

WEST MOUNTAIN
SUBDIVISION NO. 2

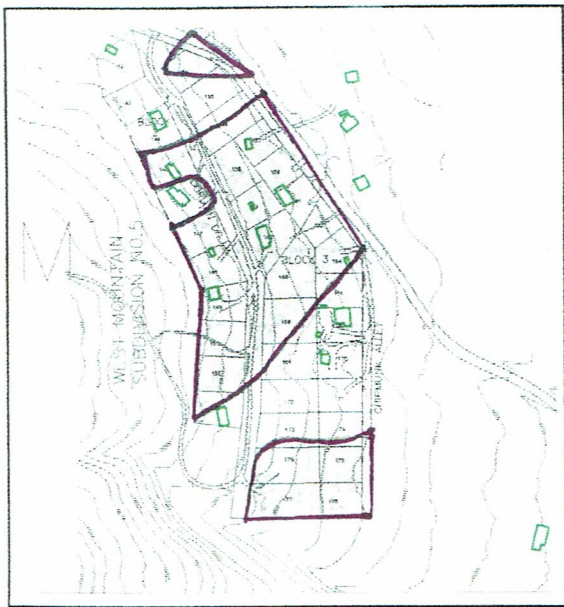
WEST MOUNTAIN
SUBDIVISION NO. 3


WEST MOUNTAIN
SUBDIVISION NO. 4

WEST MOUNTAIN
SUBDIVISION NO. 5

GRATTON & BARN

GRATTON & BARN




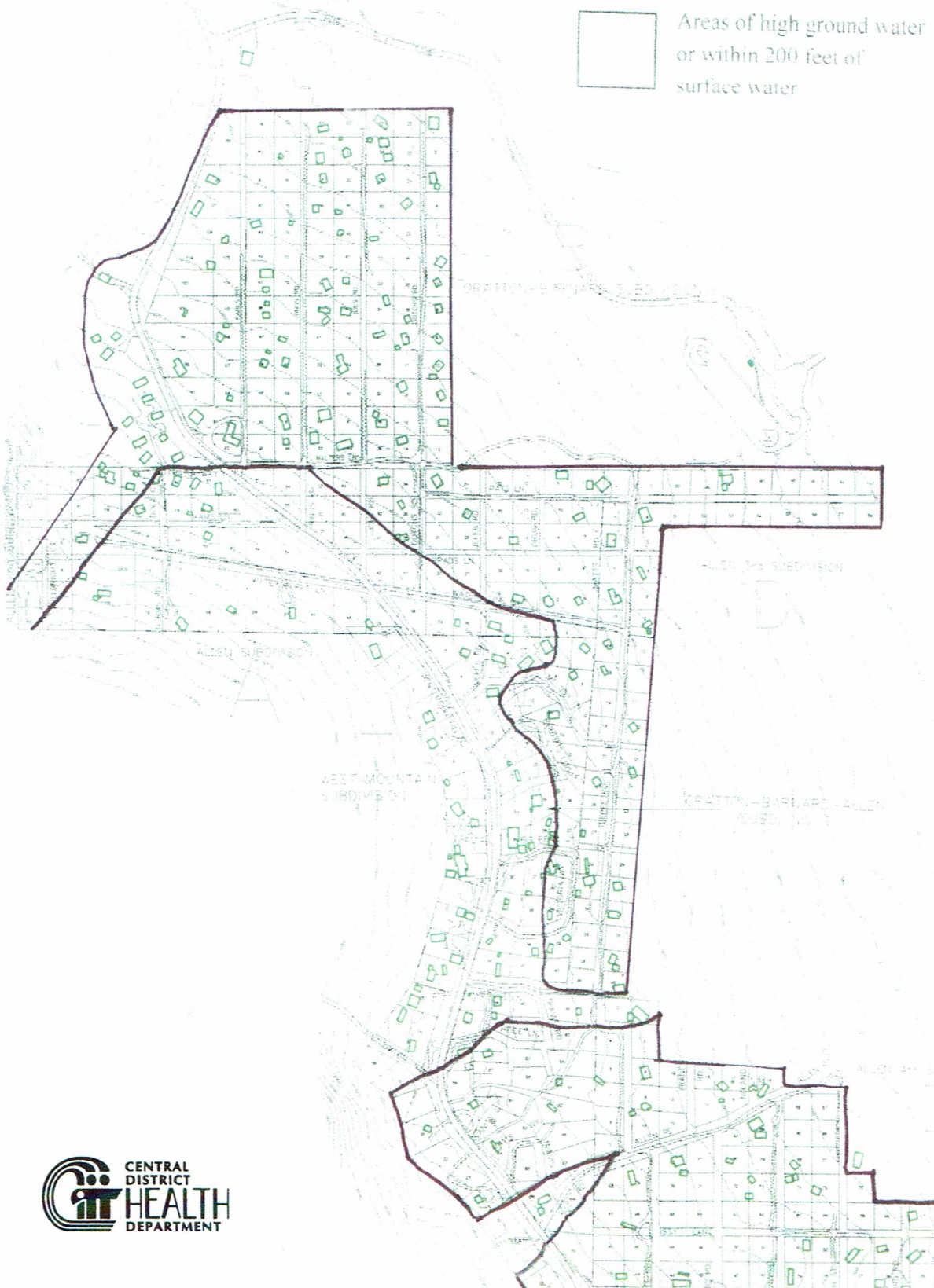
 Areas of high ground water
or within 200 feet of
surface water

**South Lake Recreational Water and Sewer
West Mountain Area
Southern Portion**



South Lake Recreational Water and Sewer West Mountain Area Northern Portion

 Areas of high ground water
or within 200 feet of
surface water



Privy Sanitation Survey-
"West Mountain" Area, Valley County, Idaho

By Jeffrey Lappin, EHS and Tom Turco, EHS
Central District Health Department

Introduction

The privy has been in use for hundreds of years for human sewage disposal. It is still considered a viable system for residences where the water system is not pressurized or where water is scarce (Warshall, 1979). Currently in Idaho, both pit privies and vaulted privies (equipped with an impervious liner) are considered alternative type subsurface sewage disposal systems and are required to meet minimum sanitation standards (IDH&W, 1985). Health Department permits have been required for privy installation since 1971. The permitting process now involves a site evaluation to determine soil suitability and the necessary set back distances to surface waters, water table, and domestic wells. In general the standards require the privy to be constructed so that the interior is cleanable, the pit vented and the wastes are not accessible to flies, rodents and human contact. Pit privies must meet the same distance setbacks as drainfield trenches and vaulted privies must adhere to the standards for septic tanks as required in the Idaho Rules and Regulations for Individual and Subsurface Sewage Disposal Systems, October, 1985 (regulations).

A properly constructed privy in the adequate soils is a sanitary and acceptable method for disposing of black wastes. However, improperly sited or constructed privies can present a significant health risk. Human wastes can carry a wide range of pathogens (Hagedorn, et.al. 1981). Bacteria from sewage pit latrines have been reported to move through soil up to 80 feet under certain conditions (Hagedorn, et.al. 1981). Flies and rodents are also attracted to exposed human wastes and can carry disease organisms from the feces to exposed food stuffs (Longree, 1972). Under the proper conditions flies can be effective in spreading bacillary dysentery (shigella) (Lindsay and Sudder, 1956). They cite that there is evidence that nonbiting flies can transmit 30 different disease agents.

Unfortunately, in Valley County many pit privies have been installed before permits and site reviews were required. Since 1971 many have been erected without a permit. This office through the years has sent numerous letters to lot owners with illegal privies. However, for each illegal privy discovered, many more have probably been installed without detection.

Objectives

This study is a result of the growing concern about the water quality of Cascade Reservoir and the drinking water aquifers that supply the recreational residences that surround the reservoir. It was funded by the Idaho Department of Health and Welfare, Division of Environmental Quality as part of series of studies on the Cascade Reservoir watershed. The objectives of this study were to determine

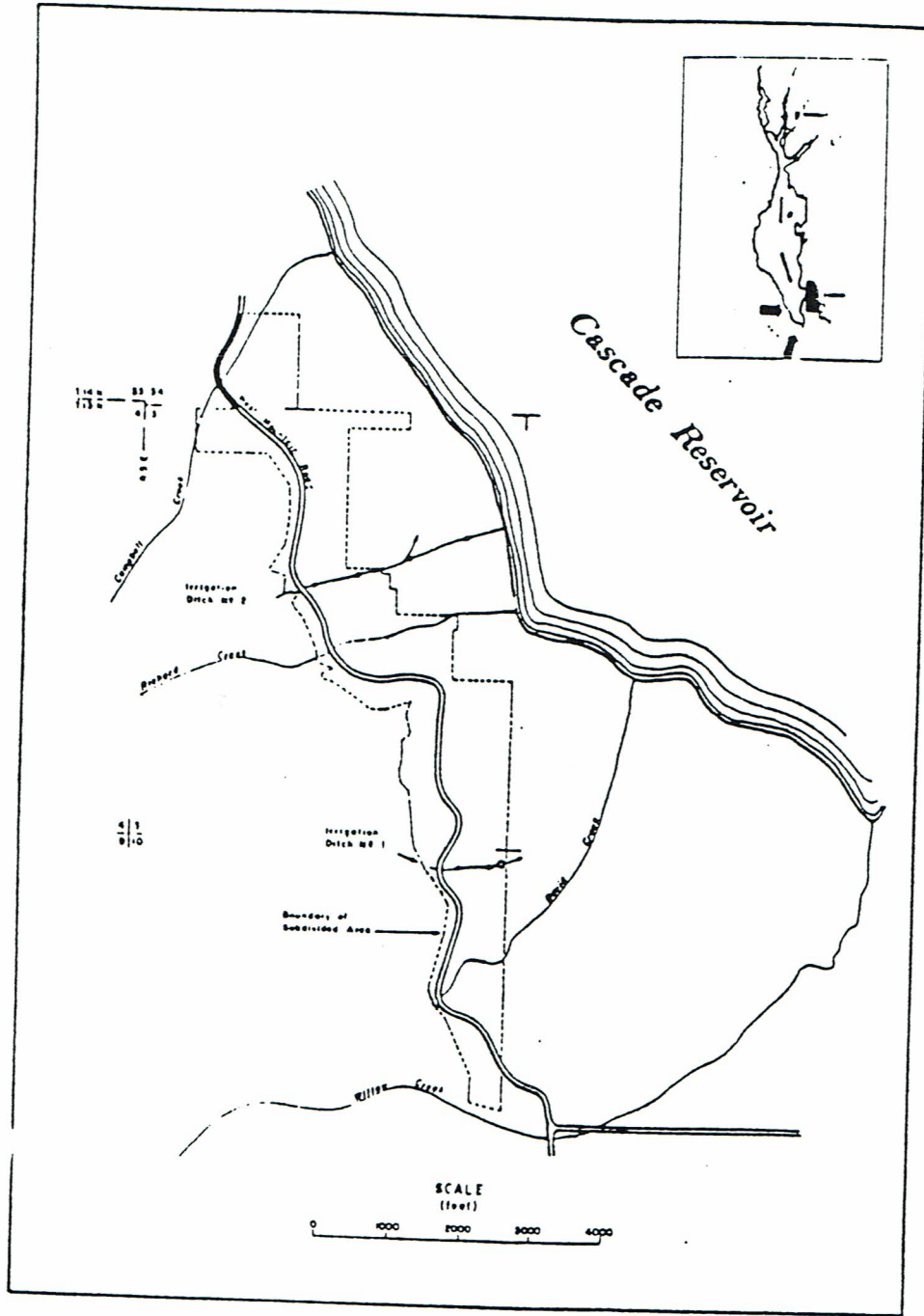


Figure 1 WEST MOUNTAIN STUDY AREA
 Figure courtesy of the U.S. Bureau of Reclamation

privy density and adherence to sanitary standards around the reservoir and to evaluate any health risks associated with these privies.

Study Area

The area chosen for the survey was the "West Mountain" area of Valley County which borders Cascade Reservoir (see figure 1). According to Valley County Tax Assessor records, this area is composed of 12 platted subdivisions and unplatted tax parcels or a total of 873 lots. Of these 374 (42.3%) are improved lots (i.e. have a dwelling). The subdivisions were platted between 1956 and 1970. As a consequence the average lot size is approximately 10,000 to 12,000 square feet. Most residences are served by individual domestic wells and individual sewage disposal systems. This area was chosen because it was known to contain a large number of privies and would be representative of similar older subdivisions on the west side of the reservoir. In addition previous research by Lappin and Clark (1986) had identified probable human sewage contamination of ground water and surface waters in this same area.

Methods

A three day field evaluation was conducted in early October, 1989. Each lot was surveyed for the presence of a privy. If a privy was present the lot was evaluated for (1) the type of residence (2) type of water supply (3) presence or absence of an apparent septic system (4) type of privy (vault or pit) (5) the sanitary construction and maintenance of the privy and (6) setback distances of the privy from drinking water wells and surface waters. The sanitary construction of each privy was compared with current day standards as established by: The Idaho Technical Guidance Manual (IDHW, 1985), minor sanitary defects (no vent, rough wood, minor odor, no screening) and major defects that could result in wastes being accessible to vectors or human contact, or causing a major odor problem. Setback distances to surface waters and domestic wells were noted and each privy was evaluated as to compliance with setback distances as stipulated in the sewage regulations. For the purposes of this study all surface waters encountered were treated as streams for determination of setback distances. Pit privies located in obviously wet areas were also recorded. It should be noted that many privies were locked and an evaluation could only be made on the basis of external appearance.

Field data was entered on a computer data base (Dbase 3). Analysis of the data was computer assisted. During the survey sixteen privies appeared to be inactive. As almost half of the lots represented by these inactive privies had no other sewage disposal system (44%) and we were unable to evaluate every privy for use, it was decided to include all apparently usable privies in the analysis.

Results and Discussion

Privy density

A total of 385 lots of the total 873 possible were surveyed. Privies

were counted on 134 of these lots or 34.2%. Eight privies (5.9%) were vaulted, one was unknown, and the remaining 126 (93.3%) were pit privies. If we apply the lot occupancy rate of 34.2% to the entire "West Mountain" area this would mean that there are approximately 303 privies in the entire area. The approximate size of the "West Mountain" area is about 280 acres excluding the West Side Road right-of-way. This means that there is about 1 privy for every 0.92 acres. Every lot then statistically is within 200 feet of a privy.

Sanitary Construction/Maintenance

Of the 135 privies surveyed (one lot had two privies), 61 or 45.2% had serious construction deficiencies sufficient to result in exposed human wastes (see figure 2). The health risk represented by these privies is the vector borne spread of disease organisms or even actual accidental human contact and resulting pathogen exposure. Only nine (6.7%) were found to meet or exceed current day codes for construction and two (2) of this limited number had other nonconstruction deficiencies (odor and well setback). Seven privies were, for various reasons, not rated. The remaining 58 privies (43.0%) had only minor construction problems, but many of these did meet required well and surface water setbacks.

Three privies (2.2%) were found to have very strong offensive odor problems. One was vaulted, one a pit type and one was not determined. Although not a health risk as such, strong offensive odors are an acute public nuisance.

Nine pit privies (7.1% of pit privies) were found to have full, to in some cases, overflowing pits. Such poor maintenance could well result in exposed wastes when the toilet is relocated.

Setback Distances

Twenty nine pit privies out of the 126 surveyed (23.0%) were less than 100 feet to surface waters and/or were located in obviously wet areas (see figure 3). One (1) of the vaulted privies (12.5%) was less than the required fifty feet to surface waters. These represent a pollution potential for shallow ground water and neighboring surface waters. Previously, we cited an example of bacteria being detected eighty feet away from a pit privy.

Forsgren Associates, a Boise engineering firm conducting a sewerability study around Cascade Reservoir, has detected high levels of bacterial contamination in shallow aquifers in the "West Mountain" (unpublished data collected fall of 1989, see Appendix B). Much of this contamination is probably due to septic systems, however some of the privies are likely making a contribution. It should be noted that this survey was conducted during the dry season and that more would have likely been found installed in "wet areas" during a spring survey.

Thirty-nine (39) pit privies (30.9%) were less than the required 100 foot setback to domestic wells. Seventeen (17) pit privies (13.5%) were fifty feet or less from domestic wells (see figure 4). Two (2)

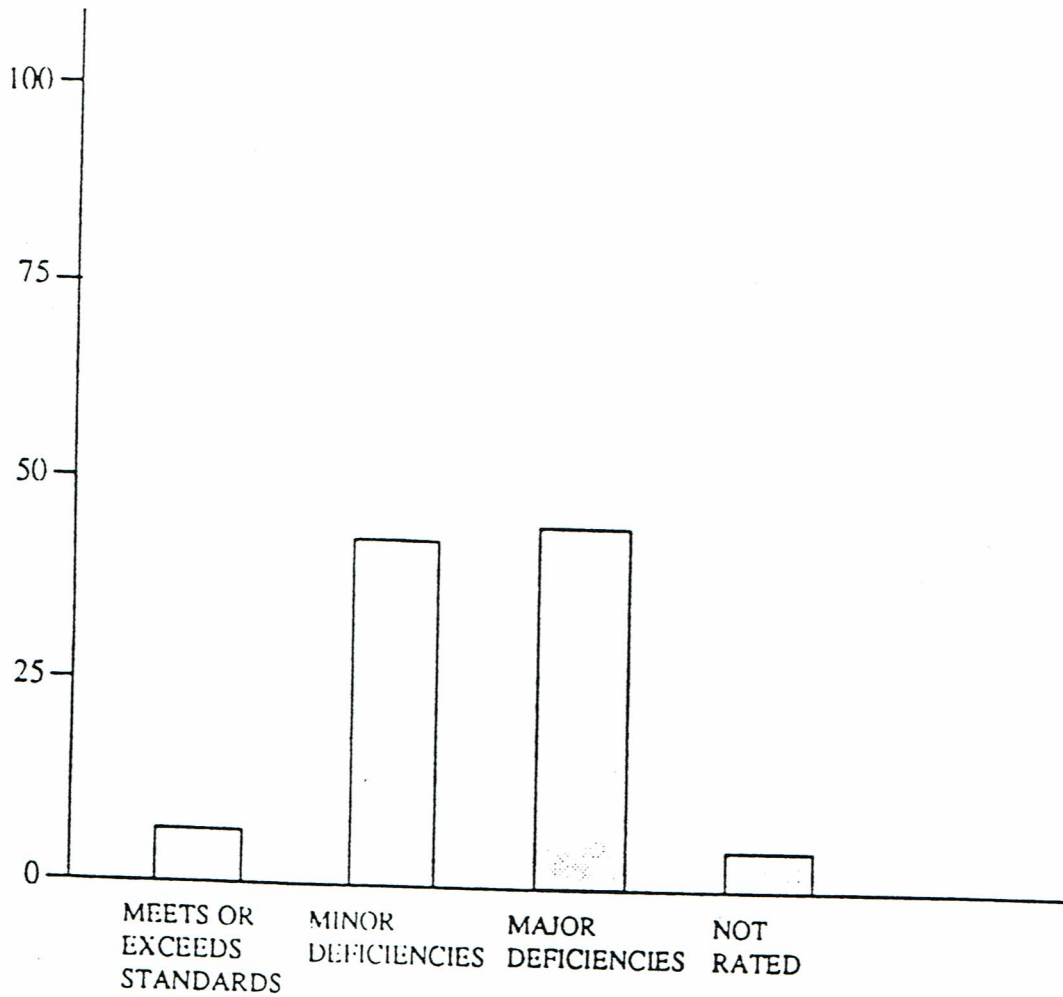


Figure 2
RATING OF SURVEYED PRIVIES BASED ON
CONSTRUCTION STANDARDS

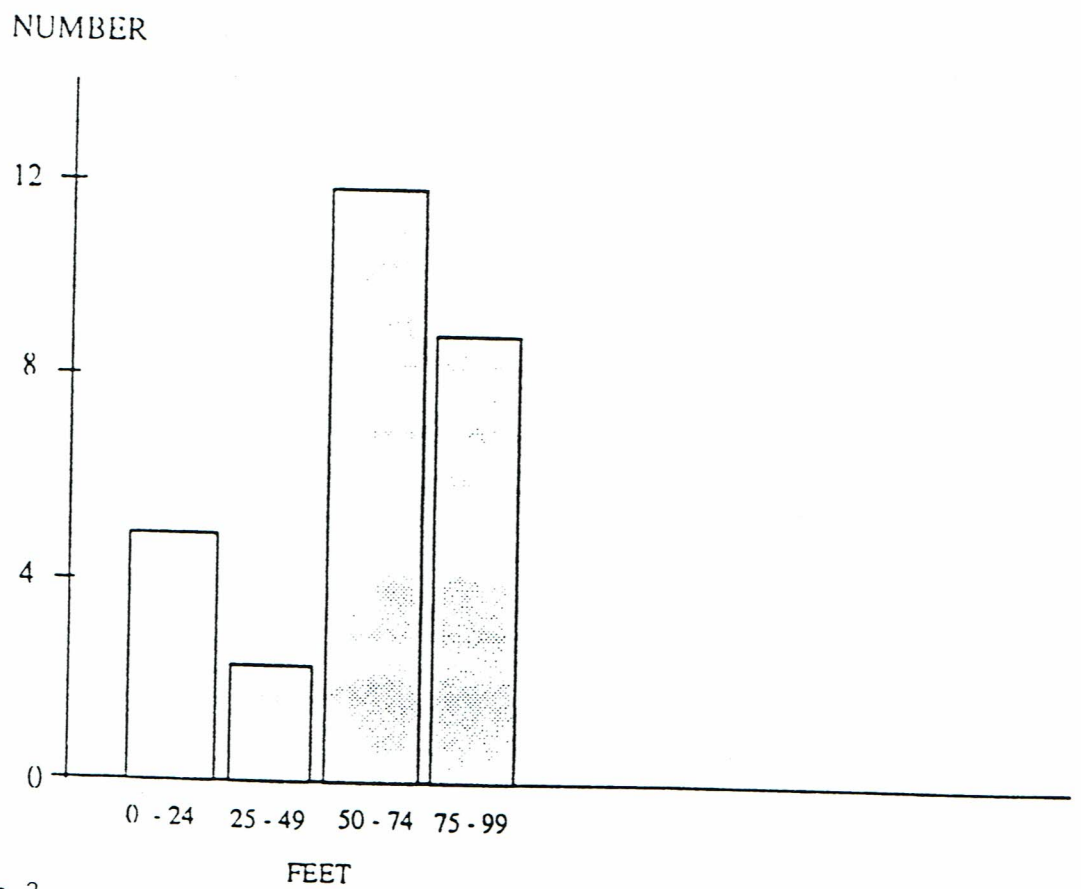


Figure 3
DISTANCE FROM PIT PRIVIES TO SURFACE WATERS
(LESS THAN 100 FEET)

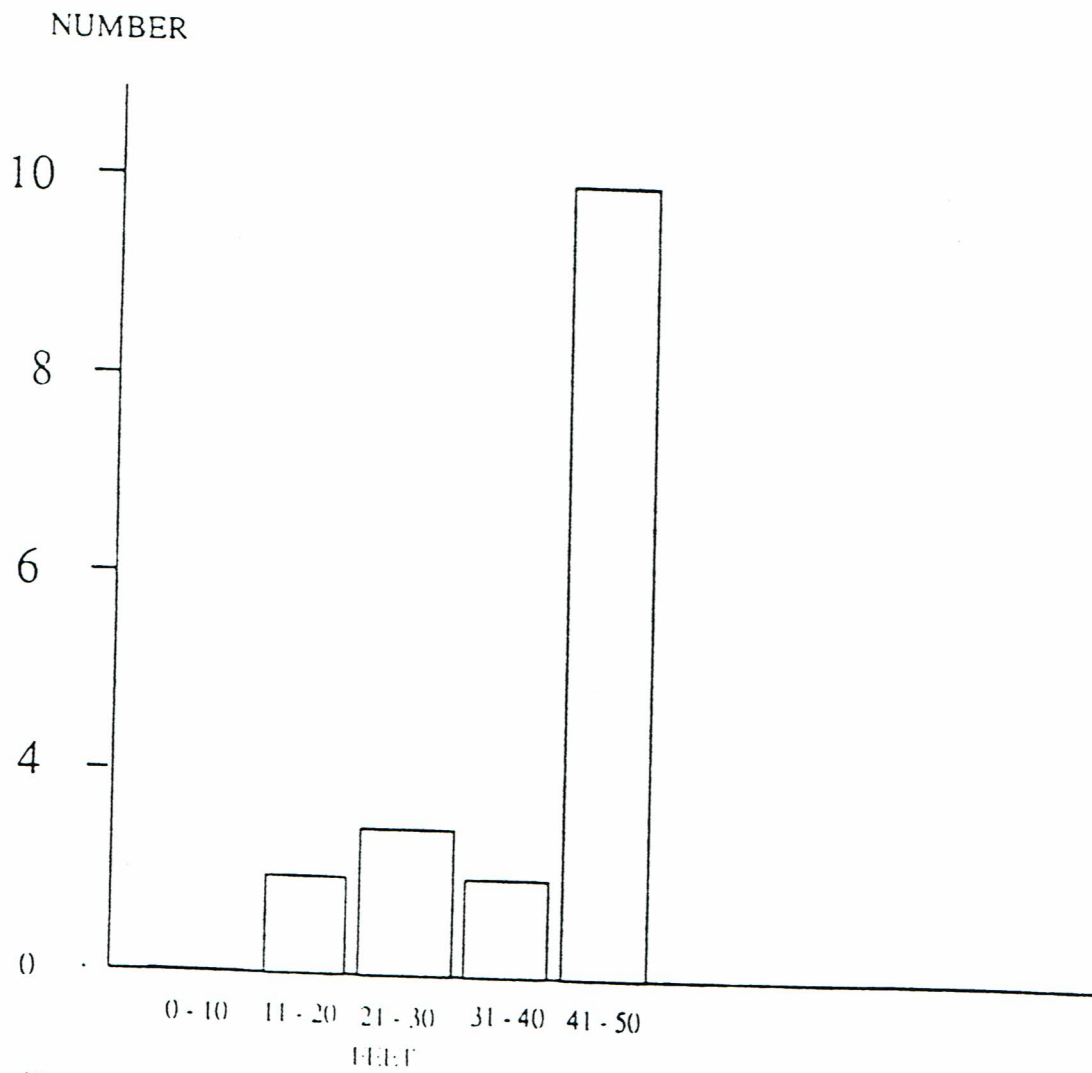


Figure 4
PIT PRIVY DISTANCE TO WELLS (50 FEET OR LESS)

vaulted privies (25% of vaulted privies) were found to be less than the required 50 foot setback to domestic wells.

If all major construction deficiencies, major maintenance deficiencies, and critical violations are used collectively then we find that 90 (72.4%) of all privies surveyed were in major violation of current day codes and represent a health risk (see figure 5). If we exclude the nonrated privies, then only 30 of the privies surveyed (22.2%) had no or only minor health code violations. This is not surprising in light of the fact that Central District has only issued eighteen (18) privy permits for the subdivisions surveyed (see figure 6). This means that only 13.3% of the privies found had some form of Health Department review.

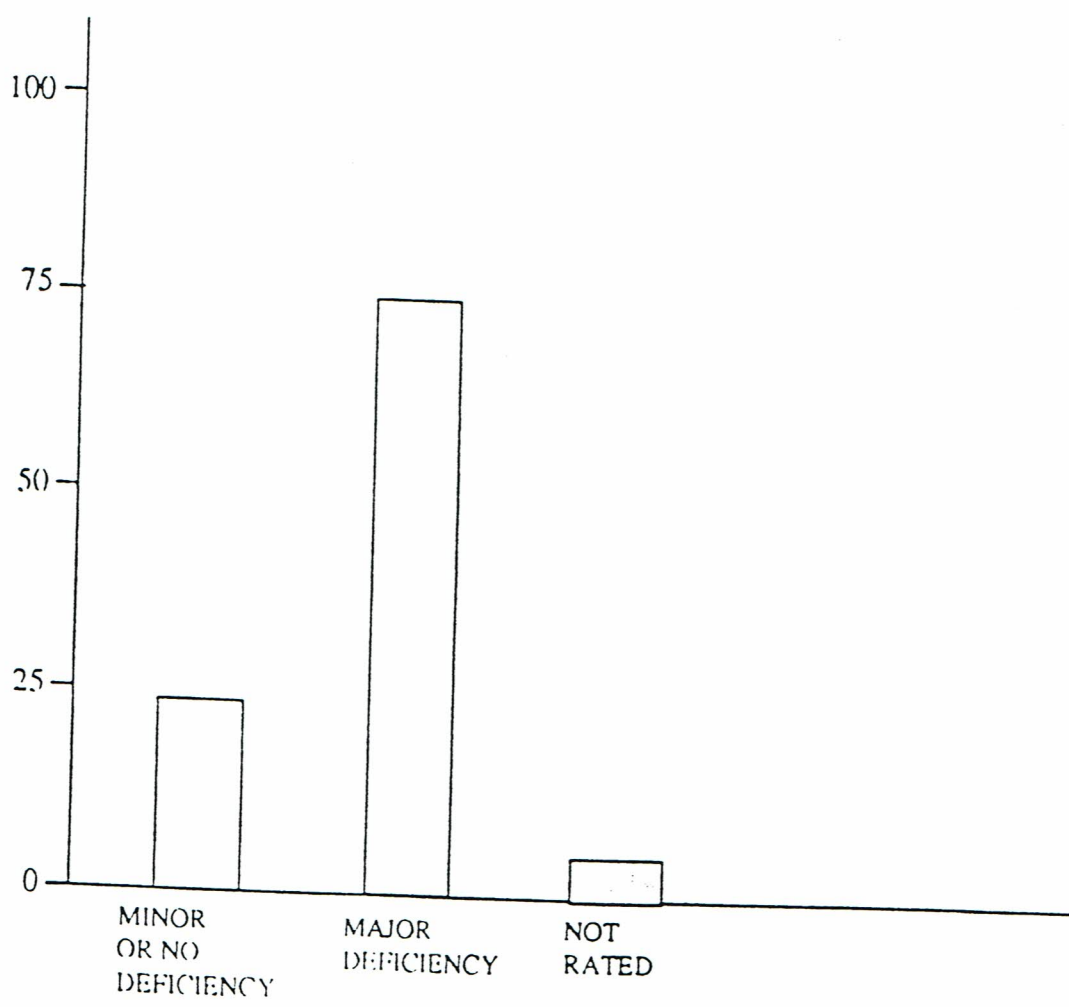
Water Supply and Septic Systems

Fifty-three (53) lots with privies or 39% were determined to have no water supply. If a regional approach is taken to sewage disposal in this area these lots will need a nonwater carried waste disposal system.

Thirty-one (31) lots or 23.1% had water under pressure but no septic system. Twenty-seven (27) of these same lots are developed with a cabin or motor home. Gray water generation and disposal on these lots raises an additional concern for the Health Department. Most of these lots could probably be served by a regional sewer system.

Thirty-one (31) lots surveyed (23.1%) were found to have water under pressure and an apparent septic system. These lots could be served by a regional sewer system. Eight (7%) had unknown water supply and three had water with unknown septic system.

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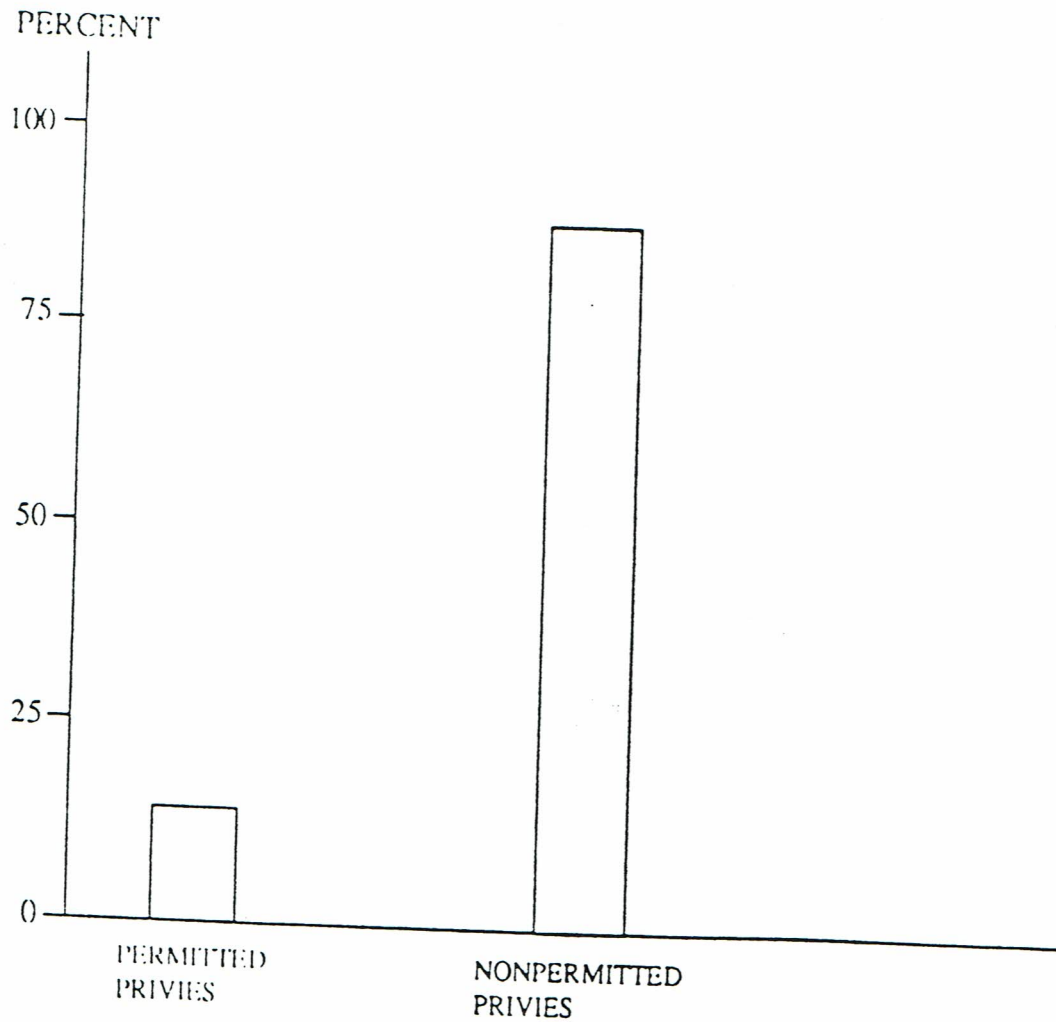


Figure 6
PERMITTED VS NONPERMITTED PRIVIES
FOR THE SUBDIVISIONS SURVEYED

Conclusions

1. Most (72.6%) of the privies in the survey area had a significant violation(s) of the current sewage regulations and represent a health risk.
2. The density of privies in this area, 1 privy per 0.9 acres, indicates that most cabins are close to an improperly installed privy.
3. We believe that the Foringren Associates data coupled with the work by Lappin and Clark (1986), the Cascade Reservoir Sewage Management Inventory and the results of this study make a strong case for a Cascade Reservoir Watershed sewage management district. Such a district could utilize central sewer collection and disposal, holding tanks, septic tank maintenance, septic system replacement, and small community sewage systems to arrive at a long term solution to sewage disposal around Cascade Reservoir.
4. In any management district special consideration will be needed for dry lots (i.e. no water under pressure) with existing privies. Non conforming privies should be replaced with alternative type systems (for example incinerating toilets, composting toilets, vaulted privies, etc.). Such systems may have to be maintained by the sewage management district.
5. In areas outside of a sewage management district or if no district is established greater enforcement by Central District Health District and Valley County should be undertaken to insure proper privy installation and maintenance. Such increased enforcement activity will require additional resources be allotted to the sewage program in Valley County.
6. No more pit or vaulted privy permits should be issued in the "West Mountain" area except to alleviate existing sewage disposal problems. *Justification? In vaulted being excluded - seems like a leap in logic.*
7. We recommend that consideration be made as to lot size before a privy permit is issued.

Acknowledgements

We want to thank the Idaho Division of Environmental Quality and especially Gwen Burr and Al Murray for their support of this project. We appreciate Robert Mayer's dedication in conducting the field survey under adverse weather conditions. We also want to thank Valley County Assessor, Robert Downend, and Valley County Engineer, Les Ankenman, and Scot Stokes, Forsgren Associates, for their technical support and supporting data.

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AFFENDIX A

Frivy Survey Form

CENTRAL DISTRICT HEALTH DEPARTMENT
PRIVY SURVEY

-
1. SUBDIVISION _____
2. LOT DEVELOPMENT:
- RESIDENTIAL (INCLUDES CABIN, MOBIL HOME)
 - RECREATIONAL VEHICLE OR EVIDENCE OF SUCH USE
 - TENTING USE ONLY
 - NO APPARENT USE (ABANDONED)
 - OTHER _____
3. WATER SUPPLY:
- WATER PROVIDED TO LOT (EXTERNAL HYDRANT ONLY)
 - WATER PROVIDED TO RESIDENCE OR RV (IF UNKNOWN CHECK FIRST BOX)
 - NO WATER SUPPLIED TO LOT AT PRESENT
4. LOT ALSO SERVED BY AN APPARENT SEPTIC TANK
- YES
 - NO
5. PRIVY CONSTRUCTION:
- PIT PRIVY
 - VAULT PRIVY
6. DEFECTS (CHECK ONE, CIRCLE MAJOR DEFECT)
- MEETS OR EXCEEDS CURRENT STANDARDS
 - MINOR SANITARY DEFECTS (NO VENTS, ROUGH WOOD, MINOR ODOR)
OTHER _____
 - MAJOR SANITARY DEFECTS (WASTE EXPOSED, NO SCREENING, LID NOT
TIGHT, BAD ODOR, CONSTRUCTED IN WET AREA IF PIT - VAULT
LEAKS IF VAULTED, OTHER _____
7. SETBACK DISTANCES TO PRIVY:
- _____ FEET TO NEAREST WELL
- _____ FEET TO SURFACE WATER (STREAM, DITCH, LAKE)

FIELD SURVEY BY:

DATE