

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II**

DATE:

SUBJECT:

Preliminary Assessment and Confirmation of Authorization of
CERCLA Removal Action Monies for the TUTU Well Site, Anna's
Retreat, Saint Thomas, U.S. Virgin Islands - ACTION MEMORANDUM

FROM:

Carlos E. O'Neill *Carlos O'Neill*
On-Scene Coordinator

TO:

Stephen D. Luftig, Director
Emergency and Remedial Response Division

THRU:

George H. Zachos, Acting Chief
Response and Prevention Branch

MMARY

In 1987, Mr. Allan Smith, Commissioner of
Department of Planning and Natural Resources, P.D.R.
Virgin Islands, verbally requested that the U.S. Environmental
Protection Agency (EPA) provide analytical support for
sampling of one well which was reported to exhibit
unpleasant odor. This well is part of a system of
provided potable water supply for the island of
Thomas. The well is located on the western part of the
in the Tutu Section of Anna's Retreat. This verbal request
was followed by an additional request for EPA to assume the
role of Lead Agency after sampling indicated that
several commercial wells were found contaminated with
hazardous substances. This verbal request was followed by a
formal request in writing by DPNR on August 10, 1987.

In July and August of 1987, EPA confirmed by sampling and
analysis, the contamination of groundwater with volatile
organic compounds. A major contaminant in the groundwater
tetrachloroethylene (TCE). The EPA 10-Day Health Assessment
Level of 175 ppb was exceeded in three (3) of twenty
wells sampled, with two of the three contaminated wells being
private residential wells. The concentrations for these wells
from 240 to 7,000 ppb with seven (7) additional wells showing
below the EPA 10-Day Health Assessment Level but above the U.S.
Island's interim maximum permissible concentration level
on September 1, 1987. DPNR for volatile organics in drinking
water in the Turpent Run Aquifer 100 ppb for a single compound
pound or 100 ppb for all volatile organic compounds. Three
of the previously mentioned seven wells were residential wells.

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This Action Memorandum will document funding authorized for Phase I of the Tutu Well Site CERCLA Removal Action. Phase I addresses only residences having contaminated drinking water wells with volatile organic compounds above levels established by the U.S.V.I.'s interim maximum permissible concentration levels for potable water. This action did not include wells where water is used primarily for commercial, business, industrial and/or trade purposes. It also did not include wells contaminated solely by gasoline or gasoline by-products which are not hazardous substances within the definition of Section 101(14) of CERCLA. This action includes the decontamination and cleaning of residential cisterns contaminated by hazardous substances, the modification of plumbing, the delivery of water by tank trucks as a temporary alternate water supply, and a well water monitoring program. The total project ceiling authorized for a 52-week period is \$100,000 of which \$40,000 is estimated for mitigation contracting; \$45,000 for TAT's extramural costs; and \$15,000 for EPA's intramural costs.

This memorandum will confirm your prior verbal authorization of Trust Fund monies, issued to the Chief, Incident Response and Prevention Section on September 1, 1987, to initiate the removal action at the subject site, and subsequently revised to the current project ceiling of \$100,000.

II. BACKGROUND

A. Historical Information

A request for EPA analytical support for one well in the Tutu Section of St. Thomas was made verbally on July 15, 1987 from DPNR. On July 31, 1987, a verbal request for EPA to assume the role of Lead Agency was made, and this was followed by a written confirmation of the request, dated August 10, 1987 (received by the Emergency and Remedial Response Division on August 19, 1987). The initial request was based on a report that one well was reported to have a strong odor, characteristic of a petroleum product. This well is a major source of commercially provided potable water for the eastern portion of the island. EPA's preliminary investigation commenced on July 21, 1987, with a field reconnaissance and sampling of this one well and six additional wells identified in the immediate area. Several of these wells are also major water suppliers of public drinking water to the eastern part of the island.

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Laboratory results from this survey indicated that the initial well was highly contaminated with gasoline and chlorinated organics, and the additional six wells contained elevated levels of chlorinated volatile organic compounds. Based on these results, DPNR declared that an imminent health threat existed, which could affect approximately 20,000 people living in St. Thomas.

In addition, an indefinite number of tourists who vacation in St. Thomas were at risk since these commercial wells supply water to major hotels and restaurants. DPNR issued orders to close these seven commercial wells to protect public health.

Subsequent to this action, EPA expanded their sampling plan due to the threat of greater contamination to drinking water wells in the area. EPA along with DPNR, identified other wells within the Tutu Water/Turpentine Run Aquifer which may be impacted by the hazardous substances identified to be present in the groundwater. A second round of groundwater well sampling took place on August 10 and 11, 1987, which included a total of twenty-four (24) wells identified in the Tutu Section of Anna's Retreat. All twenty-four wells were sampled and analyzed for volatile organic compounds. Following these results, DPNR closed the five private wells which service two three-family homes and one apartment building housing twelve studio units.

B. Site Setting/Description

The contaminated wells are located in the Tutu Section of Anna's Retreat, St. Thomas, U.S. Virgin Islands. The five (5) private wells recently ordered closed are located in the Tutu residential area. At the present time, the affected area is not serviced by any public water supply. EPA sampled a total of twenty-four (24) wells in the Tutu area and found five private wells and eight (8) commercial wells seriously contaminated with up to 7,600 ppb of PCE. (See map attached).

C. Quantity and Type of Substance Present

EPA sampled and analyzed for suspected volatile organic compounds on July 22 and August 10, 1987. Listed below are the maximum concentrations of the hazardous substances identified in the drinking water wells:

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<u>Contaminant</u>	<u>Maximum Concentration Found (ppb)</u>	<u>Statutory Source of Hazardous Substances under CERCLA</u>
Tetrachloroethylene	7,600	Clean Water Act Section 307(a)
Trichloroethylene	61	Clean Water Act Section 307(a)
Benzene	1,400	Clean Water Act Section 307(a)

The results of the sampling are contained in Tables I and II. PCE contamination ranged from non-detectable to seven thousand-six hundred parts per billion (7,600 ppb). Sampling results adequately document 3 wells with contamination above EPA's 175 ppb PCE 10-Day Health Advisory Level and eight (8) wells above the DPNR's interim standards for maximum contaminant levels of volatile organic compounds in drinking water.

III. THREAT

A. Threat of Public Exposure

Direct contact with PCE may cause eye and skin irritation along with dry scaly and fissured dermatitis. Acute exposure through absorption, inhalation or ingestion, may cause central nervous system depression, hepatic injury and anesthetic death. PCE has been found to be carcinogenic.

This is a case of actual contamination in excess of the EPA 175 ppb PCE 10-Day Health Advisory Level for a three-family house and one apartment building housing twelve studio units. In the other three family apartment dwellings, the well contamination exceeded the interim DPNR drinking water standard of 50 ppb for any single volatile organic constituent. In addition to the exposure via consumption of the water, or eating food prepared with this water, showering with water contaminated with volatile organics can contaminate the air to significantly unhealthy levels.

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The location, direction and dimensions of the plume are affected by variations in water table depth, rate of pumping of the wells, duration and intensity of rainfall, and intermittent releases of chemicals from one or more sources, all of which are unknown at this time. Given the above variables which affect contaminant strengths in any well within the plume may vary randomly.

On September 2, 1987, DPNR issued three (3) orders to close wells and issued two (2) advisory letters to homeowners not to use well water for drinking, bathing and washing.

B. Evidence of Extent of Release

Investigation, sampling and analyses by EPA have identified contaminated groundwater, as described above, and containing contaminants, as described in Tables I and II.

C. Previous Actions to Abate Threat

No mitigative action was taken by any Potentially Responsible Party prior to EPA's recent activities.

D. Current Actions to Abate Threat

EPA has commenced an investigation of the Tutu Water/Turpentine Run Aquifer by establishing a cooperative agreement with the U.S. Geologic Survey to define the characteristics of this aquifer and to determine the extent of contamination. EPA and DPNR have also completed Aquifer and a monthly well monitoring program is being developed.

DPNR has issued a total of ten (10) orders/advisories to well owners to close sixteen (16) wells.

A local dry-cleaner has been identified as using and storing PCE. Handling, storage and disposal practices from this facility are unknown at this time. DPNR has proposed to issue an advisory to local dry cleaning establishments instructing them to properly store and hold all waste for proper disposal by an industrial waste hauler. DPNR with the assistance of EPA is conducting an assessment of at least nine (9) facilities identified to be potential sources of hazardous waste and/or substance releases in the Tutu area.

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(X)

EPA has cleaned the homeowner's cisterns that have been contaminated by hazardous substances from the groundwater, modified the existing home plumbing to terminate well connections, and intends to continue to deliver clean water via tank trucks on a regular basis, and establish a surveillance program for all wells in the area by a monthly groundwater monitoring program. This Phase I, short-term removal action will mitigate the threat to public health by providing a temporary alternate source of water for affected consumers.

IV. ENFORCEMENT

The contaminant plume is generally believed by both DPNR and EPA, to have its source from past and present improper handling and disposal practices of organic solvents, possibly from dry cleaners and auto repair shops operating in the area. This site has been referred to the Site Compliance Branch for enforcement action. An attorney and enforcement project officer have been assigned to this case. EPA issued Request for Information letters to Potentially Responsible Parties.

V. PHASE I REMOVAL ACTION

A. Objective of the Phase I Removal Action

The primary objective of the Phase I of the removal action is the mitigation of the threat to public health by providing a safe potable water supply to the affected residences.

Two three-family homes and one apartment complex housing twelve studio units were identified as being dependent on groundwater from their own private wells. Their respective wells were ordered closed-down by DPNR for exceeding interim drinking water standards.

To reach the objective of providing a safe interim drinking water supply and protect the health of the public at risk, the following removal action was initiated. Water storage cisterns, which received contaminated groundwater from affected wells, were cleaned and sanitized. Cisterns were filled with clean, safe, drinking water. Water tank trucks from local water haulers will be providing water for the affected cisterns on a regular basis. Plumbing modification was made to disconnect water lines from the contaminated wells which provide groundwater to the cisterns.

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An attempt to connect well water directly to toilets for flushing will be made, if physically and economically feasible. A well surveillance program will be implemented involving all the wells in the Turpentine Run Aquifer, thru monthly sampling and monitoring.

The longer term, Phase II objective will require the provision of a permanent alternate water supply in lieu of the temporary trucking of water to the threatened consumers within the plume area. Upon completion of an analysis of the alternatives for permanent water supply to these residences, a recommendation will be made for Phase II.

B. Project Estimated Costs

Water consumption per person per day on the average is thirty (30) gallons. It is estimated that the one apartment building has twelve studio units with the average of two people per unit. The two other private homes are three-family dwellings with the average of ten people in each. The cisterns in the three family houses are small and, therefore, a supply of water must be delivered every two or three weeks, respectively. The delivery period is currently estimated to be one year or when a permanent alternative is provided, whichever occurs first.

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Extramural TAT Cost

TAT Monitoring and sampling program
(Including travel and per diem)..... \$35,000

TAT Technical and administrative
support (including travel and per diem)..... \$10,000

Total TAT Cost \$45,000

Intramural EPA Cost

(Including travel and per diem).....\$15,000

ESTIMATED TOTAL PROJECT COST.....\$100,000

The figure represents the estimated total for Phase I. It
be reduced significantly, if a reliable and permanent
ate water supply is found sooner than the proposed
weeks delivery period; might be increased, depending upon
the identification of new drinking water wells found to be
contaminated with hazardous substances within the affected
area.

C. Project Schedule

Project initiation of cistern clean-up and safe water de-
livery has already been implemented based on verbal funding
authorization. Safe water delivery period is currently
estimated not to exceed one year or when a permanent alternate
water supply can be provided, whichever occurs first.

V. RECOMMENDATIONS

Conditions at the Tutu Well Site meet the requirements of
Section 300.65 of the National Contingency Plan (NCP) for a
CERCLA/SARA removal action. EPA has determined that there is
a threat to public health at the site (Section 300.65(b)(1).
This determination was based on:

- 1) Human exposure to unacceptably high levels of acutely
toxic substances (Section 300.65(b)(2)(i), and
- 2) Contamination of drinking water supply (Section 300.65
(b)(2)(ii).

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The resident population at risk currently relies on private well water as their source of potable water.

This removal action complies with section 104(b)(2) of CERCLA, as amended by SARA, in that it is consistent with the efficient performance of long-term remedial measures, by providing an interim supply of potable water to the public until a permanent water supply can be secured.

This is a written confirmation of the initial and revised verbal approval of up to \$100,000 for the total project ceiling established on September 1, 1987, by the Director of the Emergency and Remedial Response Division to the OSC for the CERCLA removal action at the Tutu Well Site. The mitigation contracting ceiling is estimated at \$40,000, with an additional \$45,000 for TAT costs, and \$15,000 for EPA costs.

Your authority to authorize these funds is pursuant to Deputy Administrator Alvin Alm's memorandum of Delegation Number 14-1A dated April 15, 1984, and Richard Dewling's Redelegation Order R-11-1200.6 of August 29, 1984.

APPROVAL:

Steph D. Luftig

DATE:

1/6/88

DISAPPROVAL:

DATE:

cc: (after approval is obtained)

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WELL SAMPLING RESULTS
TUTU WELL SITE
ST. THOMAS, U.S. VIRGIN ISLANDS

SAMPLE LOCATION	SAMPLE NUMBER	DATE SAMPLED	DATE ANALYSED	SOURCE	BEN	TCE	PCE	TOL	DCE	GCMS
4 WINDS #1	001A	08/10/87	08/13/87	CU	2	21	72	1	213	.T.
EGLIN WELL #1	002A	08/10/87	08/13/87	CU	0	11	38	0	63	.T.
EGLIN WELL #2	003A	08/10/87	08/13/87	CU	0	13	43	0	74	.T.
EGLIN WELL #3	004A	08/10/87	08/13/87	CU	0	16	57	0	66	.T.
HARTHMAN BAKERY	005A	08/10/87	08/13/87	IU	0	0	3	0	1	.T.
HARTHMAN CRUSH	006A	08/10/87	08/13/87	IU	0	3	26	0	12	.T.
HARTHMAN ESTATE	007A	08/10/87	08/13/87	PV	0	0	1	0	0	.T.
RODRIGUEZ AUTO	008A	08/10/87	08/13/87	IU	0	0	1	0	0	.T.
BRYAN	009A	08/10/87	08/13/87	CU	0	0	0	0	0	.T.
ALPHA, LEONARD	010A	08/10/87	08/13/87	PV	0	0	1	0	0	.T.
SMITH, LUCITA	011A	08/10/87	08/13/87	PV	0	17	120	1	21	.T.
DEVCON #3	012A	08/10/87	08/13/87	CU	0	0	0	0	0	.T.
DEVCON #1	013A	08/10/87	08/13/87	CU	0	0	0	0	0	.T.
DEDE	014A	08/10/87	08/13/87	NA	0	0	0	0	0	.T.
DEMITRI	020A	08/10/87	08/13/87	CU	0	0	2	0	0	.T.
VIHA WELL #3	021A	08/10/87	08/13/87	IU	0	0	0	0	7	.T.
VIHA WELL #1	022A	08/10/87	08/13/87	IU	0	3	10	1	12	.T.
RAMSEY	030A	08/10/87	08/13/87	IU	0	0	7	0	1	.T.
STEEL	031A	08/10/87	08/13/87	PV	0	20	270	0	61	.T.
HARVEY	032A	08/10/87	08/13/87	PV	0	61	7600	1	56	.T.
MATHIAS	033A	08/10/87	08/13/87	PV	0	4	66	1	9	.T.
FRANCOIS	034A	08/10/87	08/13/87	PV	0	28	120	0	140	.T.
DENCH	035A	08/10/87	08/13/87	PV	0	0	0	0	0	.T.
TILLET	036A	08/10/87	08/13/87	CU	1300	0	240	56	570	.T.
TILLET DUP	037A	08/10/87	08/13/87	CU	1400	36	120	33	620	.T.
FIELD BLANK	040A	08/10/87	08/13/87	NA	0	0	0	0	0	.T.

TABLE II

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PHOTOVAC SAMPLING RESULTS
TUTU WELL SITE
ST. THOMAS, U.S. VIRGIN ISLANDS

SAMPLE LOCATION	SAMPLE NUMBER	DATE SAMPLED	DATE ANALYZED	SOURCE	BEN	TCE	PCE	TOL	DCE	OCHS
HARTMAN CRUSH	87-473	07/22/87	07/30/87	IM	0	7	102	6	0	.T.
HARTMAN BAKERY	87-474	07/22/87	07/30/87	IM	0	0	3	6	0	.T.
WINDS WELLS1	87-475	07/22/87	07/30/87	CM	7	19	64	6	0	.T.
WINDS WELLS1	87-476	07/22/87	07/30/87	CM	7	19	61	6	0	.T.
TILLET	87-477	07/22/87	07/30/87	CM	633	85	200	48	38	.T.
MA	87-478	07/22/87	07/30/87	IM	15	9	36	6	0	.T.
EGLIN	87-479	07/22/87	07/30/87	CM	3	16	59	6	0	.T.
TILLET	87-480	07/22/87	07/30/87	CM	6950	711	20	492	327	.T.
FIELD BLANK	87-481	07/22/87	07/30/87	MA	0	0		6	0	.T.

TABLE I