FIELD REPORT

PN-ABJ-867
74581

WATER AND SANITATION EFFORTS AMONG DISPLACED KURDISH CITIZENS

Field Report No. 339
October 1991

BEST AVAILABLE COPY

WATER AND SANITATION for HEALTH PROJECT

Sponsored by the U.S. Agency for International Development
Operated by CDM and Associates

WASH Field Report No. 339

WATER AND SANITATION EFFORTS AMONG DISPLACED KURDISH CIVILIANS

Prepared for the Office of Foreign Disaster Assistance
under WASH Task No. 246

by
Richard H. Swenson
Terrance M. Rahe

October 1991

Water and Sanitation for Health Project
Contract No. DPE-5973-Z-00-8081-00, Project No. 836-1249
is sponsored by the Office of Health, Bureau for Science and Technology
U.S. Agency for International Development
Washington, DC 20523

CONTENTS

ACRONYMS v
ACKNOWLEDGMENTS vii
INTRODUCTION ix

Part 1 1

1. SITE ASSESSMENT—ISIKVEREN, TURKEY 3

1.1 Physical Setting 3
1.2 Population 3
1.3 Shelters 3
1.4 Water Supply 4
1.5 Sanitation 4
1.6 Solid Waste 5
1.7 Recommendations for Environmental Health Program in Isikveren 5

2. WATER AND SANITATION PLAN 7

2.1 Interim Efforts 7
2.2 Conceptual Operational Plan 7
2.2.1 Working Assumptions 8
2.2.2 Thirty-Day Recommendations 9
2.2.3 Thirty- to Sixty-Day Recommendations 10

3. SPECIFIC SANITATION AND COMMUNITY PLAN 11

3.1 Sanitation 11
3.2 Water Supply 12
3.3 Burial Grounds 13
3.4 Supply List 13

4. CONCLUSION AND RECOMMENDATIONS 15

Part 2 17

5. WATER SUPPLY PROGRAM 19

5.1 Design Objectives 19
5.2 Design Team 20
5.3 Site-Specific Design 21
5.3.1 Interim System 21
5.3.2 Semipermanent Water System 21

6. SANITATION 27

7. SOLID WASTE DISPOSAL 33

7.1 Design Objectives 33
7.2 Design Team 33
7.3 Site-Specific Design 34

8. TRANSFERRING WATER AND SANITATION TO PVO STAFF 35

9. ADDITIONAL CAMP SITES 37

10. RECOMMENDATIONS 39

PHOTOGRAPHS 41

APPENDIXES

1-A. Border Map and Camp Locations 47
1-B. Initial Assessment: Field Report by U.S. Ambassador Abramowitz 49
1-C. U.S. Embassy Refugee Task Force 55
1-D. Brief History of the Kurds 57
1-E. Environmental Health Survey Form 63
1-F. Typical Camp Layout 65
1-G. Typical Water-point Distribution 69
1-H. Draft Country Exit Report on Zakhu, Iraq 71

2-A. Scope of Work 75
2-B. Truck-cleaning Procedures 77
2-C. Transition of Water and Sanitation Responsibilities 79

FIGURES

1. Water Storage and Distribution Point (Schematic) 23
2. Water Tank Design (21,000 Liters) 24
3. Tap Stand Schematic 25
4. Original Latrine (Zakhu, Iraq) 28
5. Modified Pit Privy (Zakhu, Iraq) 30

ACRONYMS

DART	Disaster Assistance Response Team
IRC	International Rescue Committee
NGO	Nongovernment organization
ODA	British Office of Disaster Assistance
OFDA	Office of Foreign Disaster Assistance
PVO	Private voluntary organization
USAID	U.S. Agency for International Development
WASH	Water and Sanitation for Health Project
WS&S	Water supply and sanitation

ACKNOWLEDGMENTS

The authors would like to acknowledge a few of the people and organizations that made their efforts possible. Special thanks go to Dayton Maxwell of the Office of Foreign Disaster Assistance, U.S. Agency for International Development, who as chief of this mission spent many hours in Turkey and Iraq sorting out the best way to ease the displaced person disaster. Thanks also to Ambassador Abramowitz of the U.S. Embassy in Ankara, who, having experienced a similar situation with Cambodians in Thailand ten years earlier, provided strong and responsive leadership and quickly established a whole section of the embassy for this effort. Don Krumm, also of the U.S. Embassy at Ankara, understands the importance of water and sanitation and was especially supportive of our efforts in getting the job done.

The WASH Project's Eduardo Perez provided cheerful support despite the problem of poor communication systems and the constantly changing objectives of this consultancy.

Hats off to General Garner, Colonel Jones, Colonel Benenson, Lt. Colonel Hess, Captain Napp, Sergeant Gignilliat, Lieutenant Baker, the 2nd Platoon, C Company, 2nd Combat Engineering Battalion from Camp Lejeune, and the entire U.S. military. The General provided direct and sensitive support for water and sanitation. The Special Forces did an outstanding job of saving lives under harrowing conditions. The 2nd Combat Engineering Battalion, U.S. Marine Corps, put up the first tents in the first official refugee camp. This intensive effort, technology, and incredible dedication helped to prevent environmental deterioration and saved thousands of lives that would have been lost to water-borne diseases.

We particularly thank Fred Cuny of INTERTEC, whose natural leadership and long experience in the whole arena of refugees and displaced persons made a tremendous contribution to the early water and sanitation effort. He deserves a special prize, as do the others on the DART who provided support and humor in a most difficult time of history.

In conclusion, we salute the Kurdish people, who have suffered greatly and recognize that they must provide the basic solutions to their problems. Their efforts have touched us all.

INTRODUCTION

Background

After the Allied victory in the war with Iraq, internal struggles developed between the Kurdish populations and the Iraqi forces. When the Kurdish uprising was crushed, hundreds of thousands of Kurds fled Iraq with but a few of their possessions. In late March of 1991, over 400,000 Kurdish civilians were already inside Turkey or along the border. Coupled with the Kurds that fled to Iran, over 50 percent of the Kurdish population was on the move. (See Appendix 1-A for a map of the 250-mile Turkey-Iraq border and a list of camp locations.)

World attention focused upon the displaced Kurds in the mountains of eastern Turkey and Iran, as word of their plight emerged from the high peaks. Deaths from exposure, malnutrition, and disease were reported daily. (See Appendix 1-B for the first assessment field report from the U.S. Embassy in Turkey.)

In response to the Kurdish disaster, the U.S. Agency for International Development (USAID) mobilized the Disaster Assistance Response Team (DART) within the Agency's Office of Foreign Disaster Assistance (OFDA). To obtain expertise in water and sanitation, OFDA turned to the Water and Sanitation for Health (WASH) Project; DART members also had expertise in communications, shelter, epidemiology, logistics, and food. However, because the problem was so massive and overwhelming, relief efforts on the scale conducted would have been impossible without the logistical capability of the U.S. military. Although not oriented toward relief operations, the military were impressively organized, had specific goals and a plan of action, and they could make decisions quickly and decisively.

The military provided security and also transported food, water, supplies, and people. Because the eastern Turkey mountains are very remote, with few roads, helicopters were often the only means of transport, although flight coordination was difficult due to limited landing areas. U.S. policymakers quickly determined that those settlements in the mountains with too little water to sustain the residents would have to be relocated; an area near Zakhu, Iraq was chosen because it offered a setting where basic water and sanitation services could be reasonably provided just inside the Iraq border.

Report Organization

This report was written in two parts: the first, by Richard Swenson, covers OFDA/DART activities during the early unsettled period of Kurdish displacement; the second, by Terrance Rahe, focuses on the design, construction, and utility of facilities within the Zakhu camp. Part 2 also discusses the process of transferring management responsibility to the private voluntary organization (PVO) community. Swenson worked from 8 April through 27 April 1991 and Rahe from 19 April through 15 May.

Part 1

Swenson's consultancy—8 through 27 April 1991—was designed to provide specialized WS&S expertise to the DART by means of five activities:

- Conducting an assessment of the water and sanitation conditions where Kurdish displaced civilians were located in eastern Turkey
- Developing recommendations for both long- and short-term water and sanitation measures
- Determining resources needed to implement recommendations
- Beginning design and construction of a temporary community on the outskirts of Zakhu, Iraq*
- Issuing a summary report to WASH and others

*Significantly, this objective was added when President Bush decided that the conditions in the mountains of eastern Turkey were untenable and further directed that northern Iraq be secured and temporary facilities set up to house the displaced persons who felt it was unsafe to return home.

Chapter 1

SITE ASSESSMENT—ISIKVEREN, TURKEY

1.1 Physical Setting

Isikveren, located in a narrow valley surrounded by snow-capped peaks, is a small village of sheep herders in eastern Turkey. The displaced persons had been transported up the valley and were perched upon the hillsides and ridges; some were several kilometers further up, against the snow fields. Lower down the valley were the following: U.S. and Turkish military, Turkish Red Crescent, clinics run by private voluntary organizations (PVOs), and some beginnings of material and food storage piled alongside the roadway. This area was located across the river from the actual village of Isikveren.

At approximately 6,500 feet, the camp lay in a rugged, mountainous area with few trees and shrubs. The weather was cold, and some rain fell; snow was present in small quantities at the higher elevations. A stream flowed in the valley, bordered by a very shallow soil layer near the stream and on some of the less-steep slopes. The terrain was steep and rocky.

1.2 Population

An estimated 70,000 or more displaced Kurds were in the area, although their numbers were difficult to assess because of the rugged terrain. Several could speak English, and the population included doctors, engineers, nurses, and carpenters. Reportedly, 20 percent of the refugees were men, 30 percent women, and 50 percent children. Three burial grounds were active, as approximately 20 to 30 died each day, as reported by refugees in this particular camp. Most deaths in the first days were attributed to exposure, but now the cause of death seems to be shifting to dehydration from diarrhea that is largely caused by poor water and sanitation. Ninety-nine percent of the camp had diarrhea. There were, however, no confirmed reports of cholera or measles. The urgent need is to provide more water so that the population can be stabilized prior to relocation, which must be a primary objective.

1.3 Shelters

People used whatever material they could to protect themselves from the extreme cold. Plastic and blankets were used for tents, with rocks piled up to prevent wind damage. Some shelters were better than others, although most were perched on steep slopes with no evident organization. The few remaining trees were being cut down.

Chapter 1

SITE ASSESSMENT—ISIKVEREN, TURKEY

1.1 Physical Setting

Isikveren, located in a narrow valley surrounded by snow-capped peaks, is a small village of sheep herders in eastern Turkey. The displaced persons had been transported up the valley and were perched upon the hillsides and ridges; some were several kilometers further up, against the snow fields. Lower down the valley were the following: U.S. and Turkish military, Turkish Red Crescent, clinics run by private voluntary organizations (PVOs), and some beginnings of material and food storage piled alongside the roadway. This area was located across the river from the actual village of Isikveren.

At approximately 6,500 feet, the camp lay in a rugged, mountainous area with few trees and shrubs. The weather was cold, and some rain fell; snow was present in small quantities at the higher elevations. A stream flowed in the valley, bordered by a very shallow soil layer near the stream and on some of the less-steep slopes. The terrain was steep and rocky.

1.2 Population

An estimated 70,000 or more displaced Kurds were in the area, although their numbers were difficult to assess because of the rugged terrain. Several could speak English, and the population included doctors, engineers, nurses, and carpenters. Reportedly, 20 percent of the refugees were men, 30 percent women, and 50 percent children. Three burial grounds were active, as approximately 20 to 30 died each day, as reported by refugees in this particular camp. Most deaths in the first days were attributed to exposure, but now the cause of death seems to be shifting to dehydration from diarrhea that is largely caused by poor water and sanitation. Ninety-nine percent of the camp had diarrhea. There were, however, no confirmed reports of cholera or measles. The urgent need is to provide more water so that the population can be stabilized prior to relocation, which must be a primary objective.

1.3 Shelters

People used whatever material they could to protect themselves from the extreme cold. Plastic and blankets were used for tents, with rocks piled up to prevent wind damage. Some shelters were better than others, although most were perched on steep slopes with no evident organization. The few remaining trees were being cut down.

1.4 Water Supply

Camp water supplies were inadequate; such sources as there were included the following:

- *Stream water*. For the most part, the stream yielded very little, as it was underground in the gravel bed when it flowed through the camp area, surfacing lower down where the clinics were located. The stream was difficult to access because of the steepness of the terrain, and the water was very muddy and obviously contaminated by feces.

- *Snow*. Although some people transported snow and melted it in camp, this was an unproductive method because fuel was at a premium, snow melt produces little water by volume, and the snow itself was dirty and had an oily smell and taste according to many. An oil sheen was observed in some containers of snow melt.

- *Bottled water*. Although the air drops contained liter-sized water bottles, many were broken upon impact. There were some water bottles in the clinic area, but these were not brought up into the camp area in any large quantity. They would not last long.

- *Hauled water*. Water was beginning to be hauled into the camp area by tanker trucks and 250-gallon water trailers towed by tractors. The trucks would go as far as possible, but since the tank lid was not watertight the water would spill onto the road as the truck went up the steep road. At several points the road turned into a quagmire and became very difficult to travel. Six water trucks were observed during this period, to which people would bring various containers to fill. Distribution at first was very unorganized, but on the second day lines started to form when the truck arrived.

1.5 Sanitation

To any visitor the lack of sanitation facilities was obvious: feces covered the ground. A few makeshift squatting areas afforded the women some privacy, but most defecated in the open. The makeshift latrines had small pits that exposed the feces to the surface. Even the latrine built adjacent to the clinic below had only slats for a floor and offered no exclusion to flies. Since it was cold, however, the fly population was still relatively low. After a rain, the feces from the camp area would wash down into the stream below. The U.S. military had constructed a sanitary latrine for its own use, but there was an almost total lack of sanitation in the camp.

1.6 Solid Waste

After the refugees had been in the area only a week or two, solid waste accumulated. Old bread, cast-aside clothing, dried macaroni, animal body parts, and even a small amount of medications were strewn about. The old bread was too dry for even the few donkeys to eat, and apparently the macaroni was not cooked because it was viewed as a "poor man's food" or because there was no tomato sauce to add to it. Clothing seemed to be ample, but a few children had no shoes.

1.7 Recommendations for Environmental Health Program in Isikveren

- Immediately relocate the population to an area where basic services can be provided. This location is untenable for large numbers of people, as shelter, water, and sanitation cannot be adequately provided.

- Take temporary measures to increase the amount of water hauled into the camp. Provide more family water containers to store water. Chlorinate the water that is hauled into the camp and try to provide four liters of water per person per day.

- Begin isolating the defecation areas from the stream, and clean these areas daily. There is too little latrine-construction for a population of this size.

- Organize camp cleanup and burn the solid waste as it accumulates. The fly season is just starting.

- Reconstruct the clinic latrines so they are fly-tight and sanitary. Maintain a cleanup crew to keep these latrines sanitary, and provide them with shovels and rakes and a disinfectant such as chlorine to swab down the latrine floors.

- Use camp labor whenever possible. Identify population resources, and divide camp into sectors to manage problems on a smaller scale.

- Identify and develop another sanitary water source if possible. Perhaps there is a spring uphill in the mountains; water quantity is more important than water quality at this stage.

Chapter 2

WATER AND SANITATION PLAN

2.1 Interim Efforts

After the visit to Isikveren, which was reported to be one of the better population areas, efforts concentrated on developing an overall strategy for water and sanitation. The logistics were incredibly difficult, and transportation was needed for food and water. It was felt that further assessments would not reveal any new information, and each person on a helicopter took the place of much needed food and water. Thus further field visits were not undertaken. From a series of meetings at Incirlik, the NATO base of operations in Turkey, a general plan emerged. The primary recommendation was that these populations be relocated to a site where services could be provided. However, several interim actions were taken:

- An order was placed to purchase and distribute 70,000 six- to eight-liter water containers so families could collect, store, and transport water.

- An environmental health survey form was developed and provided to the Special Forces who were being sent into the population areas to provide assessments and whatever services they could until populations could be consolidated. (See Appendix 1-E.)

- The Special Forces received training about environmental health and survey-conducting and were also given special information about water and sanitation.

- A concept paper for short- and long-term operations was developed in coordination with the U.S. military preventative medicine staff, engineers, and civil affairs.

- A detailed sanitation and shelter plan was developed for new camps to be located in Iraq.

2.2 Conceptual Operational Plan

While this plan was being developed, major political decisions were being made in Washington D.C. as to what should be done regarding financial commitments and where (i.e., in Turkey or in Iraq).

2.2.1 Working Assumptions

- The Turkish government will be sensitive to agencies working within their borders; relief efforts are best funneled through the Red Crescent or other national organizations rather than taken on directly by foreign donors.

- Staff of PVOs can be based in Turkey but may have to cross the border at times.

- The Kurds have a lot of expertise and will have to be the major human resource in addressing their problems.

- No major WS&S efforts should be undertaken until reliable facts come from field visitations.

- Large population movements will probably continue on both sides of the border and often be directed independently by the Turkish government on very short notice, if any.

- Appropriate, simple, low-cost technologies must be used.

- System maintenance must be incorporated into the technology design.

- No program can be effective unless there is an organized system to distribute resources. Human infrastructure must be developed and allowed to work.

- Programs must be evaluated and continually adjusted to new conditions; reports must be sent frequently.

- Agencies must be sensitive to cultural practices and beliefs when establishing a program.

- The U.S. military will turn the operation over to others with less logistical capacity in the near future. Therefore, high maintenance systems depending on outside resources should be avoided.

- Water quantity is more important than water quality in the beginning.

2.2.2 Thirty-Day Recommendations

The only viable overall, long-term recommendation is to begin the process of determining which populations must be relocated to an established area where proper water and sanitation facilities can be provided. However, many short-term activities can and should be undertaken:

- Get an experienced PVO on-line as soon as possible to work on water and sanitation. Consider water to be of primary importance.
- Identify refugee resources by population location so that they can organize and supervise the water program.
- Assess for each population area the quantity of water available, the exact location, and how best it can be delivered for the next 30 days.
- Distribute six- to eight-liter plastic water containers to the entire population.
- Start water transportation to those areas with no water supply, and supervise this operation.
- If areas require expensive transport of water, begin shifting the population to areas where water is more readily available, or start to install a transmission and storage system.
- Identify sanitation problems by each area, along with the possible short-term options. Identify resources that can focus on this problem within each population.
- Keep defecation areas from draining into or affecting water sources.
- Identify any cultural practices regarding defecation.
- Establish a defecation cleanup program and provide rakes and shovels. Begin a health education organization to start an education and communication system.
- Note and comment upon any unusual problems, such as vectors, shelters, snakes, etc.

2.2.3 Thirty- to Sixty-Day Recommendations

- Establish a PVO inside Turkey (probably in Silopi) to act as liaison for water and sanitation and to work with an identified Turkish agency.

- Identify an organization for each population area that can further implement the water and sanitation program.

- If more permanent locations are identified, start and complete construction of water and sanitation facilities prior to occupancy. Ensure that there is an ongoing maintenance effort.

- Establish an ongoing solid waste and hazardous (lab, clinic) waste program.

- Maintain an ongoing reporting system that is integrated with other health and medical programs.

Chapter 3

SPECIFIC SANITATION AND COMMUNITY PLAN

A sanitation plan is the critical element in a temporary community, as lack of sanitation facilities quickly gives rise to illness and, often, death. Careful thought must be given to this plan so that the health hazards associated with poor sanitation do not reappear once a sanitation facility (often the most expensive component in the construction of such a community) is in place.

3.1 Sanitation

The following factors must be considered in developing the plan:

- Cultural practices associated with defecation
- Ease of maintenance by the population without an extensive, costly, external maintenance effort
- Appropriate technology that is sensitive to available resources but can still interrupt the disease-transmission cycle
- Discretion and privacy
- The sanitation plan's vital role in the community plan
- Ratio of one latrine or toilet to 20 persons
- The need to maintain a fly-tight facility

After interviewing some of the Kurdish population, the following was concluded:

- Men do not use the same facility as women and children; thus, the men's facility must be set apart. Latrines must accommodate 20 percent men, 30 percent women, and 50 percent children.
- Children tend to defecate near the shelters.
- Women must have privacy.

- Kurds would maintain the latrine facility themselves if they had their own latrines or a latrine for their clan. (The basic unit of organization after the family is the clan.)

- Facing toward Mecca (south) while squatting is inappropriate for many, although some Christians in the population are unconcerned about latrine orientation.

- An open hole in a squat plate is satisfactory; seats need be provided only for the very old and some children.

- A dry latrine is acceptable.

- Water is used to wash after defecation.

- Kurds maintain cleanliness when they have the resources to bathe themselves and clean their environments.

Several camp designs were reviewed, and the one most sensitive to these factors was selected. (See Appendix 1-F for camp layout.) The basic unit is a tent that can house an average of 5.5 people. Twelve tents organized in a square create a neighborhood, with a concrete-floored latrine in three corners and a neighborhood exit in the fourth. This configuration offers the clan security, privacy, and latrines that "belong" to the clan, an important consideration since otherwise communal sanitation facilities will not be maintained even with a large degree of effort. Two of the latrines in each neighborhood will be available for the women and children, the third for the men. This arrangement, which accommodates the percentage breakdown of the population, works out to approximately 20 persons to a latrine. A person in the neighborhood will have to be assigned responsibility for inspections.

3.2 Water Supply

It is estimated that, for minimal purposes, 10 liters of water are needed per day per person, preferably from an existing water supply that comes either from a nearby community or an irrigation source. A groundwater source is usually safer than a surface source and easier to maintain. Trucking water is expensive and should be looked upon only as a last resort or as a temporary measure while the more durable source is developed.

Where water points are supplied there should be adequate drainage so that mosquitoes and other vectors do not develop. The population must be educated about how to protect the water supply once it is in their containers. Water should be available for clinics, bathing, clothes-washing, cooking, and drinking. (See Appendix 1-G for a design of a typical water distribution point.)

3.3 Burial Grounds

An area should be designated away from the water source for burial. This area should be monitored both for deterioration and for keeping track of the number of deaths.

3.4 Supply List

In camp planning it is handy to be able to order supplies for a given population. Below is a partial list of supplies calculated per capita, but it should be understood that some supplies may be unneeded or others provided based upon the specific requirements of the temporary community. Simply multiply this factor by the population for the amount required.

1.	Latrines	.05
2.	Water points (faucets)	.015
3.	Grams of chlorine per day per person	
	surface water very muddy	.08
	surface water slightly cloudy	.05
	general disinfection	.001
4.	Shovels	.025
5.	Rakes	.025
6.	Plastic bags for garbage per seven days	.18
7.	Water in liters per day per person	10-19
8.	Family unit water containers—eight liters	.18
9.	Chlorine test kits for surface water	.00025
10.	Health inspectors from population	.004
11.	Chemical sprayers	.0005
12.	Buckets for cleanup crews	.002
13.	Picks	.012

There should be a secured storage area for water and sanitation supplies, and equipment must be checked in and out. A meeting area for environmental health education needs to be available on a daily basis.

Chapter 4

CONCLUSION AND RECOMMENDATIONS

The problem of the displaced Kurdish civilians is complex and massive. Responding to their needs will be difficult because of the large numbers involved and the remote and difficult terrain. The only viable options are relocation to their former homes or temporary communities designed according to a sound sanitation plan that incorporates cultural sensitivity and maintenance ease.

The first temporary community at Zakhu was able to incorporate into its design the basics of a sound water and sanitation plan, a plan that can be a model for other communities being planned and constructed. There is, however, a serious need for "pre-packaged" water distribution points and sanitation systems that can be brought into a crisis setting and quickly constructed. (See Appendix 1-H for the country exit report on activities at Zakhu, Iraq.)

The following recommendations are addressed to OFDA:

- Identify and have on-hand several thousand low-cost, lightweight, easily transported latrines to have available for emergencies.
- Establish an orientation and training center for water and sanitation specialists who are about to work in these settings overseas.
- Urge the U.S. military to publish the water and sanitation efforts they made in this crisis.
- Discourage the concept of communal sanitation facilities as an option for this type of operation.
- Provide a separate budget for water and sanitation programs.
- Include water and sanitation personnel in all meetings where water and sanitation issues are discussed. This recommendation applies to the military operation.
- Sensitize U.S. military engineers to the problem of communal latrines in this type of operation; communal sanitation is a western concept that does not work over the long term in these types of settings.
- Reduce the size of the DART to four or five and ensure this team transportation logistics for quicker assessments and reporting.

- Have water-distribution-point components available for immediate shipment to a crisis area.

Part 2

Rahe's consultancy was from 19 April to 15 May 1991. The scope of work (Appendix 2-A) assigned prior to departure was as follows:

> A water and sanitation expert will work within a group of five to seven other specialists in the following areas: medical, logistical, food supply, and shelter. They will perform a rapid assessment of the situation and recommend methods by which to provide the most crucial basic services in these areas.

The scope of those services was further refined during a briefing by Carrie McKee of the embassy staff. Embassy briefings conducted by Task Force Director Don Krumm and Deputy Director Bob Jimenez further clarified the relationship of OFDA/DART to the overall task force.

The project-specific scope was outlined by Fred Cuny of INTERTECT. Upon arriving at the Zakhu camp, it became clear that the site could not support any displaced persons without a massive effort to avert serious degradation of environmental health standards. Based on the recommendations of Swenson and Cuny, water was assigned the highest priority, sanitation in the form of latrine construction was assigned second priority, and solid waste disposal was assigned third priority. A long list of other concerns including wash areas, surface water control (waste water), disposal of medical waste, vector control, discarded scalpels and needles, and burial were placed at fourth priority.

The program and equipment developed as part of this project were to be transitioned to appropriate PVO staff at the earliest possible time; all designs were to be easily operated and maintained to facilitate this transition.

Chapter 5

WATER SUPPLY PROGRAM

5.1 Design Objectives

The development of the water supply program occurred in two phases: the first involved providing temporary facilities to meet immediate needs; the second, occurring simultaneously with the first, involved development of semipermanent facilities capable of meeting longer-term needs.

These were the criteria for the temporary system:

- Must provide 10 liters per person per day.
- Must be on-site or locally available.
- Must provide transportation, storage, and distribution components.
- Must meet quantity standards even if ultimate quality standards unmet.
- Could include intense management requirements due to high level of military support.

Each subcommunity (4,000 population) was to have a central semipermanent water facility, whose criteria included the following:

- Must provide 20 liters per person per day.
- Must be easily managed by skeletal PVO staff assisted by Kurdish workers.
- Must meet goals for both water quantity and water quality (microbiological and chemical).
- Must provide transport, storage, and distribution components with maximum redundancy and backup.
- Must operate at low hydraulic head to facilitate interim operation with water trucks and low-head pumps and to facilitate water conservation.

Previous Page Blank

- Must be able to accommodate chlorination with minimal interruption of service in the event of a disease outbreak or decrease in water quality.

- Should be focused at the subcommunity level, the lowest level at which any centralized Kurdish responsibility was proposed.

- Must meet United Nations standards.

5.2 Design Team

The design and construction team included the following major personnel:

System design:	British Royal Engineers, Majors Bend and Murrant
Design review:	Terrance Rahe, OFDA/DART
Construction inspection:	British Royal Engineers, Majors Bend and Murrant
Contracting officer:	Orion Yeandel, OFDA/DART
Contract administration:	Terrance Rahe, OFDA/DART; Scott Detloff, IRC
Contractor:	Negati Yagci, ERE Construction, Ltd.

The basic assumptions provided to the British Royal Engineers are outlined in Section 5.1. When design work began, the team knew only that wells existed and that they would become operational soon. None of the pump characteristics or well-production data were developed until after the design was complete and the system under construction. As a result, low-head operation was assumed to maximize the chance that well pumps would be able to pump directly into the water storage tanks. An additional constraint was to be found in the interim truck hauling of water to the storage tanks. Only the poorest-quality transfer pumps were available to pump water into the storage tanks, but low-elevation tanks allowed most pumps to transfer water to the tanks at an acceptable rate.

Both active and passive water conservation methods were to be incorporated into the design: for example, self-closing valves (passive) and water security staff (active).

5.3 Site-Specific Design

5.3.1 Interim System

Because the organizational level in an interim water system seldom rises above chaos, it becomes necessary to make the best possible use of whatever is available until something better comes along. The transition from poor to better methods creates a dynamic environment—immediate needs or concerns—that frequently competes for the attention of those pledged to give the highest priority to a semipermanent solution.

From the beginning it was clear that trucks could meet all the temporary water system design requirements (see Section 2.1). However, there were no trucks of any kind in Zakhu, Iraq, in mid-April. The first trucks, secured from Silopi, Turkey, were of questionable quality but fell well within the "quantity is better" guidelines. All trucks required extensive cleaning with heavy detergents because they had hauled fuel oils. However, fuel oil residue contains none of the toxic volatile organic chemicals associated with gasoline (benzene, toluene, ethyl benzene, xylene). Procedures for truck cleaning appear in Appendix 2-B.

In spite of their drawbacks, these trucks were the only option; they have been used previously in countless emergency operations at other locations without observed adverse effects, and subsequent testing for potential toxins by British health authorities verified the vehicles' acceptability. Four days' work were required to get the first three trucks across the Turkish borders and into Zakhu camp.

The water-delivery procedure called for the trucks to load up at the well point operated by a U.S. Marine detachment and then drive to selected locations depending upon need. The delivery of 1,200-gallon water trailers from Germany in early May provided needed storage capacity; other interim storage was provided by four 1,000-gallon bladders and four 500-gallon blivits (rubber tanks that can be carried by helicopter). None of this interim storage was significant when compared to the flexibility of the trucks themselves. Intensive management (micro-management) was required to ensure continued distribution of water to all segments of the displaced persons camp.

At the peak of the interim water-system operation, all trucks with obvious fuel oil history had been released from employment; 14 trucks remained in service; 6,000 gallons of fixed storage was on the ground; and the camp contained in excess of 15,000 displaced persons. Water supply ranged from 19 to 28 liters per person per day through May 10, 1991.

5.3.2 Semipermanent Water System

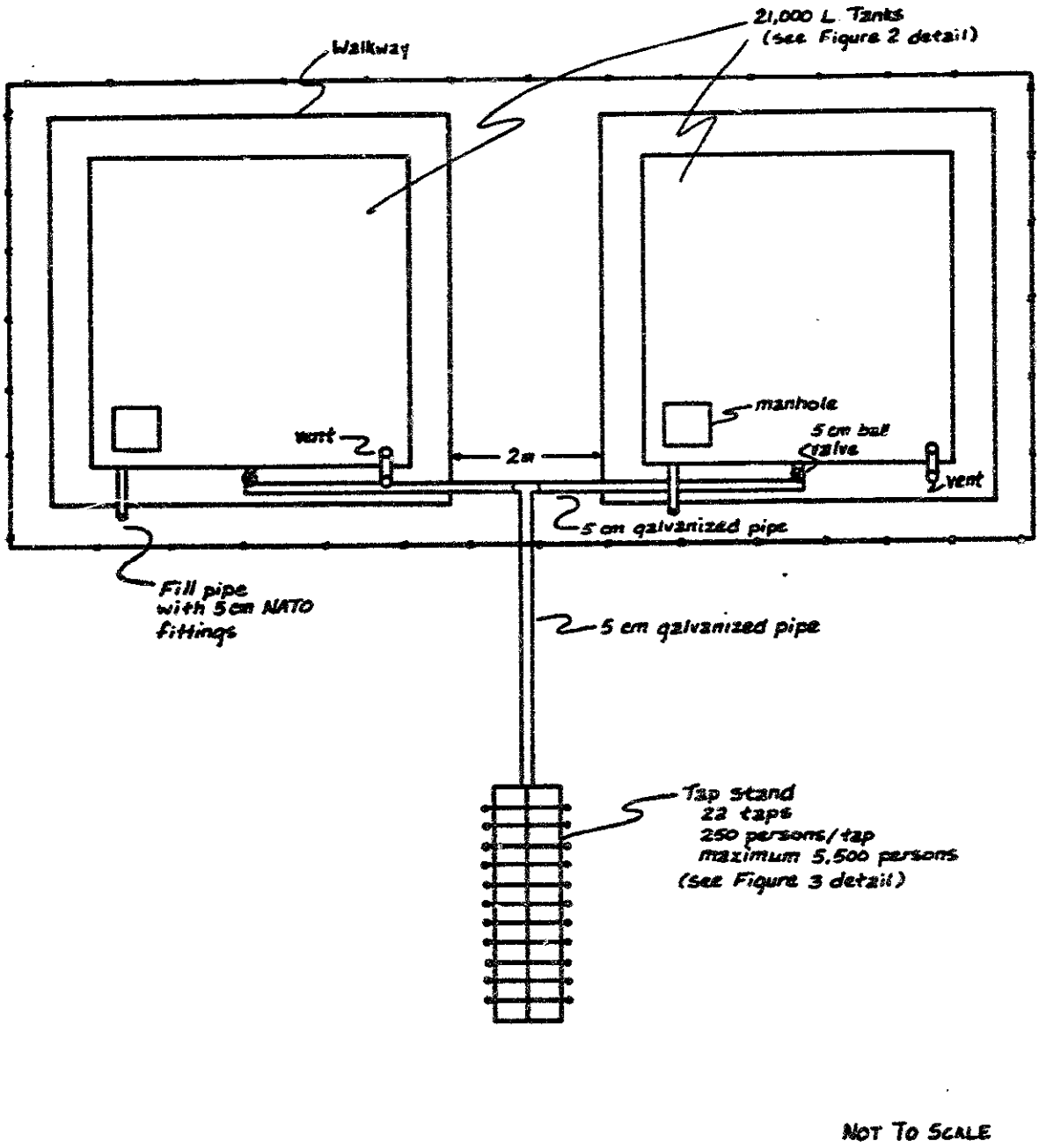
Final contract negotiations were completed on May 1, 1991 for the construction of the semi-permanent system by ERE Construction. Details of that design are shown in Figures 1, 2, and 3. Figure 1 demonstrates the schematic layout of a storage and distribution unit designed

for one subcommunity. The system consists of two identical tanks of 21,000 liters each connected by a 2-inch galvanized pipe manifold with individual valves, which allows one tank to remain in use while the other is off-line for cleaning or batch chlorination.

The manifold connecting the two storage tanks conveys water to a transport line serving a tap stand providing 22 taps (1 tap per 250 residents). All manways, valves, and openings to the tank are lockable. The security fence shown in Figure 1 provided passive security for the

FIGURE 1

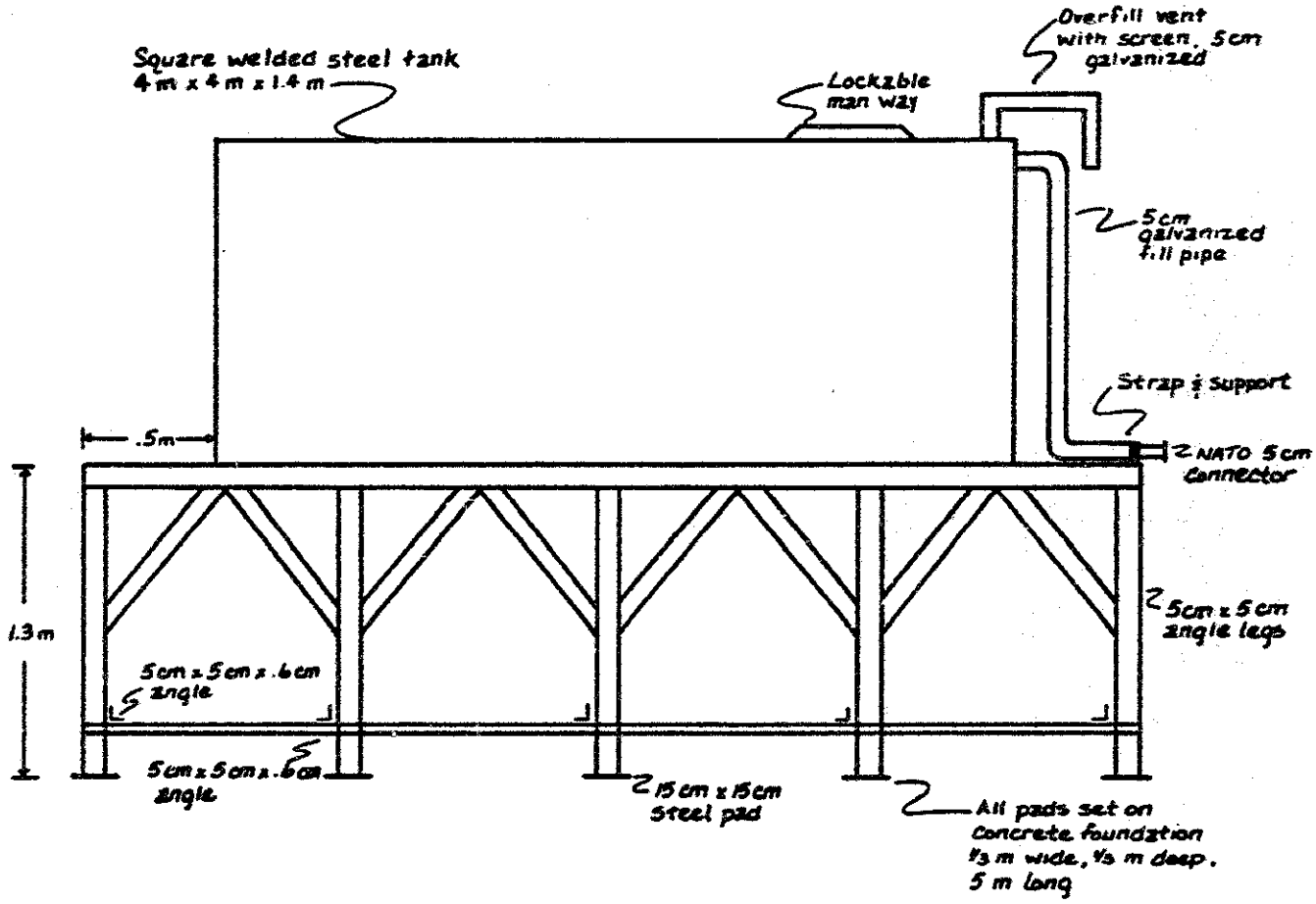
Water Storage and Distribution Point (Schematic)



NOT TO SCALE

FIGURE 2

Water Tank Design (21,000 Liters)



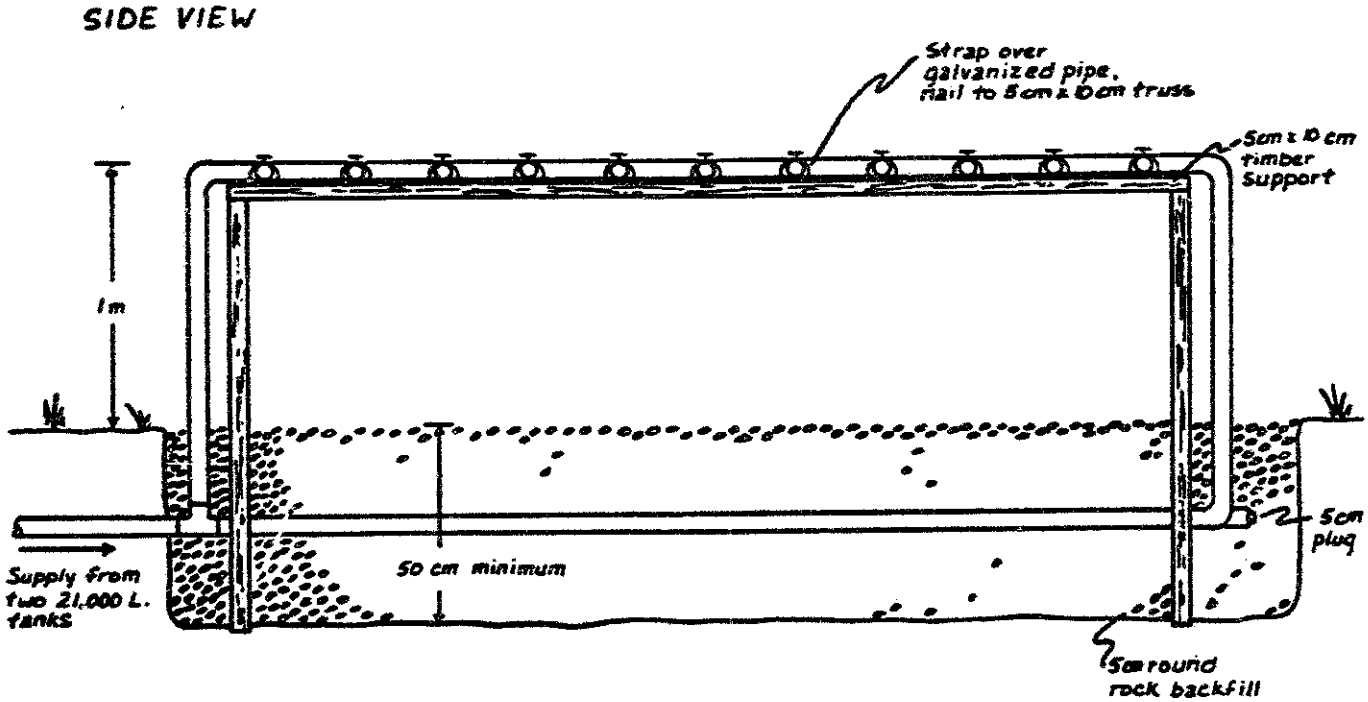
NOTE:

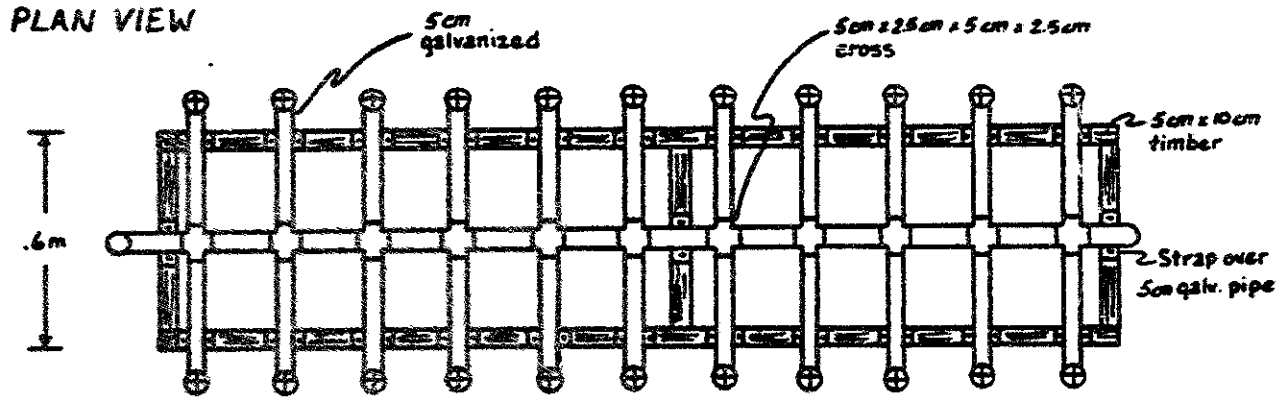
- All tanks fitted with ball valves at maximum height of fill pipe.
- All concrete cure for seven days.
- Height limited to 2.7 m to allow low head pumps on many trucks to fill tanks.
- Low tank height also produces low volume delivery at tap stand which reduces waste.
- Security fence to be installed around each tank pair.

NOT TO SCALE

FIGURE 3

Tap Stand Schematic





NOTE:

- Gravel bed under tap stand located such that a gravel filled french drain can carry away excess spilled water.
- Water guard required to assure all taps turned off when not in use.
- Self closing taps to be installed as available.

NOT TO SCALE

water points, while water guards (Kurdish workers) provided active management. Figure 2 shows tank detail, while Figure 3 shows the detail of the tap stand.

Delivery, scheduled for May 6th, was delayed three days by border difficulties. The tanks were prefabricated in Turkey and transported to Zakhu, where they were erected. An additional day was lost to crane scheduling, the failure of a contractors' welding equipment, and a host of other minor complications. On May 10, a preliminary inspection indicated that the tanks were not yet ready to load with water. Specific corrective actions were taken by the contractor, and on May 11, the tanks were loaded and the water super-chlorinated. On May 12, water was delivered to the camp population for the first time. These tanks were not fully approved or accepted by the design engineers on May 16, 1991, at the time the WASH consultant departed.

The acceptance of the tanks, tap stands, and gravel areas by camp residents was overwhelming. As of May 16, three water points (two tanks in two subcommunities and one at City Center) were complete and three more under construction; this would equip Camp 1 for 22,000 people.

The status of an underground transport line leading from the water source to the storage/distribution system remained unsettled due to a lack of agreement on a funding source. Because the absence of this component made the system dependent on trucks, rain storms interrupted the delivery of water within the camps due to the lack of all-weather roads.

In mid-May, the U.S. Army Corps of Engineers let a contract for construction of the storage tanks and distribution tap stands in the second camp (Camp 3 on the original layout) that would allow the water system to serve more than 42,000 people.

Chapter 6

SANITATION

In this report sanitation refers to sewage disposal. Solid waste will be discussed in Chapter 7. Photos 1-3 (see Chapter 11) demonstrate the technology being employed as interim measures prior to the construction of contract latrines by the U.S. Army Corps of Engineers through their contractor, ERE Engineers, Ltd. The greatest problem with the original latrines was their fiberboard decking, which deteriorated in the rain. These units were also slow to construct, and only 114 were completed. The design objectives for both interim and semipermanent latrines were as prescribed by Richard Swenson in Part 1 of this report.

Figure 4 constitutes a schematic design developed by the U.S. Army Corps of Engineers and let for contract without review by OFDA/DART or others familiar with refugee/displaced persons operations. No other example could better prove the necessity and value of an OFDA/DART team than this design. At the same time, the eventual revision of this design and the willingness of U.S. Army Corps personnel to let additional contracts to correct the original design demonstrated their sincere desire to be of assistance and their invaluable contribution to the eventual outcome of this program.

Figure 4 represents a schematic of a four-sided privacy screen of 1 m by 1 m, supported by 2" x 4" timbers on a timber base of like construction. The base was covered by 1" x 6" PVC sections surrounding a rough-finish concrete squat plate. The unit was specified with a 1-m deep by 1/2-m diameter excavation. This design was appropriate in several ways:

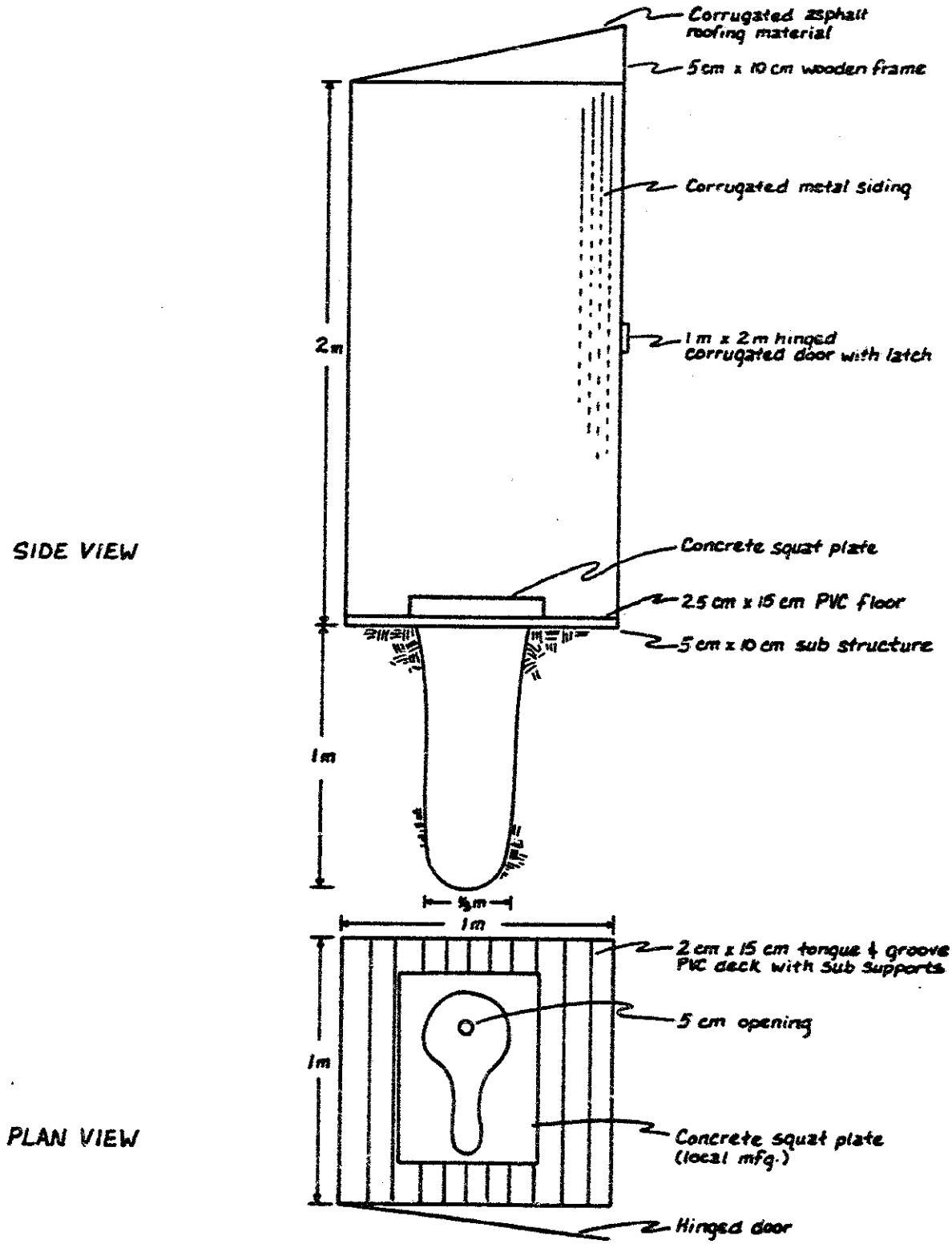
- The privacy screen provided was durable and appropriately sized.
- The PVC flooring was easily cleanable and appropriate to good sanitation.
- The unit was easy to build and economical ($75-$100 U.S. dollars/unit).
- The design was for a single unit that would be shared by an extended family or clan, encouraging a concept of "ownership" and self-maintenance of the unit.

Design deficiencies included the following:

- The specified pit was sufficient for only a 15-day life; at contract completion, over 500 latrines would need replacement every day.

FIGURE 4

Original Latrine (Zakhu, Iraq)



- The very rough surface of the squat plates required excessive water to "flush" the waste into the open hole.

- The design was not fly proof, lacking fly screen, self-closing door, and a VIP vent screened to trap flies.

- The superstructure design would not allow the construction of a large pit due to the relatively small 1m × 1m base (backhoe pits require a 1m × 2m base).

The following design modifications were specified by OFDA/DART and International Rescue Committee (IRC) staff. These modifications are shown in Figure 5.

- A plywood base large enough to accommodate a backhoe pit (243cm × 121cm) was added. Plywood was specified, contrary to the recommendation of R. Swenson, because large numbers of latrines (1,920) needed to be constructed and modified in a very short time.

- Fly screen was added between the roof and metal sidepanels.

- The door was made self-closing.

- A 20-cm vent pipe was added with a screen over the upper opening.

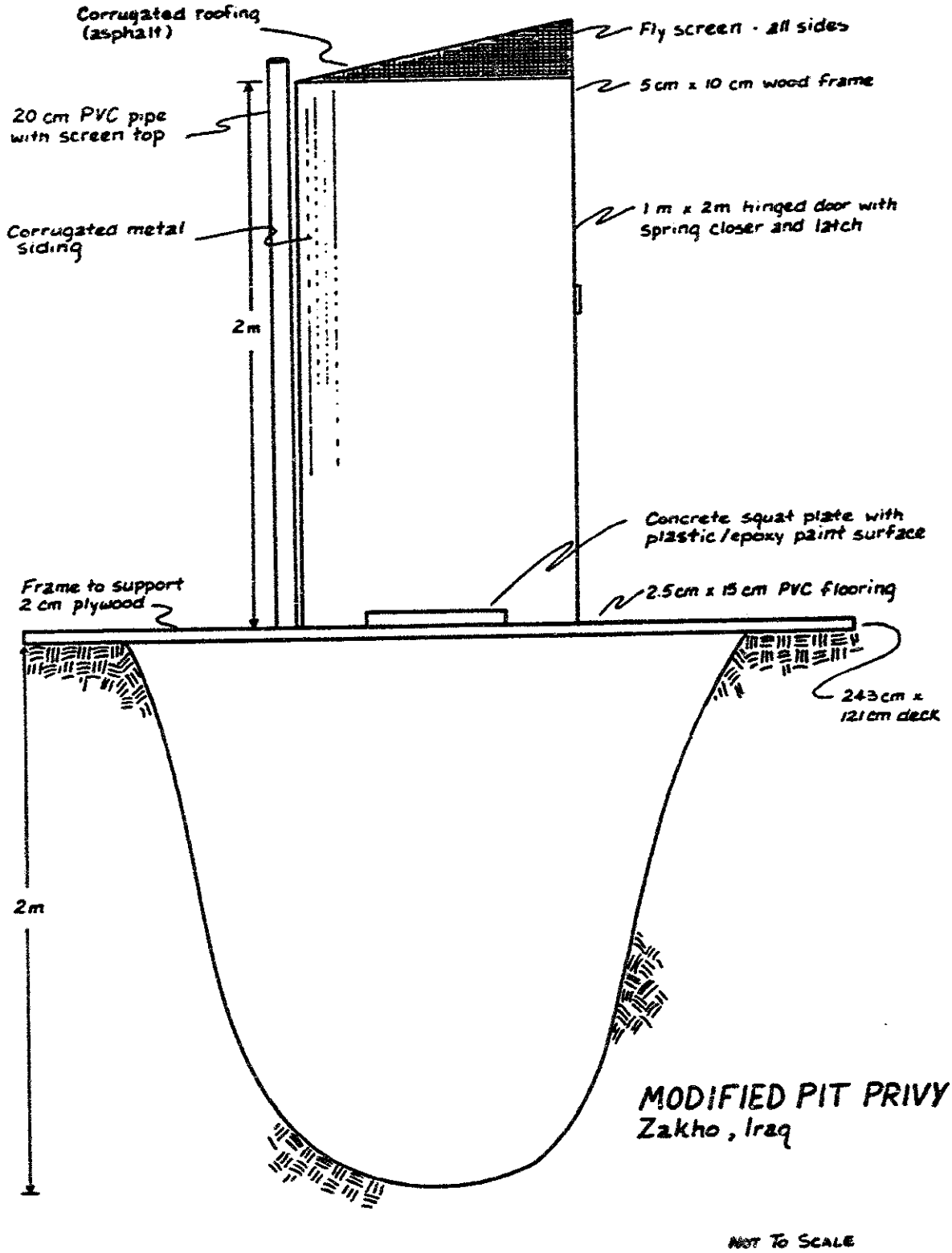
- The squat plates were coated with an epoxy finish that rendered them smooth and easily cleanable.

Specific consideration was given to the problem of water use in the latrines. The Kurdish practice of using water for anal cleansing weighed heavily in the decision not to discontinue the use of the squat plate. While the use of water reduces latrine life, some water was going to make its way into the latrine anyway due to anal-cleansing practices. Because early experience with even the rough squat plates demonstrated that the users *would* keep them clean if the units were restricted to use by the clan only, it was concluded that the squat plate served an important function in keeping the fecal material located so that users could easily clean the plate (even when children used the facility and did not clean it). The presence of water in the system for anal cleansing and the advantage of a small opening with less potential for attracting flies when the VIP vent was installed combined to justify any shortened lifespan for the modified latrine. This was a judgement based on data available at the time; the possibility of using an open hole without water and dealing with attempts to keep the holes covered should be based on operational experience.

At the termination of this reporting period, in excess of 1,200 operational latrines were located in Camp 1 and Camp 3 (the second camp to be developed). All latrines were located as prescribed in the original design by Fred Curry of INTERTECT. Authorization had been

FIGURE 5

Modified Pit Privy (Zakhu, Iraq)



issued for 1,920 latrines of a total 8,600. A contract addendum had been authorized by the U.S. Army Corps of Engineers to modify the original 960 latrines. Discussions with Capt. Larry Knapp of the 432nd Civil Affairs Unit included options for constructing interim trench latrines in the event of an unexpected rapid influx of displaced persons.

Chapter 7

SOLID WASTE DISPOSAL

7.1 Design Objectives

The objectives of the solid waste disposal program were similar to those in the other programs:

- Design centered on the subcommunity as the lowest level of management.
- The system was to be initially managed by military personnel and then transferred to PVO staff with actual labor and equipment provided under contract to Kurdish workers.
- "Burning dump" management was selected because—
  - This option controlled vectors such as rats and flies.
  - It is a simple technology requiring only excavation.
  - Sites could be reasonably recovered for crop land.
  - Equipment and skills existed within Kurdish population to continue construction and operation.
  - This was the same basic technology practiced by the population in their hometowns and villages.
  - Sites would be designed to facilitate ease of closure with local equipment.

7.2 Design Team

Solid waste disposal was considered the third priority during the early operation of the Zakhu camp. "City staff" provided by the 432nd Civil Affairs provided initial solid waste management based on preliminary designs by the OFDA/DART team; the PVO staff from the International Rescue Committee provided construction supervision; and the U.S. Army 18th Engineering Battalion provided the D-8 caterpillar to perform the actual excavation.

Previous Page Blank

7.3 Site-Specific Design

The actual pit design was 3 m wide by 2 m deep. Trench length was 27 m on the original excavations, but the length was shortened in subsequent subcommunities to 15-17 m. A single pit was located in an open space adjacent to each subcommunity. Ten pits were completed at the terminal date of this report, bringing solid-waste design capacity to a level comparable to the authorized capacity of the water and sanitation program (42,000 people).

Chapter 8

TRANSFERRING WATER AND SANITATION TO PVO STAFF

One of the earliest PVO teams to arrive at Zakhu was the International Rescue Committee, whose initial team included one environmental health worker (vector control) and one public health nurse. In the first week of May, two additional staff members arrived: a registered sanitary engineer, Scott Deiloff, and a registered sanitarian, Dan Bush. Both had previous international refugee/displaced persons experience and excellent technical backgrounds. The water and sanitation programs improved tremendously upon their arrival and strengthened daily. The IRC team quickly recruited the assistance of the British Office of Disaster Assistance (ODA), bringing professional PVO staffing to five.

On May 10, it was recommended that a PVO team begin to assume WS&S responsibilities, and on May 13, a meeting was held between representatives of OFDA/DART, the U.S. Army 432nd Civil Affairs, and the International Rescue Committee to formalize the transition. A summary of that meeting, including specific dates for assumption of responsibility, appears as a chart in Appendix 2-C.

Chapter 9

ADDITIONAL CAMP SITES

Two additional camp sites were visited during the consultancy, each viewed from the standpoint of 20,000 displaced persons. The sites were located east of the existing Zakhu camp. The first was in the location of Camp 10 in the original camp layout; the second was located directly east across a paved north-south road leading from the Zakhu road to a moderately sized village.

Ensuring the integrity of the water source and protecting it from potential contamination by generated waste rank high on the list of camp siting criteria. The proposed water sources for these two sites caused concern. The proposed sites are on the north slope of the valley, and any wastewater generated in the camp would flow over the surface toward the proposed well locations. Subsurface flow would be expected to flow in the same direction. The existence of an adequate well seal on a well designed for irrigation is doubtful. Camps 1 and 3, by contrast, were located so that the wells were upgradient from the area where the latrines were located, and the camp area was between the wells and the adjacent river. This helps assume that both surface water and shallow groundwater flows are directed away from the water source. Water sources below the camps should be developed *only* as a last resort. Indeed, the use of upgradient surface water may deserve re-examination if chlorination is possible and upgradient groundwater sources cannot be developed.

Previous Page

Chapter 10

RECOMMENDATIONS

The experience of working with a wide variety of multinational agencies (armies) while at the same time having responsibilities in culturally sensitive areas such as water and sanitation gives a perspective that may differ from that of many OFDA/DART team members. The following recommendations, offered respectfully, are drawn from that perspective.

- Design all water and sanitation facilities with both active and passive security systems. For example, if you want to secure your water storage tanks, provide a fence with a gate and lock (passive) *and* a water guard (active). If you want to minimize water loss at the water tap, design a low-pressure system to minimize splash loss and include self-closing taps and a water guard to be sure the taps are not modified or mistreated.

- Do not accept inappropriate equipment: do not allow it into the camps; do not allow it to be erected; do not allow it to be used. A classic example of such equipment is the open-topped water storage tank, known in its military configuration as "onion skin" and duplicated by various civilian manufacturers. Anything that cannot be secured with a lock and key is unacceptable because the Kurds have a preoccupation about their water being poisoned by enemies; unsecure storage is an open invitation to a riot. Equally important is the microbiological quality of such a storage unit, which is forever in question. The level of active management required to secure a device such as this makes it unusable.

- Construct buried water-transmission lines between the storage tanks/tap stands and the wells. Without all-weather roads, all water delivery will stop with the slightest rainfall so long as water trucks are the only transport method. Water trucks, although not expensive, do cost money that could be put to the cost of a better, more-reliable system. Finally, some consideration should be given to the Iraqi Kurdish community as a whole. Every available water truck within the Zakhu, Mosel, Dahuk area was working in the camp; thus, the communities that relied on these trucks were without water. All of these site-specific and greater community problems would be solved by installing a semipermanent water system.

- Offer the maximum level of support to the International Rescue Committee, which has taken a tremendous responsibility. The IRC organization is spread over too many places where disasters are under way and can maintain the existing level of water and sanitation services only if properly funded.

- Build everything with redundancy: an old army rule holds that "when you have one generator, you have no generator; when you have two, you have one; when you have three, you have two generators; etc." In field operations, redundancy is the key to success. Fund redundancy as a necessary design cost; it is the price of success.

- Provide more communications. If there is a single most-valuable tool, it would be the personal hand-held radio. This element of the DART team was so effective that all the Army units were trying to get on its communication net and were working to create one of their own.

Chapter 11

PHOTOGRAPHS

Refugee arrival at Zakhu, Iraq. April 1991.

Supply base Silopi, Turkey. April 1991.

Waiting for tents: "The Toilet Fields"
We liked to be ahead of the game just a little on the DART team.
These were the contractor constructed (ERE) latrines.
April/May 1991. Iraq.

Substructure for early-design latrines

Base and substructure placed over backhoe pit.
Early latrine design.

Kurdish refugees at 7,000 foot elevation near Isikveren, Turkey.

Kurdish women and children waiting to go back to Iraq from Isikveren. Refugee population was 50 percent children and 30 percent women.

Kurdish women prepare traditional bread in Isikveren Camp.

Kurdish men chopping the precious trees at Isikveren Camp
for warmth and cooking.

Appendix 1-A

BORDER MAP AND CAMP LOCATIONS

JTF-EC J2 14 APR 91

SUBJECT: Refugee Location Place Names

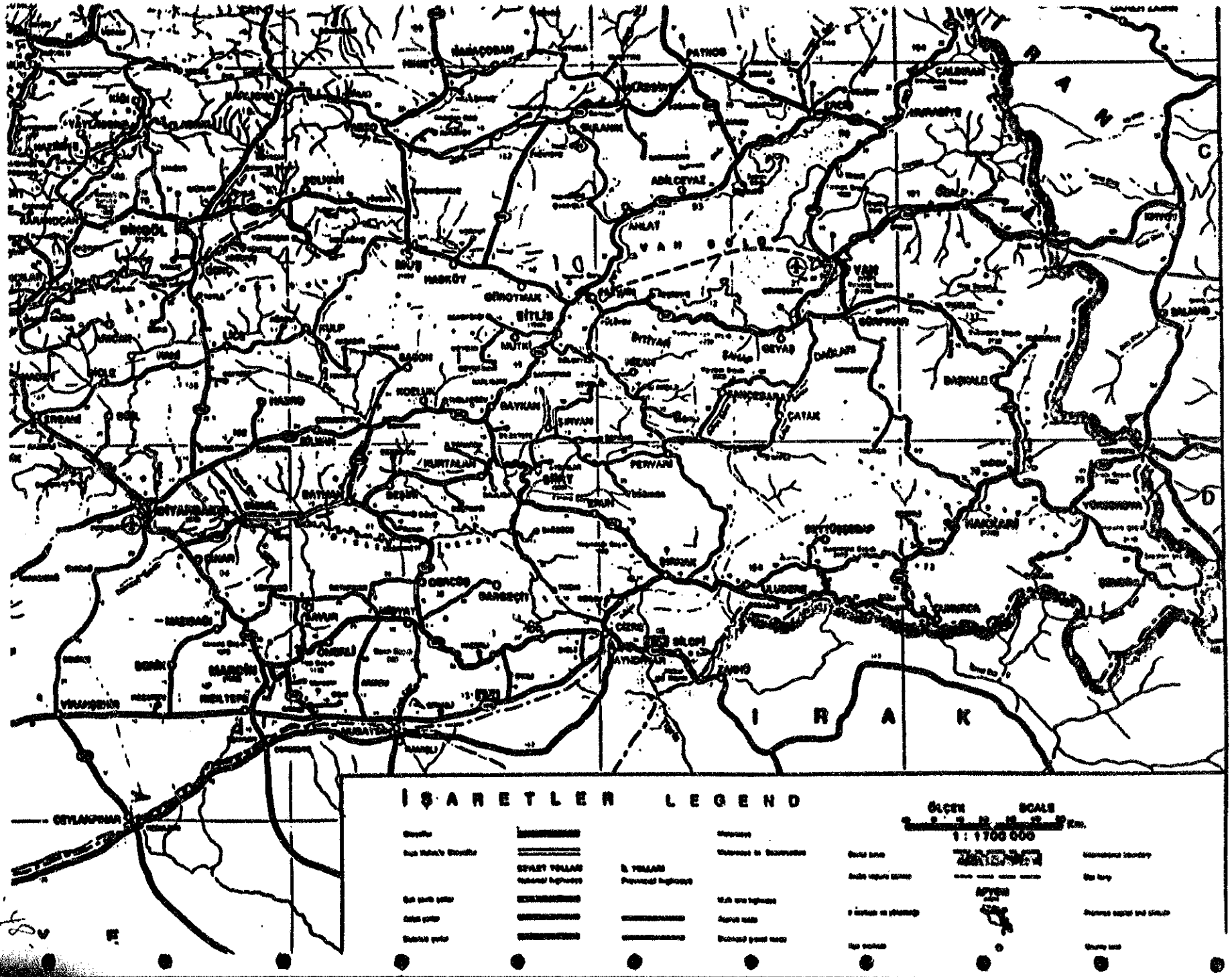
The place names provided below are the ones used by the Government of Turkey to identify the refugee concentration areas.

REFUGEE CONCENTRATIONS

NAME	LOCATION
SUMAKTEPE	372115N0424532E
ISIKVEREN	372101N0424940E
KAYADIBI	372057N0425328E
YILDIZ	371923N0425815E
YEKMAL	372203N0430730E
ANDAÇ	372100N0431430E
ÜZÜMLÜ	371510N0433155E
IŞIKLI	371405N0434100E

(NOTE: The Turkish military report refugees from this location are moving toward the ASMAÇORPRU area.)

ÇAYIRLI	371430N0434620E
KARASU	371230N0435200E
PIRINCEKEN	371430N0435550E
GENISDERE	374900N0440500E
YESILOVA	370300N0442100E
BORDER POST 49	371400N0433500E
ASMACORPRU	371600N0433630E


İŞARETLER LEGEND
ÖLÇEK SCALE
1 : 1700 000
VAN GÖLÜ
VAN
BİTLİS
MUŞ
HASKÖY
GÖROYMAK
MUTKİ
SASON
KOELUK
BAYKAN
ŞİRVAN
KURTALAN
BATMAN
BEŞİRİ
SİİRT
PERVARİ
ERUH
ŞIRNAK
CİZRE
SİLOPİ
AYNDIYAR
ZAKHO
ULUDERE
HAKKARİ
YÜKSEKOVA
ÇATAK
GEVAŞ
DAĞLARI
BAŞKALE
GÜRPINAR
ADİLCEVAZ
AHLAT
PATNOS
ERCİŞ
MURAŞİYE
ÇALDIRAN
BİNGÖL
KULP
HAZRO
DİYARBAKIR
MARDİN
MİDYAT
GERCÜŞ
GARGEÇİT
SAVUR
ÖMERLİ
MAZIDAĞI
DERİK
VİRANŞEHİR
CEYLANPINAR
MUSAYBA
HAMİLİ
İ R A K
C
D

Appendix 1-B

INITIAL ASSESSMENT: FIELD REPORT BY U.S. AMBASSADOR ABRAMOWITZ

```
PAGE 01          ANKARA  05191  01 OF 04  141912Z
ACTION RP-10
INFO  LOG-00    ADS-00    AGRE-00   AID-01    AMAD-01   CIAE-02   EB-01
      EUR-01    FDRE-01   HA-09     EHS-05    INRE-00   INR-01    IO-19
      NEA-01    NSAE-00   NSCE-00   OIC-02    OMB-01    PM-01     P-02
      SP-01     SR-01     SSO-00    SS-01       /060W
                  ------------------59C0B6  141917Z /44 38
O 141918Z APR 91
FM AMEMBASSY ANKARA
TO SECSTATE WASHDC IMMEDIATE 1445
INFO RUEHGV/USMISSION GENEVA PRIORITY 1953
GULF WAR COLLECTIVE
OECD COLLECTIVE
USMISSION USUN NEW YORK 1632
USCINCEUR VAIHINGEN GE//ECCAT// IMMEDIATE
USEUCOM AIDES VAIHINGEN GE
JCS WASHDC//J3/JOD//
JTF PROVIDE COMFORT//INCIRLIK//CC//J2// IMMEDIATE
USCINCCENT
USSOCOM MACDILL AFB FL
USTRANSCOM SCOTT AFB IL
CINCUSNAVEUR LONDON UK
HQ USAFE RAMSTEIN AB GE//CC/OSC//
CINCUSAREUR HEIDELBERG GE//AFACC//
HC TUSLOG ANKARA TU//CC/DO/LG//
DIA WASHDC//NMIC/JS/DAT-7//
SECDEF WASHDC
CHJUSMMAT ANKARA TU//TCH/TDA//
AMCONSUL ISTANBUL
AMCONSUL IZMIR
                        UNCLASSIFIED
                        UNCLASSIFIED
PAGE 02          ANKARA  05191  01 OF 04  141912Z
USIA WASHDC 0343
CDC ATLANTA
UNCLAS SECTION 01 OF 04 ANKARA 05191
DEPARTMENT FOR RP, PM, EUR/SE AND TASK FORCE
DEPARTMENT FOR PRINCETON LYMAN
AID FOR OFDA
GENEVA FOR RMA
BRUSSELS ALSO FOR USEC
CDC FOR BALDWIN, TOOLE, WALDMAN
USIA FOR EU, NEA, P/PFE, P/PFN, VOA/BIN, VOA/BRE,VOA/BRN
INCIRLIK ALSO FOR EMBASSY LIAISON TEAM
E.O. 12356:  N/A
TAGS:  AORC, PHUM, EAID, TU, IZ
SUBJECT: TFKU01: PHYSICIANS FOR HUMAN RIGHTS REPORT

-        ON THE SITUATION IN REFUGEE CAMPS
-        ALONG TURKISH-IRAQI BORDER
1.  THIS IS THE FIRST COMPREHENSIVE REPORT FROM REFUGEE
```

CAMP PROFESSIONALS IN THE FIELD. THE INFORMATION SPANS THE APRIL 8-12 TIME-FRAME. IF WHAT THESE DOCTORS ARE SAYING ABOUT THE CRUDE DEATH RATE IS TRUE, WE ARE IN A LITERAL RACE AGAINST TIME. OBVIOUSLY IT IS BASED ON A

LIMITED SAMPLING; MORE WILL BE KNOWN WHEN ACTUAL REPORTS FROM OTHER CAMPS BEGIN TO REACH US.

2. THE REPORTING INDIVIDUALS ARE KNOWN TO REFUGEE PROFESSIONALS. THEY CAME TO THE EMBASSY TO DESCRIBE THEIR EXPERIENCE AND THE METHOD BY WHICH THEY COLLECTED AND ANALYZED THEIR DATA. AT LEAST ONE, DOCTOR RICHARD SANDLER, WAS ON THE THAI/CAMBODIAN BORDER IN 1979. HE LEFT A COPY OF HIS BOOK ON MEDICAL CARE OF REFUGEES WITH THE EMBASSY. DEPARTMENT MAY WANT TO VERIFY THE BONAFIDES OF THESE INDIVIDUALS WITH THE CENTERS FOR DISEASE CONTROL INTERNATIONAL HEALTH PROGRAM OFFICE. ASK FOR BOB BALDWIN.

3. NONETHELESS, THIS INFORMATION IS WORTH REPORTING. WE HAVE NO WAY TO VERIFY ITS VALIDITY. WHAT WE DO HAVE IS ANECDOTAL EVIDENCE THAT SUGGESTS THE SITUATION IS EXTREMELY DIRE. THE REPORT IS NOT, REPEAT NOT THE RESULT OF A U.S.G. ASSESSMENT. IT IS BEING PASSED ALONG AS THE FIRST REPORT OF ITS TYPE WE HAVE RECEIVED. WE WILL KNOW MORE WHEN OUR EMBASSY TEAMS LAUNCHED TODAY PENETRATE TO THE FIELD, WHEN OUR DART TEAM ACTUALLY TOUCHES DOWN, AND WHEN THE MILITARY IS ON THE GROUND IN

THE CAMPS.

4. BEGIN TEXT OF DOCTOR'S REPORT:

- RICHARD H. SANDLER, MD
- PAUL R. EPSTEIN, MD, MPH
- ROBERT COOK-DEEGAN, MD
- ASFANDIAR SHUKRI, MD

OVERVIEW OF DEMOGRAPHICS

WE NEED TO REVIEW AND COLLATE OUR DATA, WHICH WILL TAKE A FEW HOURS FOR THE PRELIMINARY RESULTS. GROSSLY, THE CAMP DEMOGRAPHICS AT CUKURCA ARE AS FOLLOWS:

- 40 PERCENT UNDER 5 YEARS OLD
- 3 PERCENT OVER 65 YEARS OLD
- LESS THAN 1 PERCENT PREGNANT WOMEN
- PARTRUITION (DELIVERY) RATE APPROXIMATELY 0.5/12,000
- REFUGEES PER DAY.
- SOME 20 PERCENT OF WOMEN ARE BREASTFEEDING, BUT LESS THAN 1/2 OF THESE ARE LACTATING (SECONDARY TO
- MALNUTRITION, DEHYDRATION, AND/OR STRESS)
- THE REFUGEES APPEAR TO BE LARGELY URBAN - WITH THE

- FULL RANGE OF PROFESSIONAL AND SUPPORT SERVICE
- SKILLS EXPECTED. WE MET MANY DOCTORS, ENGINEERS,
- TEACHERS, ETC. FOR EXAMPLE, IN CUKURCA, THERE WERE
- ABOUT 30 DOCTORS AND 10 NURSES.

CRUDE DEATH RATE IN CUKURCA (PROBABLY THE CAMP WITH THE BEST SERVICES), IS CURRENTLY IN THE ORDER OF 10/10,000 PER DAY. THIS TRANSLATES, BASED ON A POPULATION FIGURE OF 700,000 ALONG THE IRAQI-TURKISH BORDER, INTO A DAILY DEATH RATE OF 400-1000 DEATHS. THIS FIGURE WILL INCREASE UNLESS THERE IS IMMEDIATE INTERVENTION. VIRTUALLY ALL OF THESE DEATHS ARE EASILY PREVENTABLE OR TREATABLE. OVERALL, SINCE THIS CAMP MAY HAVE THE LOWEST CRUDE MORTALITY RATE, THE OVERALL MORTALITY RATE FOR THE IRAQI-TURKISH BORDER CAMPS IS PROBABLY SIGNIFICANTLY HIGHER.

- UZUMLU (DASHTAM) IS A RELATIVELY INACCESSIBLE CAMP
- IN THE MOUNTAINS WITH APPROXIMATELY 200,000 PEOPLE.
- (WE WERE NOT ABLE TO ACCESS THE CAMP. REFUGEES HAVE
- TO WALK ABOUT 4H DOWN 6H UP A STEEP MUDDY "ROAD"
- STRETCHING ABOUT 20 KM). WE DID SEE ABOUT 1,000
- REFUGEES WALKING TO AND FROM THE CAMP, AND
- INTERVIEWED IN DETAIL ABOUT 70 OF THESE. FROM THESE

- SKETCHY REPORTS, WE FEEL SAFE IN SAYING THAT DISEASE
- PREVALENCE, STARVATION, EXPOSURE IS SIGNIFICANTLY
- WORSE IN UZUMLU THAN IN CUKURCA. FOR EXAMPLE, AS
- OF 2 DAYS AGO, THERE WERE REPORTEDLY ABOUT 620 TENTS
- FOR 200,000 PEOPLE, 50 PEOPLE IN THE FIRST FEW DAYS
- AFTER ARRIVAL HAD LAND MINE INJURIES, FEWER THAN 1/2
- THE CHILDREN HAVE SHOES. WOOD/FUEL IS VERY SCARCE.

- WE HAD CONFLICTING REPORTS ON POTABLE WATER
- AVAILABILITY THERE.
- 2/3 OF THE THE OVERALL MORTALITY IS IN INFANTS AND
- TODDLERS. THE CAUSE OF DEATH IS PRINCIPALLY
- DIARRHEA AND DEHYDRATION. DYSENTERY (BLOODY
- DIARRHEA) ACCOUNTS FOR APPROXIMATELY 10-20 PERCENT OF
- DIARRHEAL ILLNESS. EXPOSURE, MALNUTRITION, AND
- PERHAPS LOWER RESPIRATORY INFECTIONS ALSO ARE
- IMPORTANT.

VACCINATION RATES: VIRTUALLY ALL OF THE CHILDREN IN CUKURCA ARE UP TO DATE WITH THEIR IMMUNIZATIONS.

GENERAL OBSERVATIONS: ABOUT 90 PCT OF POP IN CUKURCA HAVE SOME FORM OF FOOT COVERING - USUALLY LOW RUBBERS.

/

BLANKETS AND TENTS ARE IN SHORT SUPPLY. THERE IS VIRTUALLY NO RAINGEAR.
SANITATION AND WATER SUPPLY. THIS CLEARLY VARIES CAMP

TO CAMP AND EVEN WITHIN CAMPS. IN GENERAL, THERE IS NO OR LITTLE POTABLE WATER OR SAFE SANITATION FACILITIES.

ORGANIZATIONAL PRIORITIES

- 1. THE CAMPS APPEAR TO HAVE LITTLE TO NO
- ORGANIZATIONAL STRUCTURE. THIS COMPROMISES ALL
- OTHER PUBLIC HEALTH AND BASIC RELIEF EFFORTS.
- PRIORITIES INCLUDE:
- 2. POTABLE WATER TO INTERRUPT CYCLE OF WATERBORNE
- DISEASE SPREAD (METHODS INCLUDE COLLECTION IN TANKS
- WITH CHLORINATION, ISOLATION OF STREAMS FROM
- SANITATION FACILITIES, BOILING OF WATER).
- 3. SANITATION FACILITIES - WITH ADEQUATE LATRINES
- SAFELY DISTRIBUTED.
- 4. FOOD - APPROPRIATELY DISTRIBUTED TO ALL -
- ESPECIALLY THOSE IN MOST NEED. IF ONLY "DROPPED,"
- THEN THE MOST AGILE MALES GET SUPPLIED, WHILE WOMEN
- AND CHILDREN MAY GO HUNGRY. BABY FORMULA SHOULD IN
- GENERAL NOT BE USED. MOST WOMEN WILL BE ABLE TO
- LACTATE WITHIN DAYS OF RECEIVING ADEQUATE FOOD AND
- WATER.
- 5. SHELTER, BLANKETS, SHOES
- 6. FUEL FOR COOKING, HEAT, CLOTHES DRYING, AND
- POSSIBLY WATER PURIFICATION IN THE SHORT TERM.
- 7. PROPANE STOVES OR OTHER COOKING MECHANISMS LIKE

- CHARCOAL NEED TO BE PLANNED.

OVERVIEW OF MEDICAL PRIORITIES

- 1. THE FIRST PRIORITY IS TO FOCUS ON PUBLIC HEALTH
- ASPECTS OF THE EMERGENCY, INCLUDING ADEQUATE WATER
- SUPPLY, SECURING ADEQUATE POTABLE WATER, CLEARING UP
- DIARRHEA, AND PROVIDING ADEQUATE FOOD FOR SMALL
- CHILDREN, E.G. CORN SOYA BLEND.
- 2. INITIAL SURVEYS (SHOULD TAKE ONLY A FEW
- HOURS/CAMP) WILL NEED TO BE DONE - AND REPEATED AT
- INTERVALS IN EACH CAMP TO MOST APPROPRIATELY DIRECT
- MEDICAL RELIEF EFFORT.
- 3. ASSESSMENT AND IMPLEMENTATION SHOULD INCLUDE
- INDIGENOUS RESOURCES IN THE CAMPS.

- 4. ORAL REHYDRATION PROVISION - ORGANIZED DELIVERY,
- AVAILABILITY, AND EDUCATION ARE THE CRITICAL,
- IMMEDIATE MEDICAL TREATMENT NEEDS. THIS IS SAFE,
- CHEAP, EFFECTIVE THERAPY FOR THE MAJOR KILLER
- (DEHYDRATION) IN THE CAMPS. (THE TYPE OF ORAL

- REHYDRATION - PACKETS, RICE WATER, ETC.- WILL NEED TO
- BE EVALUATED). EVERY EFFORT SHOULD BE MADE TO AVOID
- THE TEMPTATION TO PUT MUCH EFFORT INTO EARLY
- SURGICAL AND OTHER INTENSIVE MEDICAL INTERVENTION
- MODALITIES. FIRST TAKE CARE OF BASICS. SINCE
- DYSENTERY IS PRESENT, EARLY IDENTIFICATION OF
- OFFENDING ORGANISMS (AND THEIR ANTIBIOTIC
- SENSITIVITIES FOR POSSIBLE ANTIBIOTIC USE MAY BE
- INDICATED. E.G., ANTIBIOTICS (EG PENICILLIN FOR
- ADULTS, AMOXICILLIN FOR CHILDREN) ARE HELPFUL FOR THE
- TREATMENT OF LOWER RESPIRATORY TRACT INFECTIONS.
- 5. QUICK SURVEYS OF THE UNVISITED CAMPS SHOULD
- DISCERN WHETHER OR NOT MEASLES VACCINATIONS HAD BEEN
- ADMINISTERED TO THE POPULATIONS WHILE THEY WERE
- STILL IN IRAQ. IF THE DITERMINATION IS MADE THAT
- MEASLES VACCINATIONS HAD NOT BEEN ADMINISTERED, IT
- WILL BE IMPORTANT TO CONSIDER ESTABLISHING A
- PROGRAM.

OTHER GENERAL THOUGHTS ON THE RELIEF EFFORTS:

- INCLUDE SOME EFFORT TO HELP THE SURROUNDING TURKISH
- VILLAGES. THEY ARE IN GENERAL QUITE POOR THEMSELVES

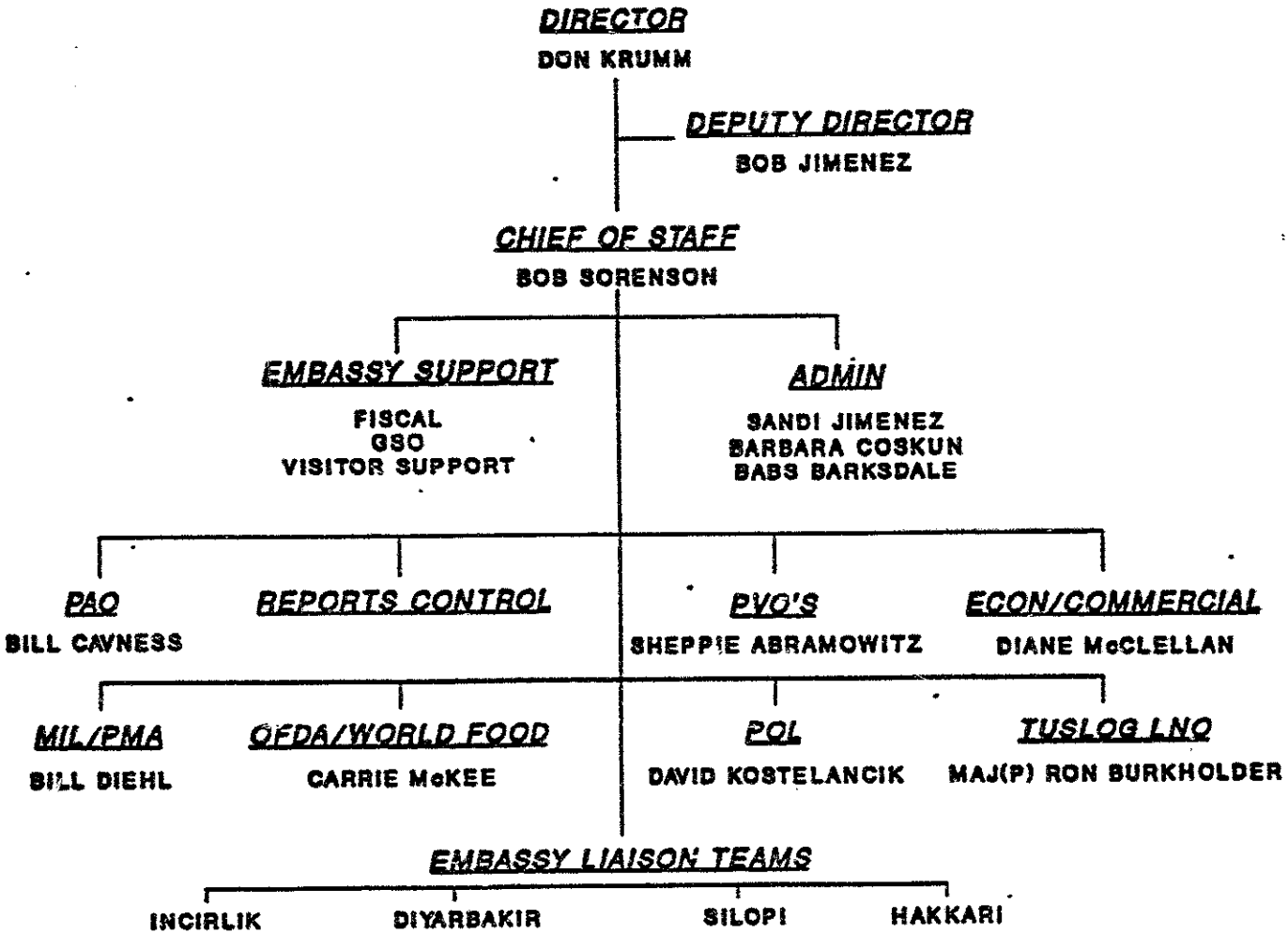
- AND STRUGGLING. MOST LIKELY, THEY WILL BE RESENTFUL
- OF A MASSIVE RELIEF EFFORT.
- PLAN FOR THE FACT THAT THIS IS BY NECESSITY A SHORT
- TERM EFFORT - (UNLESS MORE PERMANENT SHELTERS ARE
- BUILT TO WITHSTAND WINTER WEATHER - WITH ALL THE
- IMPLICATIONS CARRIED OF BUILDING NEW LARGE CITIES IN
- THIS REGION)]] WITH WEATHER CONDITIONS AND TERRAIN.

- THESE SITES ARE ABSOLUTELY UNLIVABLE AND
- UNSUSTAINABLE.

END TEXT
ABRAMOWITZ

Appendix 1-C

U.S. EMBASSY REFUGEE TASK FORCE



Previous Page Blank

Appendix 1-D

BRIEF HISTORY OF THE KURDS

Reproduced Page [illegible]

the disappearance of which could greatly complicate the strategic planning of the superpowers.

Kurdistan

For mapmakers—if not for international lawyers—there *is* such a place as Kurdistan. The Kurds inhabit a crescent of high mountains, one tip of which abuts the Euphrates in northern Syria, the other the Iranian city of Kermanshah. The bow of the crescent arches north and east (from Syria) through Turkish Armenia and Iranian Azerbaijan. Within the curve, the lowest points reached are Khanaqin (northeast of Baghdad near the Iraq-Iran border), Kirkuk, and Mosul in Iraq; and Mardin and Urfa in Turkey. Inside the crescent lies the entirety of the Zagros Mountains, a considerable portion of two great river systems—the Tigris and the Euphrates—and lesser waterways, like the Great and Little Zab rivers. No matter how the most fervent of Kurdish nationalists may construe the situation, however, at no point does Kurdistan find an outlet to any of the great seas of the region. This factor has considerably inhibited the Kurds' national development.

Kurdistan has many natural resources, although the political turmoil that has existed in Kurdish regions for over 200 years has prevented an accurate assessment of them. There are, however, two natural resources about which there can be no doubt, and both of them are precious in the Middle East: oil and water. The richest oil fields of Iraq are located around Kirkuk and Khanaqin, disputed Kurdish territory; and the rivers in Kurdish areas provide a plentiful supply of water, which can be and is being dammed and converted into electric power. Although mineral resources such as chrome and iron may exist, the area is primarily agricultural. Staple crops include wheat, barley, tobacco, rice, peas, and lentils. The Kurds also raise sheep and goats and use cattle as work animals.

The Kurds

Population

Population statistics for the Kurds cannot be trusted for the very good reason that all the countries in which the Kurds dwell have a strong vested interest in downplaying their precise numbers. Those countries are Turkey, Iran, Iraq, Syria, and the Union of Soviet Socialist Republics (USSR). At least one, Turkey, maintains the fiction—resolutely in the face of all reason—that Kurds do not exist, that what the world knows as Kurds are in fact "mountain Turks." Another country, Iraq, has written the existence of Kurds into its constitution; that is, the constitution makes reference to two "nations" in Iraq: the Arab and the Kurdish. But the Arab-dominated Iraqi government will not concede that the Kurds in Iraq are as numerous as the Iraqi Kurds claim they are. The pattern that prevails wherever the Kurds are a minority in the Middle East is that official government statistics play down their numbers.

It is important to understand how widely the estimates of Kurdish populations vary. *New York Times* reporter Dana Adams Schmidt estimates around 2 million Kurds in Iraq, 4 or 5 million in Turkey, 3 million in Iran, around 300,000 in Syria, and about 175,000 in the USSR—around 10 million all told.[1] Contributors to *People Without a Country* claim over 6 million in Turkey, over 5 million in Iran, almost 3 million in Iraq, almost 1 million in Syria, and around 200,000 in the USSR—15 million altogether.[2] Derk Kinnane, a Dutch writer and formerly a lecturer in Baghdad, puts the figures at 1.2 million in Iraq, 1.4 million in Iran, 2.5 million in Turkey, 250,000 in Syria, and between [illegible]0,000 and 60,000 in the USSR—a little over 5 million.[3] Even claims as to where the Kurds live vary. With the exception of ultranationalist Turks, all commentators agree that there are Kurds in Turkey, Iran, Iraq, Syria, and the USSR. But some people would also

list Afghanistan; Algeria was cited to me once; and the London-based Minority Rights Group includes Lebanon.

My own estimate of the number of Kurds and their location tends to be conservative: at least 3 million in Turkey, over 2 million in Iran, close to that number in Iraq, and very small colonies in Syria and the USSR. I estimate that the total is between 7 and 7.5 million. As for their locale, they are only politically significant in Turkey, Iran, and Iraq.

Physical Attributes

The acting British high commissioner for Mesopotamia after World War I, Sir Arnold Wilson (a man who would have legislated the Kurds out of existence),[4] described the Kurds as "physically perhaps the finest specimens of the human race in the Middle East, and they resemble Afghans in character and to some extent in physiognomy."[5] Wilson is but one of many who have found the Kurds to be physically impressive. André Singer, an anthropologist, speaks of them as "practically the only Central Asian group that remained unmixed by the influx of invading nations." He notes that although invading Mongols, Arabs, Persians, Turks, and even Macedonians all left their mark on other indigenous peoples, the Kurds in their protected mountainous home were able to preserve their identity.[6]

Character

Assessments of the Kurds' character also tend to be romanticized. Ely Soane quotes a traditional opinion in the Middle East about Kurds:

> Shedders of blood, raisers of strife, seekers after turmoil and uproar, robbers and brigands; a people all malignant and evil-doers of depraved habits, ignorant of all mercy, devoid of all humanity, scorning the garment of wisdom; but a brave race and fearless, of a hospitality grateful to the soul, in truth and honor unequalled, of pleasing countenance and fair cheek, boasting all the goods of beauty and grace.[7]

The exaggerated character assessments and admiration of the Kurds as physical specimens may be accounted for—at least in part—by the contrast between the Kurds and other Middle Eastern peoples encountered by early travelers.

The Kurds differed in three obvious respects from their neighbors. First, they were a mountain people and more often than not, free. Kurdish women did not wear the veil, and they worked alongside the men—which to a Western traveler would have seemed preferable to the seclusion in which Arab, Turkish, and Persian women are kept. Second, the Kurds were exuberant and flamboyant, characteristics embodied in their splendid costumes. To this day, Kurdish men and women favor floral scarves and cummerbunds, and the women drape themselves with chains of gold coins. Third, and an attribute the British travelers, themselves gentry, particularly admired, the Kurds were superb—but by all accounts reckless—horsemen. In fact, it was as mounted cavalry that the Kurds achieved notoriety, much like the Cossacks in the early 1800s, when the czars went to war against Persia. two-thirds of the Persian forces were made up of Kurdish tribesmen.[8]

Society

Today, in the more primitive areas such as northeastern Iraq, the tribe is the natural unit of allegiance, and there is communal distribution of wealth. However, in most parts of Kurdistan, the land is owned by wealthy *aghas*, descendants of Kurdish lords who, in earlier times, held the land in fief. Originally, the Kurds were nomads, but at the beginning of the sixteenth century, under Sultan Selim I, the nomadic way of life came under attack by the Ottomans who needed Kurdish tribesmen as border guards. Hence, the Turks imposed the feudal pattern on Kurdistan, an important point to remember even though feudalism died out in Kurdistan at the end of the nineteenth century.[9] The Kurds' refractoriness, which gives so much trouble to governments of the Middle East today, is probably an inherited trait. The Turks encouraged the Kurds

to be wild, even savage, so they would frighten off the encroaching Persians to the East.

There was a contradictory element in Kurdish character. Along with their fierce independence, the tribesmen obeyed their leaders without question, and these leaders exercised the power of life and death over the tribesmen. Such control is a feature of nomadism since a tribe that is constantly on the move with all of its worldly possessions is vulnerable to predators. Hence, the nomadic tribe must allow itself to be organized and must follow the orders of its leaders.

By the nineteenth century, although there were few purely nomadic tribes left among the Kurds, the largest of them—the Jaf and the Herki—were formidable aggregations. In 1820, the Jaf tribe totaled 60,000 and was wholly nomadic until 1900. However, in the 1950s, only 2,000 to 3,000 of the Jaf tribesmen were still nomads,[10] and by the time the Kurds become of interest to us (that is, in comparatively recent modern times), not only had nomadism all but disappeared, but the institution of the freeholding tribesman had also declined. The pattern has been to move from nomadism to feudalism to landlordism—the last I equate with detribalization. Under the British, the *aghas* were easily induced to fall in line with British-sponsored proposals to register tribal land in their names, which encouraged a trend toward private property relations started by the Turks. The essence of tribalism is that a tribe owns its land in common; landlordism is the antithesis of that principle.

Tribal organization persists in the more primitive regions of Kurdistan up to the present day. One can still find Kurds who owe allegiance to no man, manufacture their own clothes, and raise food on their own land. Commodity exchange is almost unknown to these primitive people, of whom Barzani, the great Kurdish guerrilla leader I will have occasion to refer to later, was one.

As market relations replaced feudal relations in Turkey, Iraq, and Iran, detribalized Kurds were driven, or drifted, off the land to the major cities of the Middle East where they

became unskilled laborers, so that today, whole quarters are given over to Kurds in Beirut and Damascus. These expatriates have been de-Kurdified and have identified with the dominant cultural group. Some have risen very high—as Syrians (for example, Husni Zaim and Khalid Bokdash), Turks (Ismet Inonu), or Iraqis (Abdul Karim Kassem)—but these people are exceptional, since the path to the top for Kurds, even when they assimilate, is generally difficult.

Mostly the Kurds are illiterate. Ismet Vanly, writing in *People Without a Country*, says that in Erbil, Irbil (Iraq), the richest of the Kurdish provinces, had only seventy schoolchildren per 1,000 inhabitants.[11] The Kurds are also poor. In Turkey they are the principal denizens of the shantytowns that pustulate around the major industrialized cities.

Discrimination

The Kurds are woefully discriminated against on three grounds: race, religion, and history. Racially they are distinct. They are Aryans, like the Iranians, and the language they speak is of the Indo-European group, which sets them apart from the Semitic-speaking Arabs in Iraq and Turkic speakers in Turkey. But even though they are linguistically allied with the Iranians, the two languages are not mutually intelligible.

In regard to religion, the Kurds and Iranians are also different. By and large, Kurds are Sunni Muslims. In Iran, where the state religion is Shiism, Kurds who might ordinarily live as equals with their racial brothers are alienated on the grounds of religion. And, ironically, in Iraq the situation is precisely the reverse. There the Kurds are coreligionists of the dominant Sunni Arabs, but as Kurds (that is, non-Arabs) they are considered aliens.

Finally, the Kurds are discriminated against because of their alleged past wrongs. The Middle East is an area racked by ancient feuds, and as neighbors of the Turks, Persians, Arabs, Armenians, Assyrians, and Jews, the Kurds have meted out their share of punishment over the centuries. In the way of things in the Middle East, such acts must be repaid.

Appendix 1-E

ENVIRONMENTAL HEALTH SURVEY FORM

DATE: CAMP #, NAME, COORDS:

CAMP SIZE: 1. POPULATION EST: 2: AREA OCCUPIED:

SKETCH OF CAMP LAYOUT:

PHYSICAL FEATURES:

TERRAIN: LEDGE BOULDERS MIXED

SOIL: SAND CLAY LOAM

ELEVATION (RANGES)

DRAINAGE: GOOD MODERATE SLOW POOR

COMMENTS:

SHELTERS (TYPES, CONSTRUCTION, LOCATIONS)

WATER SUPPLY

SOURCES: QUALITY: CLEAN TURBIDITY SUSPECT CONTAMINATED

QUANTITY:

COLLECTION/DISTRIBUTION(HANDLING)

IDENTIFICATION OF "LOCAL" HEALTH CARE WORKERS:

SANITATION

1. CURRENT FECAL PRACTICES

CURRENT URINE PRACTICES

CULTURAL

ESTIMATED QUANTITIES

COMMENTS/RECOMMENDATIONS:

SHORT TERM

LONG TERM

2. SOLID WASTE

TYPE

PRACTICES

NEED

COMMENTS/RECOMMENDATIONS

3. SPECIAL ITEMS

DECEASED

MEDICAL

EPIDEMIC

VECTOR CONTROL

1. TYPES:	PRESENT	MANY	FEW	NONE	COMMENTS
MOSQUITOES					
LICE					
FLIES					
OTHERS					

2. CONTROL MEASURES

3. COMMENTS

PRIORITIZATION OF ENVIRONMENTAL HEALTH ACTIVITIES

RESOURCES NEEDED:

STAFF

REFUGEES

EQUIPMENT

Appendix 1-F

TYPICAL CAMP LAYOUT

COMMUNITY PLAN

The temporary community is designed around a basic sanitation plan. Community components include the following.

Tent

The tent is the individual unit and is calculated to hold an average of 5.5 people.

Neighborhood

The neighborhood is the basic building unit and consists of 12 tents in a square, all opening inward to afford security and clan integrity. The neighborhood contains 12 × 5.5 = 66 people. There are three latrines (one latrine for 22 people) and one exit. Individual families cook in the area in front of their tent. The common area is where the children play and other common activities take place, such as gardening and visiting.

Block

The block contains 48 tents in four neighborhoods, or 264 people (4 × 66 = 264). Between blocks are firebreaks and small roads and paths.

Village

The village contains 192 tents in four blocks, or 1,056 people. Each village or two should have a water point and washing area.

Subcommunity

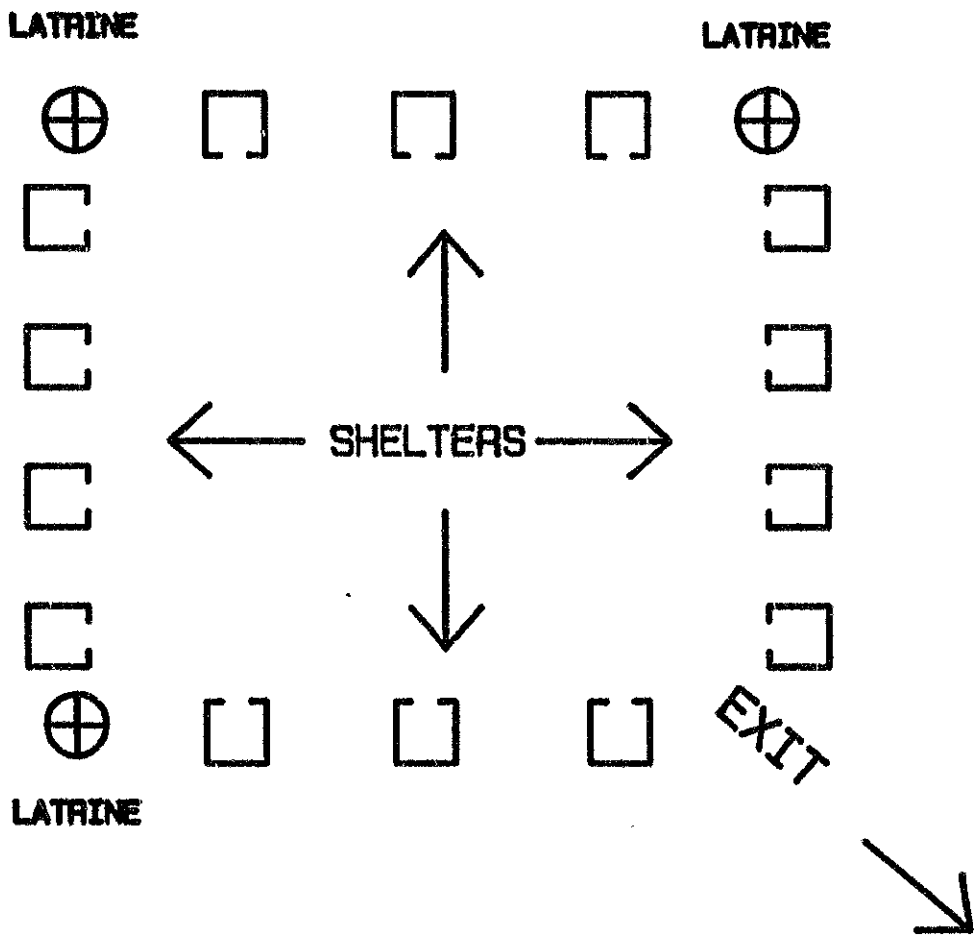
The subcommunity contains 768 tents in four villages, or 4,224 people. It also should contain a clinic area, supplemental feeding space, and meeting facilities.

Temporary Community

The temporary community contains four or five subcommunities that can hold 16,896 to 21,120 people (considered the maximum population). The temporary community should have a major access road, warehouses, hospital, administrative centers, communication post, etc.

Each temporary community should have a processing point a short distance from the community where the populations coming into the community can be screened and provided with information, food, water, tent, or village assignment, etc. This is one of the few ways accurate demographic and health status can be established.

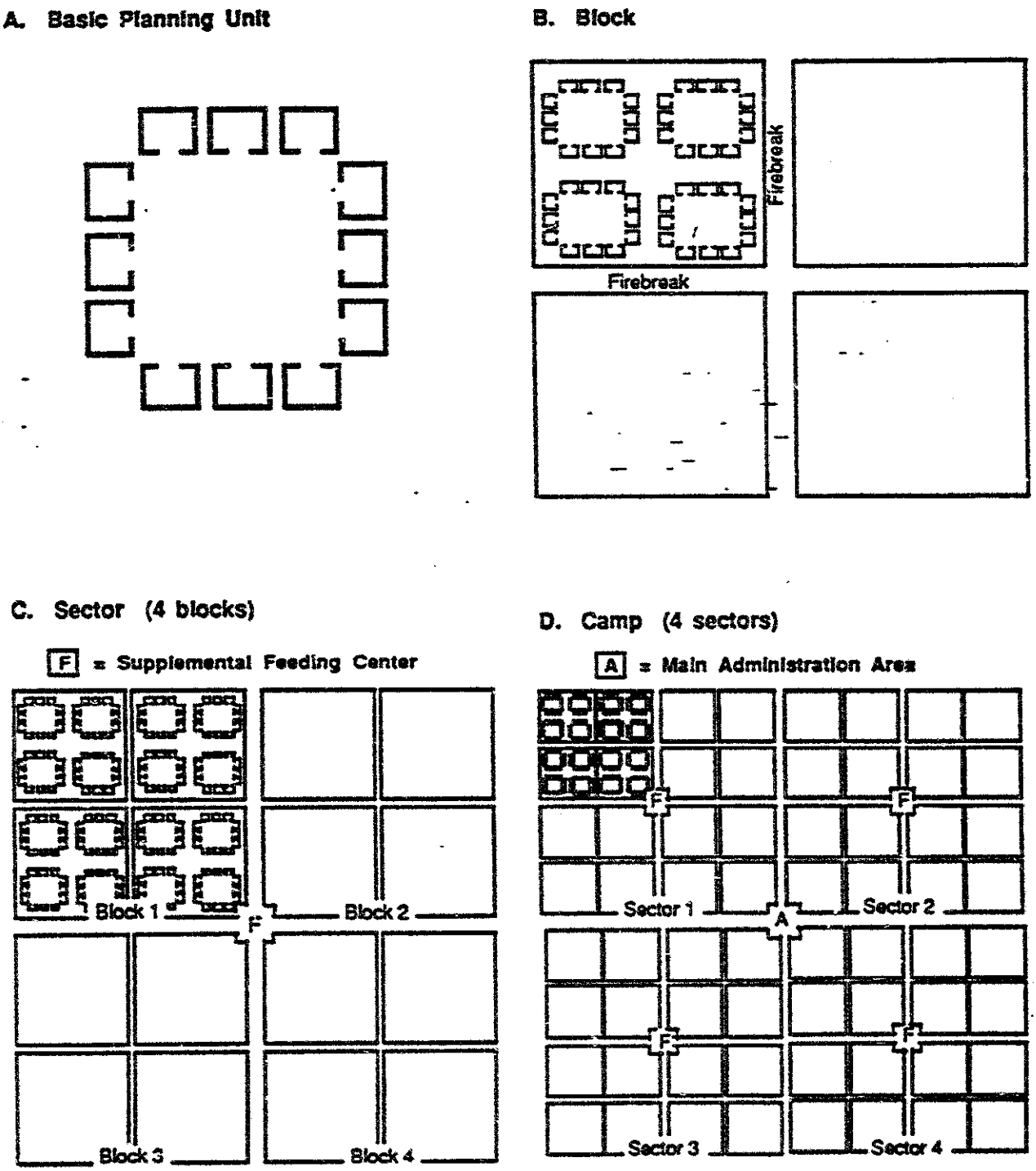
BASIC NEIGHBORHOOD



SOURCE: Fred Cuny, Intertec and University of Wisconsin Disaster Management Center

Figure 6-2

STANDARD SITE PLAN FOR A CAMP OF 20,000 PEOPLE

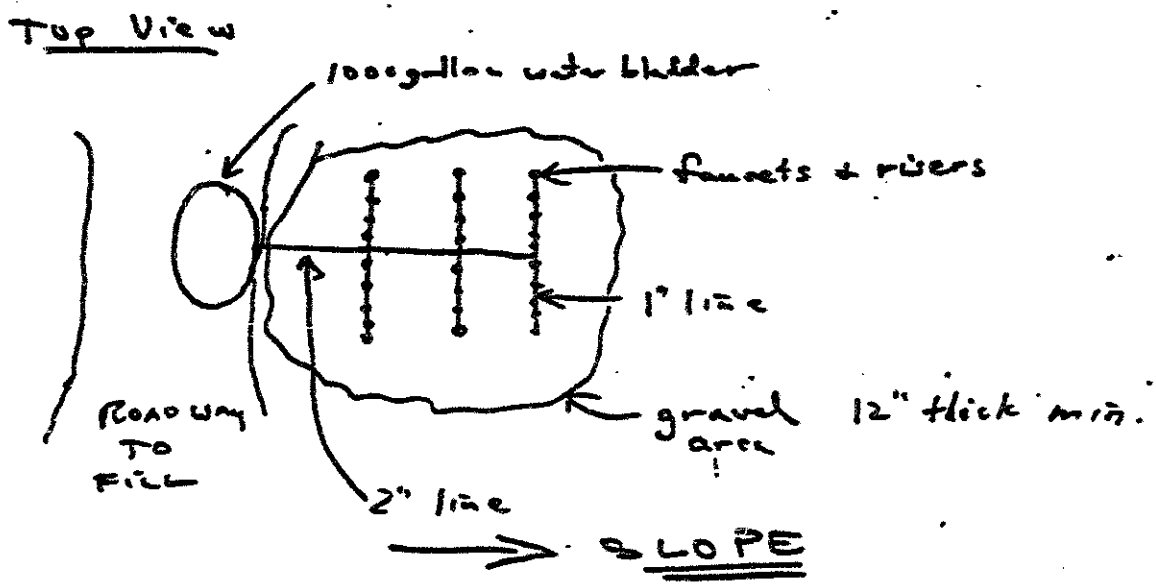


SOURCE: Fred Cuny, Intertec and University of Wisconsin Disaster Management Center

Appendix 1-G

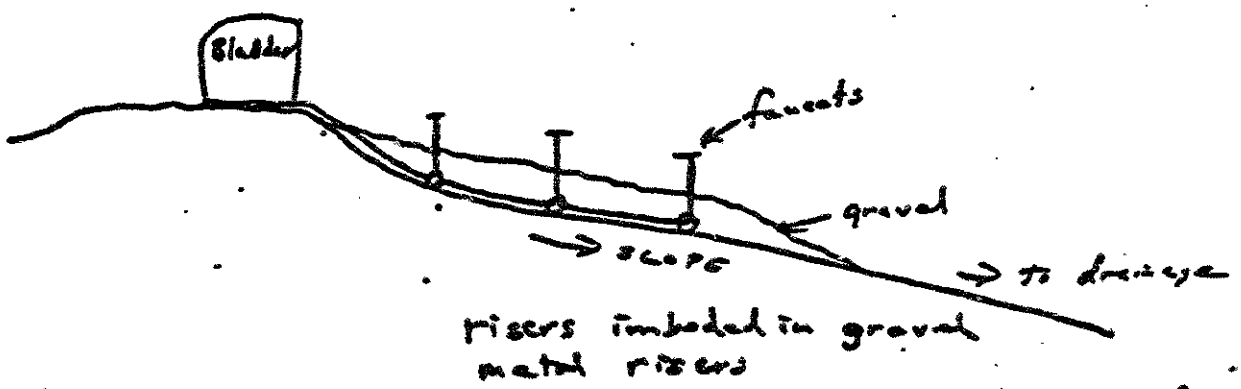
TYPICAL WATER-POINT DISTRIBUTION

NOT TO SCALE



SIDE VIEW

for 1000 people
20 to 30 faucets
31" high risers
½" faucets
1000 gal bladder



Appendix 1-H

DRAFT COUNTRY EXIT REPORT ON ZAKHU, IRAQ

Water and Sanitation Report
April 25, 1991
Draft Exit Report on the Water and Sanitation Program
Kurdish Situation
Richard Swenson, Consultant from WASH as part of the DART Team

Due to time constraints this is not a complete country activity report for all of my time in Turkey. Such a report will follow. This report will focus on the new camp construction at Zakhu.

BACKGROUND

Prior to arriving at Silopi, briefings were held with the U.S. military engineering unit to discuss water and sanitation possibilities in a new camp setting. A general concept paper was prepared covering the short and long range time frames for implementation. General agreement was reached that the only realistic solution for water and sanitation was to try and relocate the populations where possible to a suitable site where an infrastructure could be built. The mountainous regions lack soils for disposal of feces except near streams where soil has accumulated over time.

ZAKHU

On April 20, 1991, I arrived at the Zakhu site about 5 p.m. One tent had been constructed. Iraqi soldiers were on the mountain top and gun-carrying police were in a building compound 100 meters away. Marines were around but I felt worried about security. We were sitting ducks. The next day the Marines took the hill top and the nearby police left. Security was not on my mind after that.

The camp site location at Zakhu is excellent. There are gently rolling hills to provide drainage, lots of space, a paved road nearby, good potential for water, and deep soils that have lots of clay.

We immediately formed a working team consisting of the Marine Lieutenant, U.S. Army Sergeant, and myself. We reviewed how the camp should be constructed based upon a sanitation plan and the cultural characteristics of the population. Fred Cuny was very helpful in providing the shelter concept based on his experience. That evening approximately 30 tents were put up. The Marines quickly developed their resources to systematize the project. The next morning the tents available on site were put up. We were out of tents until the next

day. Finally, more tents arrived and we got more help and started a team laying out the tents and other teams putting them up. The backhoe started digging the pits for latrines.

LATRINES

The latrine construction plan was developed based upon interviews with the refugees in the mountains and the Kurdish person at Incirlik. Men and women do not share latrines. Children use the female latrines. In the total population there were approximately 30 percent men. Therefore, approximately two-thirds of the latrines need to be for women and children. Privacy is very important and use of communal latrines is not acceptable for two reasons: communal latrines become filthy even with lots of maintenance effort and children tend to use the ground if a latrine is not nearby. Communal latrines by their nature are located a distance from the shelters.

The soils are very important before finalizing the latrine system. The soils at the site are heavy clays but have good structure near the surface. There will be no problem with soil caving. There were no stones down to eight feet.

The only device available for digging pits was the Marine backhoe so that was used to dig a hole 30" wide, 6' deep, and 8' long. This is not the best alternative as the hole is too long and makes the latrine floor too big but it was the best we could do given the resources. A 3-FOOT DIAMETER AUGER IS THE DEVICE REALLY NEEDED. All latrines could be constructed in short order if this could be provided.

Latrine floors are being constructed from locally supplied press board. This material will not last more than a week or two. It is not acceptable but is the only material available at this time. Plywood is better but concrete is a must.

A PROGRAM OF MAKING LATRINE FLOORS OUT OF CONCRETE CAN BE ACCOMPLISHED AS SOON AS THE REFUGEES START ENTERING THE CAMP. MATERIALS WILL HAVE TO BE PROVIDED. The marine carpenter can make the forms.

It is my understanding that the U.S. military engineers are about to let a contract in Incirlik with a Turkish contractor to construct communal latrines. This contract as currently understood could be a very big mistake. I'll try and put this into perspective.

The refugee population deaths are largely attributed to dehydration. Dehydration is mostly caused by diarrhea. Diarrhea is mostly caused by poor sanitation. Therefore, good sanitation and water are extremely important to break this killing cycle of transmission. Latrines alone will not solve this problem. Latrines must be maintained and it only works when the latrines are organized around the family or clan unit. The U.S. military engineering planners in Incirlik and Stuttgart are ignoring this fact.

LATRINES—LONG TERM PERSPECTIVE

There should be a ready supply of lightweight latrine floors (such as fiberglass) available on short notice. A proposal will be developed for this in the near future.

WATER SUPPLY

After several recon trips, a close-by irrigation well was located. The well apparently has a large enough capacity for several camps. I am sure the water will be bacteriologically safe. A chemical analysis should be done but this well is much better than river water. The pump was quite new and only lacked a power source. It was my understanding that the Seabees were going to install a generator on April 25, 1991, and check out the well. It is about 1 kilometer from the camp. Since no road crossings are involved, temporary irrigation pipe could quickly be placed on the ground from the well to the camp. A temporary water distribution plan was developed using water bladders and a unit of 20 to 30 faucets. Ten water distribution points should be located on the sloping ground so that spillage and drainage will be carried away from the camp site. If water has to be trucked it must be chlorinated and tested.

SUMMARY

The construction of the Zakhu camp was going well largely due to the combined team approach and the outstanding hard labor put in by the Marines—they deserve a medal. General Garner was an excellent supporter of the troops and helped immeasurably in getting the job done. Once refugees arrive they will need to be trained and an inspection team organized to maintain all water and sanitation systems. There are considerable resources within their community.

Appendix 2-A

SCOPE OF WORK

OFDA/TURKEY WATER SUPPLY AND SANITATION EVALUATION IN KURDISH REFUGEE CAMPS

BACKGROUND

As a result of internal conflict in Iraq, vast numbers of Kurdish refugees have migrated to the Iraqi/Turkish border. These people have none of the basic necessities: water, shelter, etc. The OFDA has requested WASH assistance in providing a water and sanitation specialist to participate in a team of specialists that will recommend ways to alleviate the refugee situation.

SCOPE OF WORK

A water and sanitation expert will work within a group of five to seven other specialists in the following areas: Medical, Logistic, Food Supply, and Shelter. They will perform a rapid assessment of the situation and recommend methods by which to provide the most crucial basic services for these needs.

SCHEDULE

Start:	18 April 1991
Field Work:	19 April - 15 May 1991
Finish:	25 June 1991

PERSONNEL

Terrance Rahe—A water and sanitation/public health specialist who has worked extensively in refugee camps.

Appendix 2-B

TRUCK-CLEANING PROCEDURES

1) Flush truck with fresh water and detergent (1/2 full, drive down road, drain).

2) Fill truck 1/4 full with water, add 2 gallons chlorine bleach, drive to mix. Let sit 2 hours.

3) Drain out, operating valves open and close.

4) Repeat until there is no visible oil sheen on water and no odor.

Previous Page

Appendix 2-C

TRANSITION OF WATER AND SANITATION RESPONSIBILITIES

Sector	Agency Lead	In-Place Resources	Military Role	Assets to Remain	Needs	Date of Transfer
Latrine Team	IRC	Latrines in place—contract for modification	None	None	Long-term maint., continued Corps contract monitoring	5-13-91
Garbage Team	IRC	Garbage cans	None	Cans	Contract collection and excavation	5-13-91
Vector Control	IRC	None	None	None	Sprayers, insecticide, protective equipment, laborers	5-13-91
Water/ Storage	IRC	Military: 1 generator (40kw) PVOs: 1 generator (30kw)	Transition assistance, construction, contracting to add'l tanks/tap stands	Tanks, tap stands	Two generators (1 well #1, 1 standby)	After replacement generator and construction administration is completed
Education	IRC	3 GP mediums, PA system	Psyops assist	3GP mediums	PA system	After receipt of PA system
Generators, Pumps	IRC	Refer to water storage	—	—	—	—
Mechanical Support	IRC	Military elect/mech resources	Elect/mech resources	None	Civilian electrician, mech resources	Upon compl. of storage contract and receipt of generators
Planning and implement. long term	IRC	IRC/ODA	None	IRC/ ODA	None	5-13-91