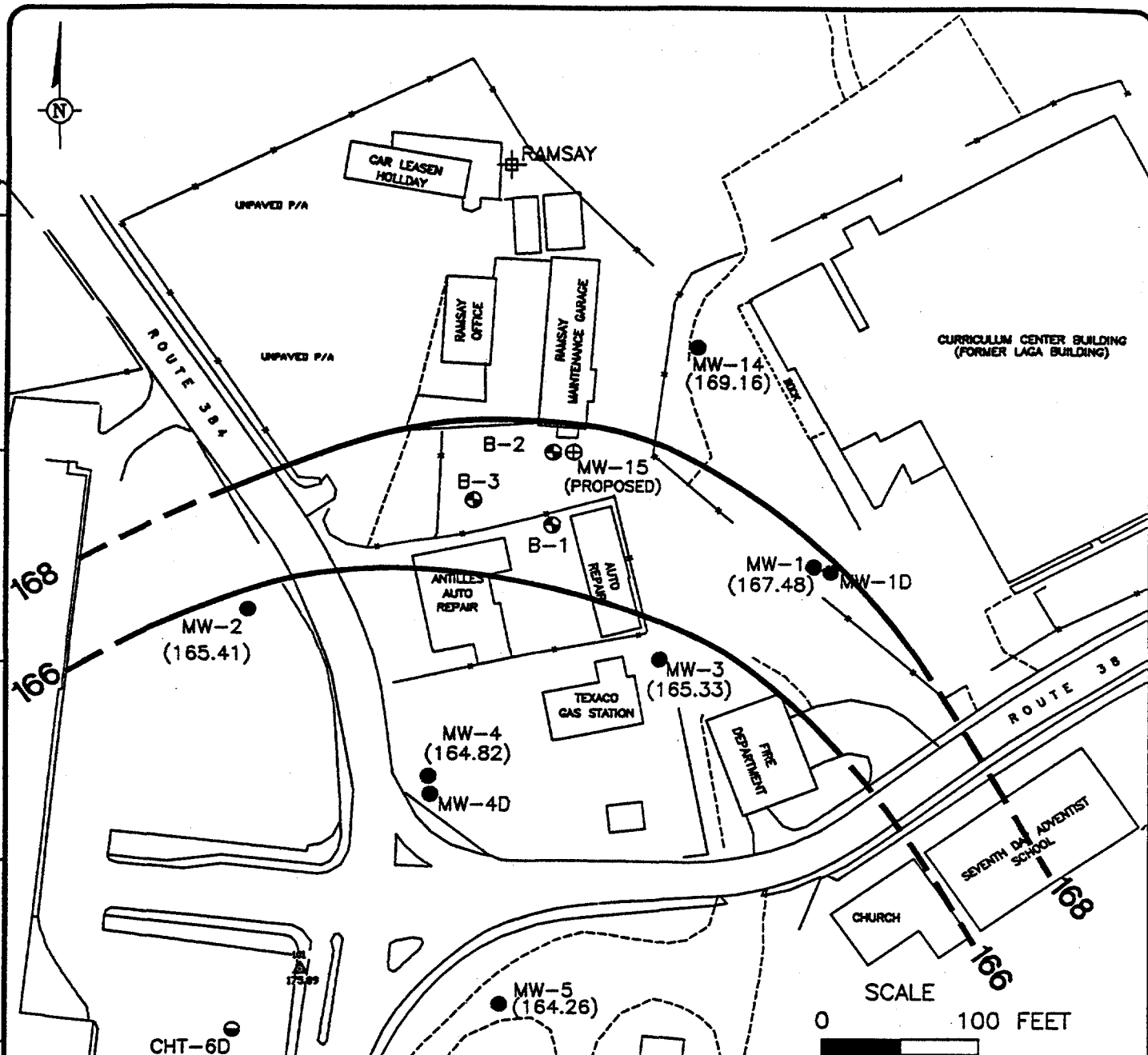
LEGEND

- ⊕ PROPOSED MONITORING WELL
- EXISTING MONITORING WELLS
- ⊕ EXISTING SUPPLY WELL
- ⊕ EXISTING SOIL BORING
- APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANK (UST)

SCALE

0 30 FT

DRAFTER: PADULA
 APPROVED: DANAHY
 CHECKED: BURDICK
 DRAWING: TU-230
 FILE: TU-230
 PRJCT NO.: PRO1301
 DWG DATE: 08JUN93



LEGEND

- | | | | |
|----------|---|----------|--|
| MW-1 ● | SHALLOW MONITORING WELL LOCATION | ⊕ | PROPOSED MONITORING WELL |
| MW-4D ● | DEEP MONITORING WELL LOCATION | ⊙ | EXISTING SOIL BORING |
| RAMSAY ⊕ | EXISTING SUPPLY WELL LOCATION | (164.82) | WATER-LEVEL ELEVATION
IN FEET ABOVE MEAN SEA LEVEL |
| CHT-6D ● | MONITORING WELLS INSTALLED
BY CARIBBEAN HYDRO-TECH, INC
(LOCATIONS APPROXIMATE) | 166 — | LINE OF EQUAL WATER-LEVEL ELEVATION
IN FEET ABOVE MEAN SEA LEVEL
(DASHED WHERE INFERRED) |

SOURCE: R. LOPEZ DE AZUA & ASSOCIATES (1992).



**GROUND-WATER CONTOUR MAP
 SHALLOW WELLS, SEPTEMBER 28, 1992**

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

FIGURE
1-2