

GEPA Tips for Home-Builders and Property Buyers

GEPA 50th Anniversary Industry Outreach Forum

March 29, 2023



GUAM ENVIRONMENTAL PROTECTION AGENCY
AHENSIAN PRUTEKSION LINA'LA GUAHAN

Disclaimer:

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Introductions

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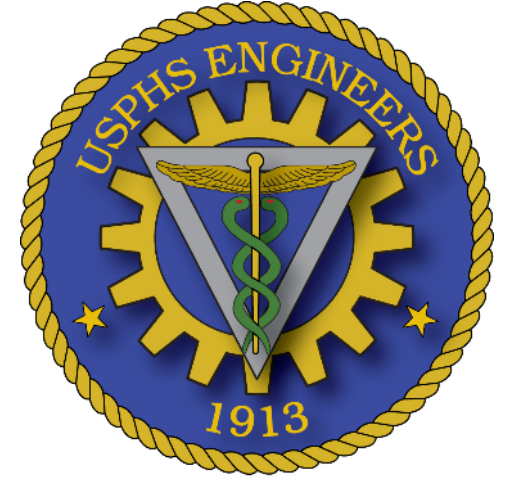
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This session:

- Sewage disposal/property requirements
 - Lot sizes: sewer property vs. septic systems
 - Setbacks
 - Soils
- Permitting requirements
- Construction requirements
- Occupancy requirements
- Additions & renovations



Sewage Disposal Options



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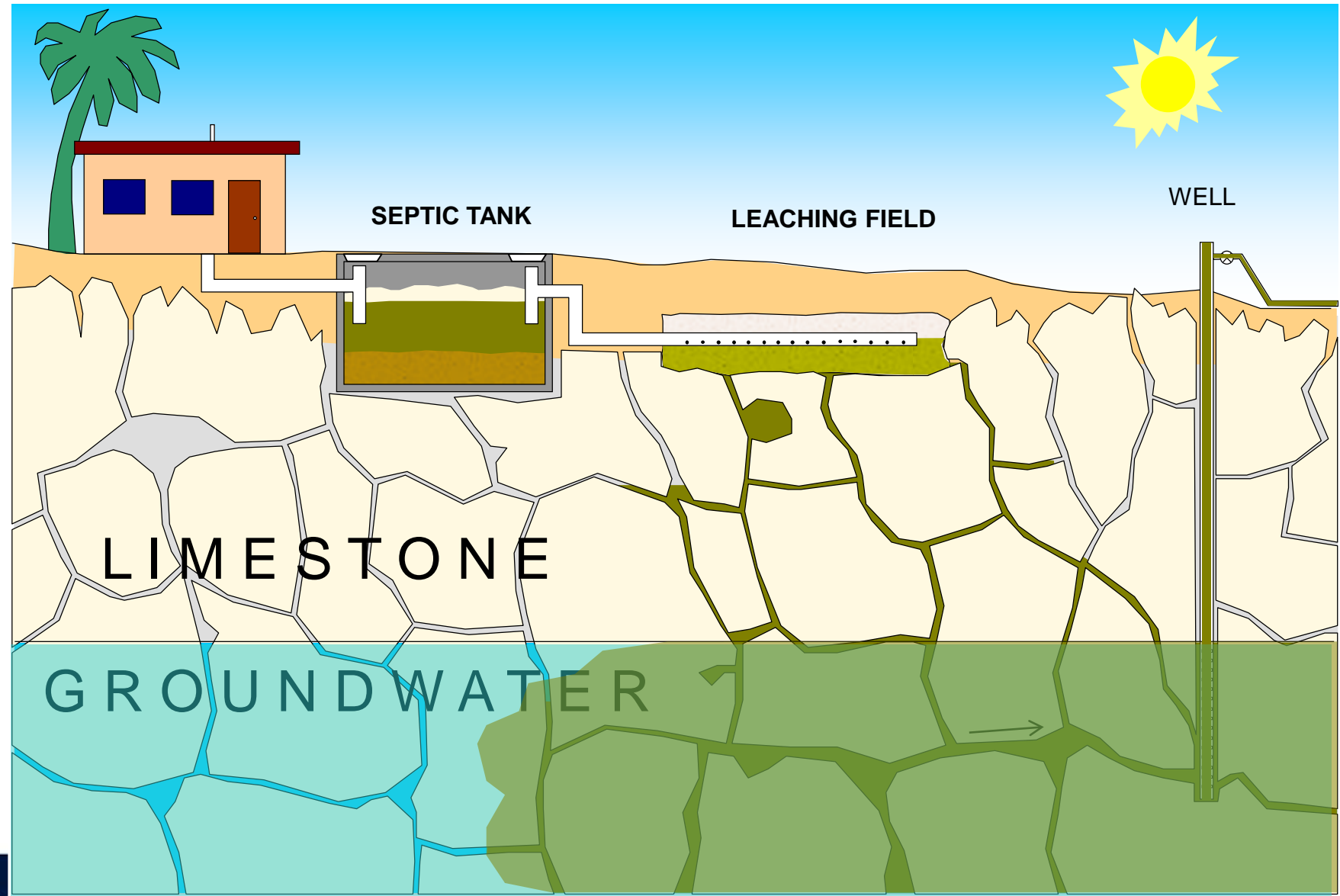
Property requirements: sewage disposal

- Only two (2) options per Guam Law:
 - Connection to Sewer
 - Connection to septic tank & leaching system
- See: Guam Toilet Facilities and Sewage Disposal Act (10 GCA Chapter 48) – last amended 1985



Septic System:

- Discharges to groundwater, by design
- Treatment to remove solids in septic tank
- Further treatment by soil – reduced when discharging into limestone (Northern Guam)



Property requirements: sewage disposal

- Connection to sewer:
 - Sewer not available everywhere on Guam
 - Connection to sewer required when “available”:
 - Within 200 feet (horizontally) from home
 - Within 20 feet (vertically) of sewer – pump required
 - Exemptions to the vertical distance requirement:
 - NEW homes: may use septic system if (proposed) home cannot be raised or relocated to enable gravity connection
 - EXISTING homes: septic system may continue to be used if found to be “adequate” and gravity connection to sewer cannot be made



Residential sewage pump system:

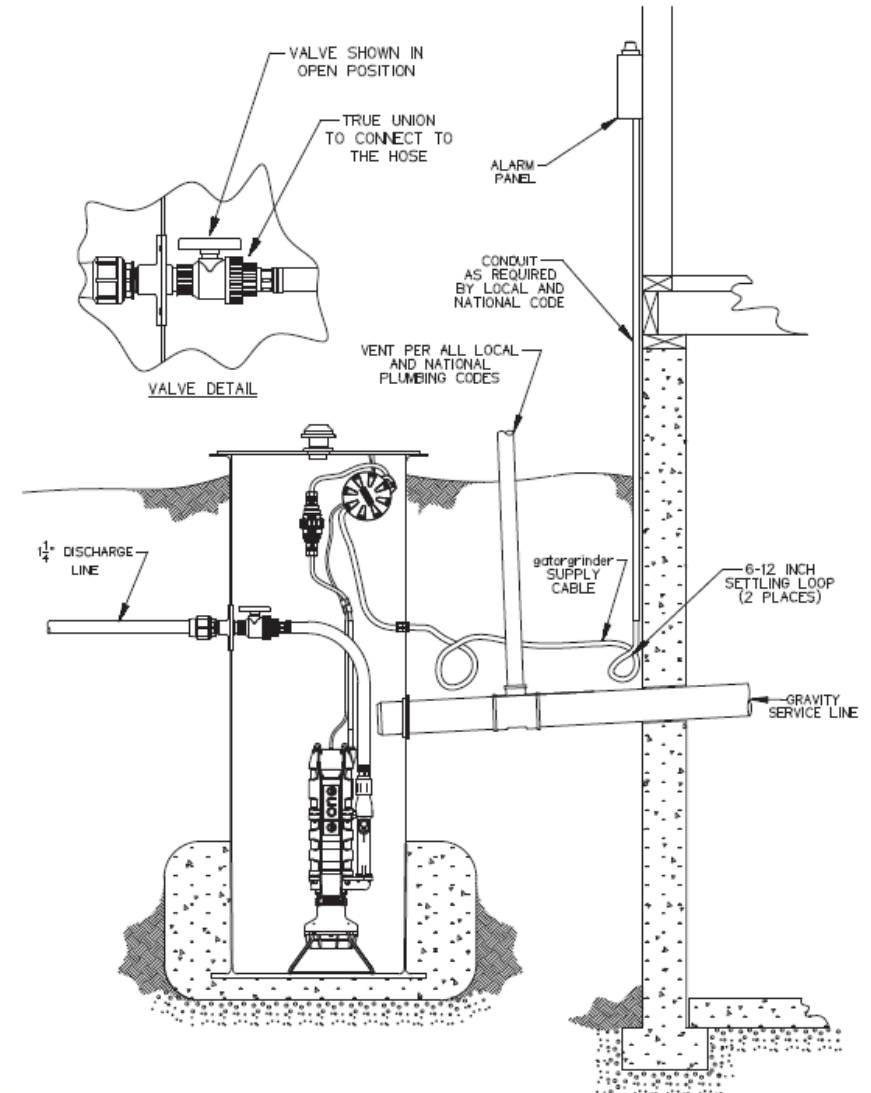


FIG. 5 - TYPICAL STATION INSTALLATION

“Septic Systems” (Onsite Wastewater Disposal)



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Sewer not available?

- **NOT ALL UNSEWERED PROPERTIES CAN BE DEVELOPED**
- What you need to know:
 - Location of your lot with respect to the aquifer (GPZ)
 - If your lot meets minimum size requirements
 - Location with respect to “Waters of the Territory”
 - Location with respect to water production wells
 - Location with respect to Flood Zones
 - Adequacy of site soils and hydrological setting



Groundwater Protection Zone (GPZ)

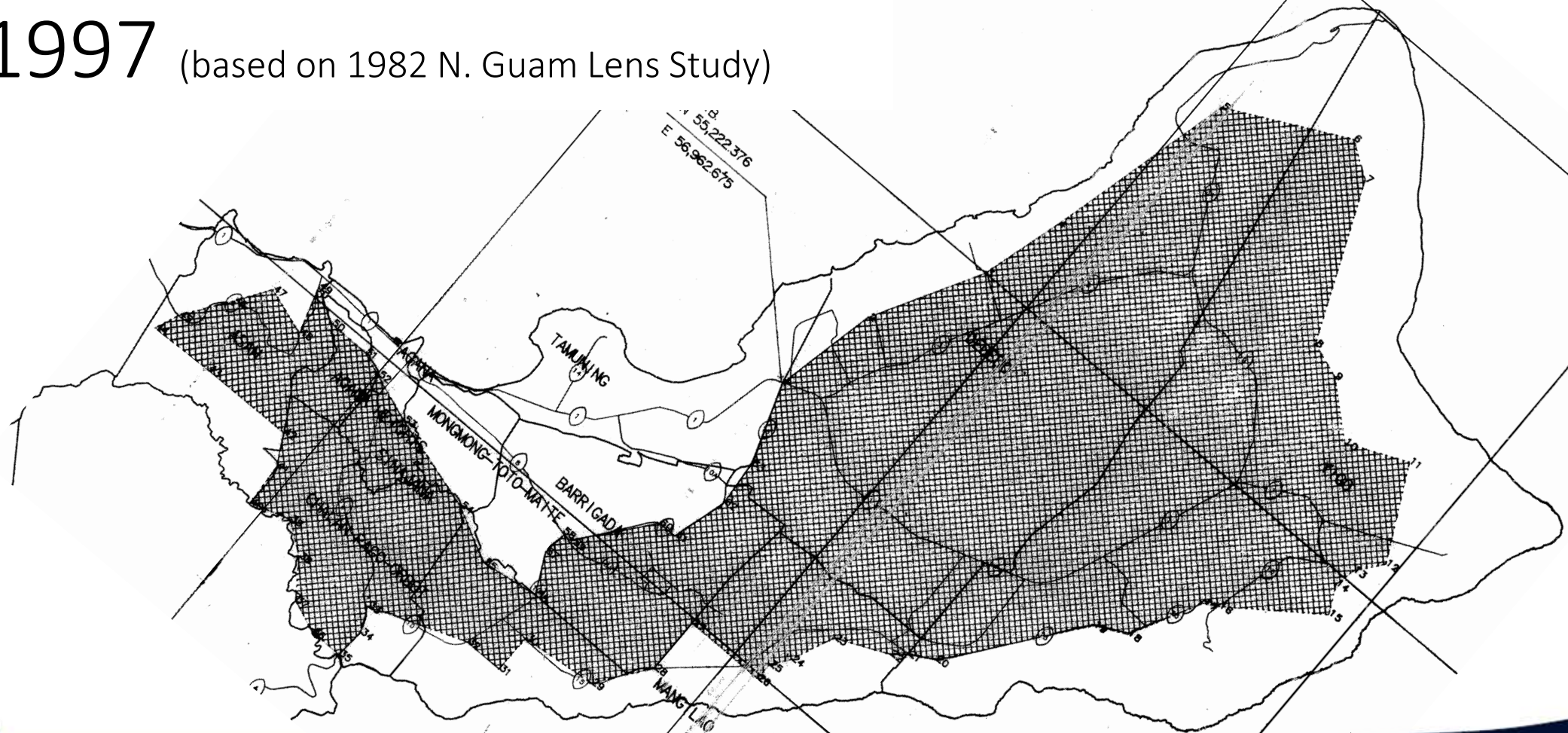
- Official (Regulatory) map of the Northern Guam Lens Aquifer
- Location within the GPZ: GEPA lot size restrictions apply IF UNSEWERED, per Zoning Law
- Location outside the GPZ: DLM lot size restrictions apply, per Zoning and Subdivision Laws



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Official DLM GPZ Overlay 1997

(based on 1982 N. Guam Lens Study)



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Lot Sizes Within the GPZ

- Guam Water Quality Standards at 22 GAR §5101(c)(1)(b) requires:
high density residential development, more than one (1) dwelling per one-half (1/2) acre, should not occur [within the GPZ] without adequate public sewer service
- GEPA policy memos (1997, 2009) established minimum lot sizes that are still in effect today



Lot sizes

- All from Zoning and Subdivision Laws – GEPA did not establish any new lot sizes
- 19,200 sf within GPZ
 - About ½ acre
- 9,600 sf exception for “parental subdivision”
 - About ¼ acre

GEPA MINIMUM YARD AND LOT AREA TABLE

As of 4 September 2009

Minimum Lot Size (sq. ft.) by Zone

		Over Northern Aquifer					
		"Unzone"	"A"	"R-1"	"R-2"	"C"	"M-1" "M-2"
Sewered	Parental	9600	9600	5000	5000	2000	5000 40,000
Un-Sewered	Parental	19,200	19,200	19,200	19,200	19200	40,000 40,000

Lot area per dwelling unit

Sewered	9600	9600	5000	1250	400	1250	*
Parental	9600	9600	5000	1250	400	1250	
Unsewered	19200	19200	19200	19200	19200	19200	*
Parental	9600	9600	9600	9600	9600	1250	

Minimum Residential Lot Size (sq. ft.)
Outside Northern Aquifer

Sewered	10,000	5000	5000	5000	2000	1250	40,000
Parental	7,200	5,000	5,000	5,000	2,000	1250	40,000
Unsewered	10,000	10,000	10,000	10,000	10,000	40,000	40,000
Parental	9600	9600	9600	9600	9600	9600	9600

Lot area per unit

Sewered	9600	9600	5000	1250	400	5000	*
Parental	7200	7200	1250	400	400	5000	
Unsewered	10000	10000	10000	10000	10000	10000	*
Parental	9600	9600	9600	9600	9600	9600	



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Why does GEPA regulate lot sizes?

- Density of unsewered development directly relates to how much pollution enters aquifer – lot sizes/density a common requirement
- 1982 Northern Guam Lens Study:
 - 3 acre min. lot size calculated to keep Nitrate levels below 4 mg/L
 - Reduced to 1 acre on assumption 2/3 of N. Guam never developed
- Origin of ½ acre lot size – not clear
- Current conditions: aquifer has exceeded 4 mg/L in many locations, and still increasing. Drinking water MCL is 10 mg/L, additional monitoring triggered at 5 mg/L



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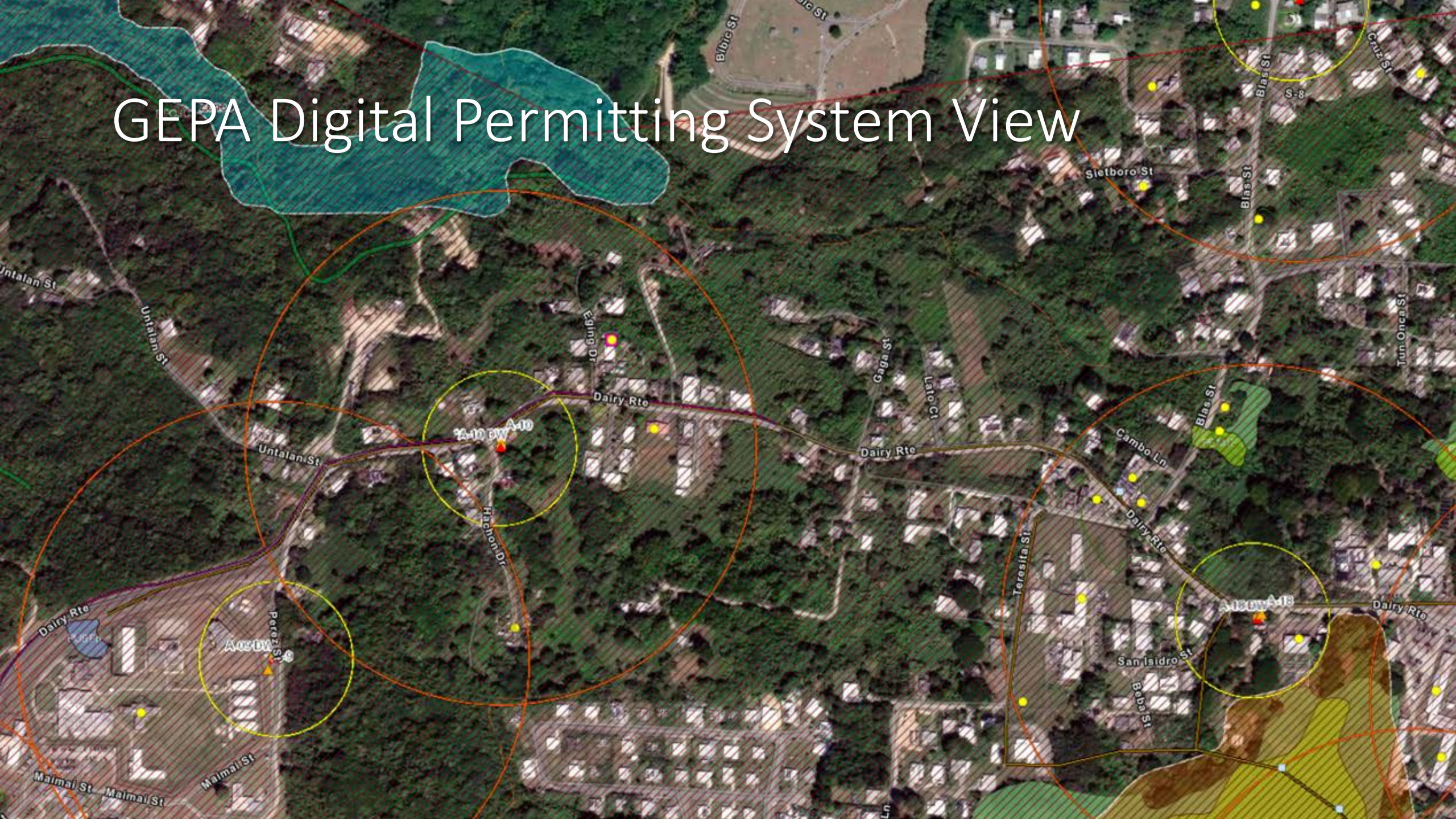
Distances from wells, waters, wetlands:

- Setback distances set in both law (10 GCA Chapter 48) and Regulation (22 GAR Chapter 12) (NOTE: this does NOT apply if sewerer):

Table I: Minimum Safe Horizontal Distances in Feet			
From:	To:		
	Septic Tank	Absorption Bed (Leaching Field)	Absorption Trench
Any Water of the Territory	300 ft	300 ft	300 ft
Wells	300 ft	300 ft	300 ft
Any building (including your home)	10 ft	20 ft	20 ft
Property boundary lines	5 ft	5 ft	5 ft
Water lines	10 ft	25 ft	25 ft



GEPA Digital Permitting System View



Soils

- Not all soils are suitable for septic systems!
 - Slow-percolating soils – clayey soils – may not function
 - Common in Southern Guam
 - High groundwater tables will prevent septic system from working
 - Low elevations, near wetlands, etc.
- Soil investigation and percolation tests
 - Required in Southern Guam
 - Strongly recommended in Northern Guam



- Typical Southern Guam soil profile



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Akina soil series

slide: Bob Gavenda, NRCS

- Typical Northern Guam soil profile



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Chinen soil series

slide: Bob Gavenda, NRCS

- Also possible!



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slide: Bob Gavenda, NRCS

High water table

- Low elevations, and near wetlands or streams



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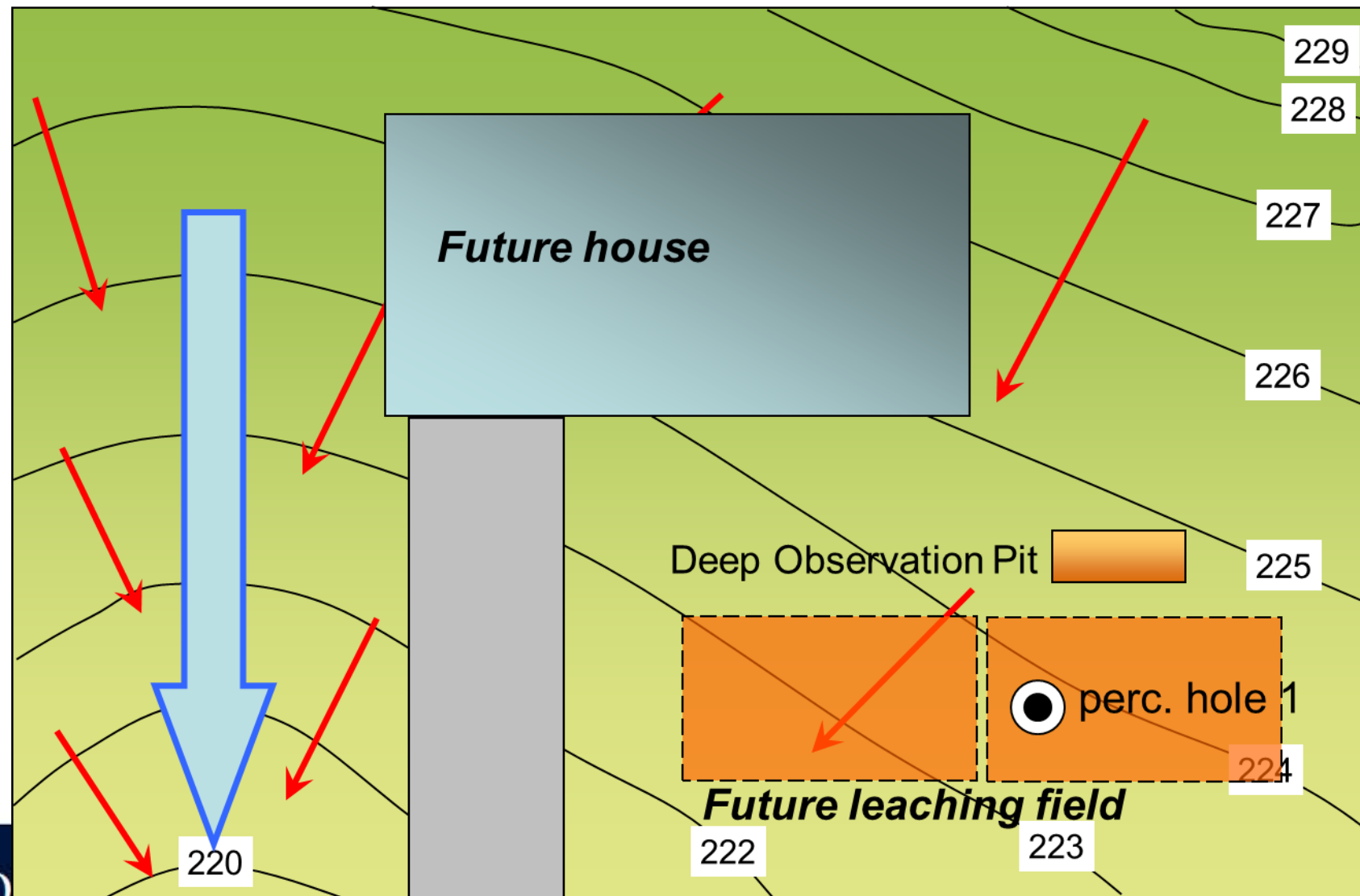
Landscape Setting/hydrology

- Avoid building in the lowest spot!
 - Leaching system will not work if it is saturated with stormwater runoff!
- Engineer/architect must visit site and determine local runoff patterns, search for signs of saturation/inundation, oversee percolation test



EXAMPLE SITE LAYOUT

(CNMI Percolation Testing Manual)



Percolation Testing

- Who can perform a percolation test?
 - Guam regulations do not specify (certification required in other jurisdictions)
 - HOWEVER: perc tests arguably fall under “practice of engineering” – should be performed by or under direct supervision of a **licensed professional engineer (PE)**
 - **You want the best possible data to ensure the septic system does not fail upon occupancy!**

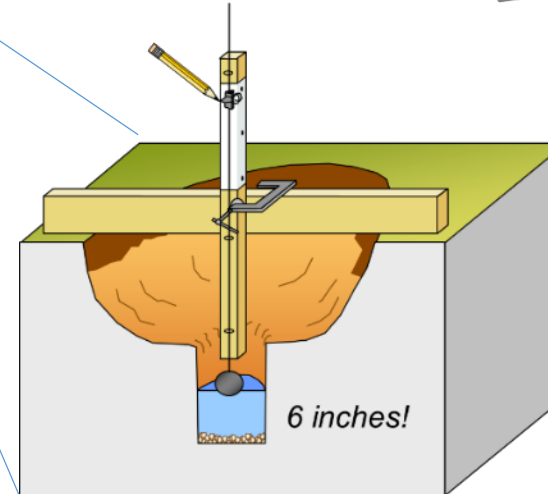
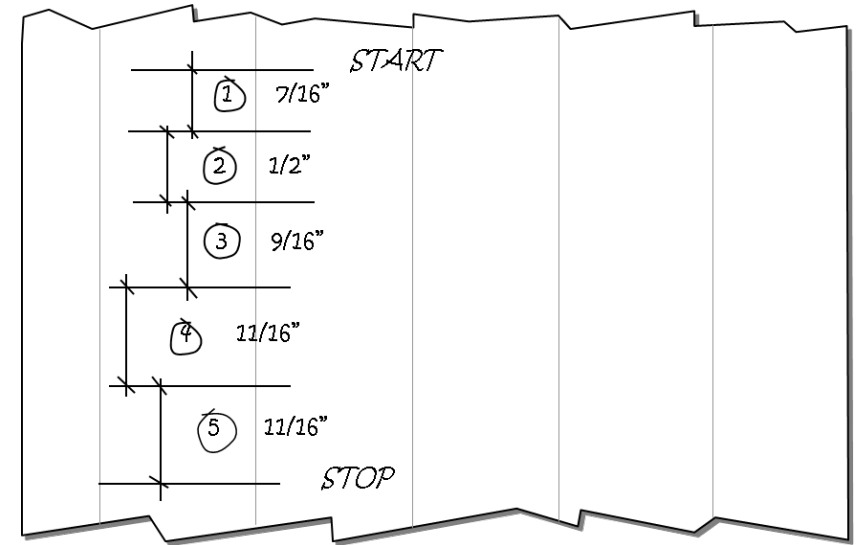
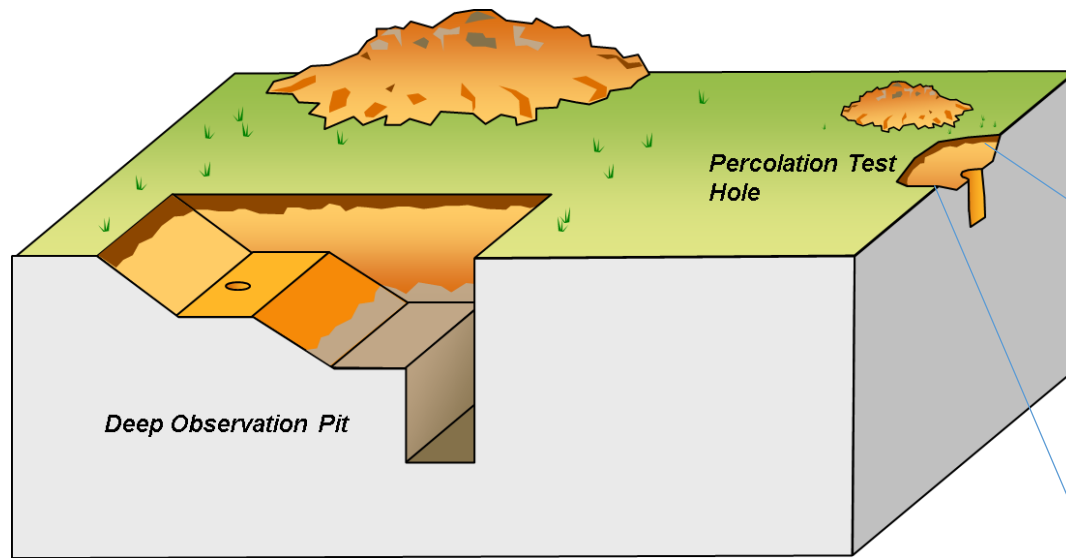


Percolation Testing – the basics

- Hole dug to depth of proposed leaching field
 - 4 to 12 inches diameter
 - NOT the same hole as the soil observation pit, which is larger and deeper
- Hole is pre-soaked – min. 4 hours, preferably overnight
 - You WANT worst-case perc rate, to ensure long-term performance
- Hole is re-filled, and the rate of water level drop is measured



Percolation Testing



Images from CNMI Percolation Testing Manual



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Flood Plains

- New septic systems not permitting within Flood Hazard Areas!
 - There is an **appeal** system, however, that requires obtaining a variance from the **Guam Land Use Commission**
 - Be careful: flood zones are often located in low elevation areas that have a seasonally high water table, which would prevent a septic system from working in the first place.
- Flood Zones: <https://msc.fema.gov/nfhl>



Summary: things that should be done prior to purchasing an unsewered property

- Determine lot size requirements (inside GPZ?)
- Determine distances to wells, waters, wetlands
- Determine if located in flood zone
- Evaluate landscape setting (hydrology)
- Dig observation pit
 - Look for evidence of high water table
 - Look for restrictive layers (impermeable clays, hard volcanic rock)
- Perform percolation test



Septic System Planning resources :

- Production Wells: https://north.hydroguam.net/ge_download.php
- Wetlands & Waters: <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>
- Flood Zones: <https://msc.fema.gov/nfhl>
- Soil Survey of Guam: <https://www.nrcs.usda.gov/resources/data-and-reports/web-soil-survey> or <https://www.uog.edu/resources/files/wptrc/guam.pdf>
- Future: GEPA mapping system to be made available to public
- CNMI Percolation Testing Manual: https://www.deq.gov.mp/assets/ww-forms/cnmi_percolation_testing_manual.pdf



Questions!

- What is the minimum (non-parental) unsewered lot size above the aquifer?

19,200 square feet (roughly one-half acre)

- What is the distance to sewer within which you must connect?

200 feet

- How far away from a Territorial Water (wetland, coastal water, stream) or Well must ALL septic system components be located?

300 feet



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Questions!

- Can I build a septic system in a flood zone?

No – but you can appeal this to the GLUC

- Are percolation tests required for every lot?

Current GEPA policy requires tests in Southern Guam; recommended in N. Guam

- Where am I most likely to encounter low percolation rate soils?

Southern Guam in volcanic areas, low-lying areas near wetlands/flood zones

- Who can perform a perc test?

Not stated in regulations, but PEALS law probably restricts to engineers



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Additional Septic System Questions



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How much space do I need to reserve for my septic system?

- The proposed home, driveway and septic system must be able to fit on the lot including:
 - 100% reserve leaching field (or trench) area
 - All setbacks:
 - 10 feet from septic tank to any structure
 - 20 feet from leaching field (or trench) to any structure
 - 5 feet from property boundaries
 - 25 feet from water line
- ¼ acre lots are about the smallest that can realistically meet all requirements and provide for reasonable home size



Who is responsible for determining if I can build on a property?

- Purchasing a property
 - The buyer is responsible
 - Work with your realtor and perform the basic research to identify known conditions such as setbacks from wells, water features, and to determine likely soil conditions.
 - If these initial tests are passed, it is a good idea to have a soil investigation and percolation test performed before purchasing.
 - **Don't assume that the presence of existing homes on adjacent properties means that a septic system can be permitted**



Who is responsible for determining if I can build on a property?

- Building a home on a property you already own
 - The engineer or architect is responsible for determining if a septic system can be built. This is the PE or RA who signs the plans – not a drafter or contractor.
 - The engineer or architect should review property information and public information concerning soils and setback distances before committing you to the expense of a full design
 - The engineer or architect should inform you at the earliest opportunity if there are potential obstacles.
 - The engineer or architect should have the percolation test performed as a first step before completing a design and charging you



What if I can't legally build a septic system?

- Current Guam law does not allow for any alternatives, which means that some properties cannot be developed for a dwelling



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What about holding tanks?

- Holding tanks are water-tight tanks that collect sewage from a home, which is then pumped and hauled to the public sewer system for disposal.
- Holding tanks are not currently authorized under Guam Law
- Holding tanks are very costly and inconvenient:
 - Costs: several hundred dollars per month to pump
 - When full, plumbing can't be used until pumped
 - Frequently abused by owners because of this
 - illegal conversion to cesspools



What if my permit is denied?

- If a permit for a septic system is denied, an applicant may request a hearing before the GEPA Board of Directors
- The GEPA Board of Directors shall affirm, modify, or revoke the denial, or issue the permit based on evidence presented at the hearing.
- A request for an appeal must be filed in writing within 15 days of official notification of denial.



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Can the GEPA Administrator approve variances to the septic system regulations?

- NO – there is no legal authority built into Guam's laws or regulations that would allow the Administrator to provide a waiver or variance from any of the commonly requested requirements:
 - Setback distances
 - Septic system sizing requirements
 - Lot size/density requirements
- Variances are allowable from the connection to sewer requirements, in limited circumstances



Permitting



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Permitting a new home – GEPA requirements

- DPW Grading Permit
 - If clearing only: clearing and grading permission is included with Building Permit
- DPW Building Permit
 - Single application to DPW only: GEPA and other agencies review
 - Clearing/grading approval is included with Building Permit – no need for a separate Grading Permit



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“Clearing” permits

- If wanting to clear property only, or to grade or backfill, a DPW Grading Permit is required
- Typical residential lots (1/4 to 1/2 acre) are not required to submit erosion & sediment control (ESC) plan – under “exemptions” clause of regulations
 - However, ESC measures such as silt fence are required and standard details are provided as part of the GEPA permit document
 - Steep lots or lots in sensitive areas may be required to provide ESC plan



“Clearing” permits - continued

- Properties 1 acre or larger are required to obtain federal permit coverage
 - USEPA NPDES “Construction General Permit”
 - Illegal to attempt to evade this requirement by clearing one lot at a time:
- “Piecemealing” covered on first page of USEPA 2022 Construction General Permit, “Eligibility Conditions”:

1.1.2 Your site's construction activities:

- a. Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale (as defined in Appendix A) that will ultimately disturb one or more acres of land; or

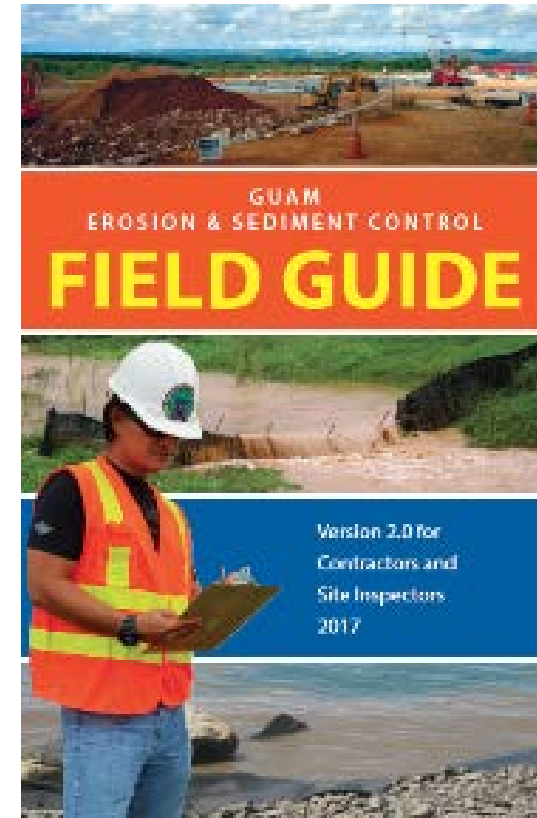
Building permits

- Permit Application Contents needed:
 - DPW Permit Application
 - Construction Drawings (complete)
 - Inspection request form & map
 - Solid Waste Disposal Plan (GEPA Form)
 - & Disposal authorization forms from hardfill & transporter
 - Fugitive Dust Control Plan (GEPA Form)
 - Notice of Intent for Pesticide Application (GEPA Form)
 - Unsewered: Septic System Calculations & Percolation Test Report
 - Unsewered: Property Map



Erosion & Sediment Control Training

- Proof of Training (certificate) in construction site erosion & sediment control
 - **REQUIRED for all contractors**
 - OPTIONAL for self-construction
- Guam Trades Academy – Guam Erosion & Sediment Control Course available



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Exemptions

- Single-family dwellings and duplexes may be exempted from some of the requirements of the Guam Soil Erosion and Sediment Control Regulations.
- GEPA has implemented this exemption for decades by:
 - NOT requiring **stormwater runoff drainage system plan**
 - NOT requiring **erosion & sediment control plan**
- Does this mean you don't have to worry about these? NO!



Exemptions

- Stormwater Runoff Drainage System Plan Exemption:
 - Exemption is only from being required to turn in a PLAN
 - STILL PROHIBITED from discharging to other public or private property
 - When building in areas that have been developed piecemeal (one property at a time), flooding problems eventually arise
 - Make sure your engineer or architect evaluates the surrounding area before building, and takes off-site runoff into account, and designs to minimize your runoff impact to neighbors



Example “LID” Residential Stormwater Runoff Drainage Plan

(low impact
development)

Source:
2006 CNMI & Guam
Stormwater Management
Manual



Figure 4.18 Single-family Residential Site Plan on Tinian

Exemptions

- Erosion and Sediment Control Plan Exemption:
 - Exemption from turning in an E&SC PLAN only
 - Still must provide E&SC measures during construction
 - Still prohibited from discharging sediment to neighboring properties and water resources



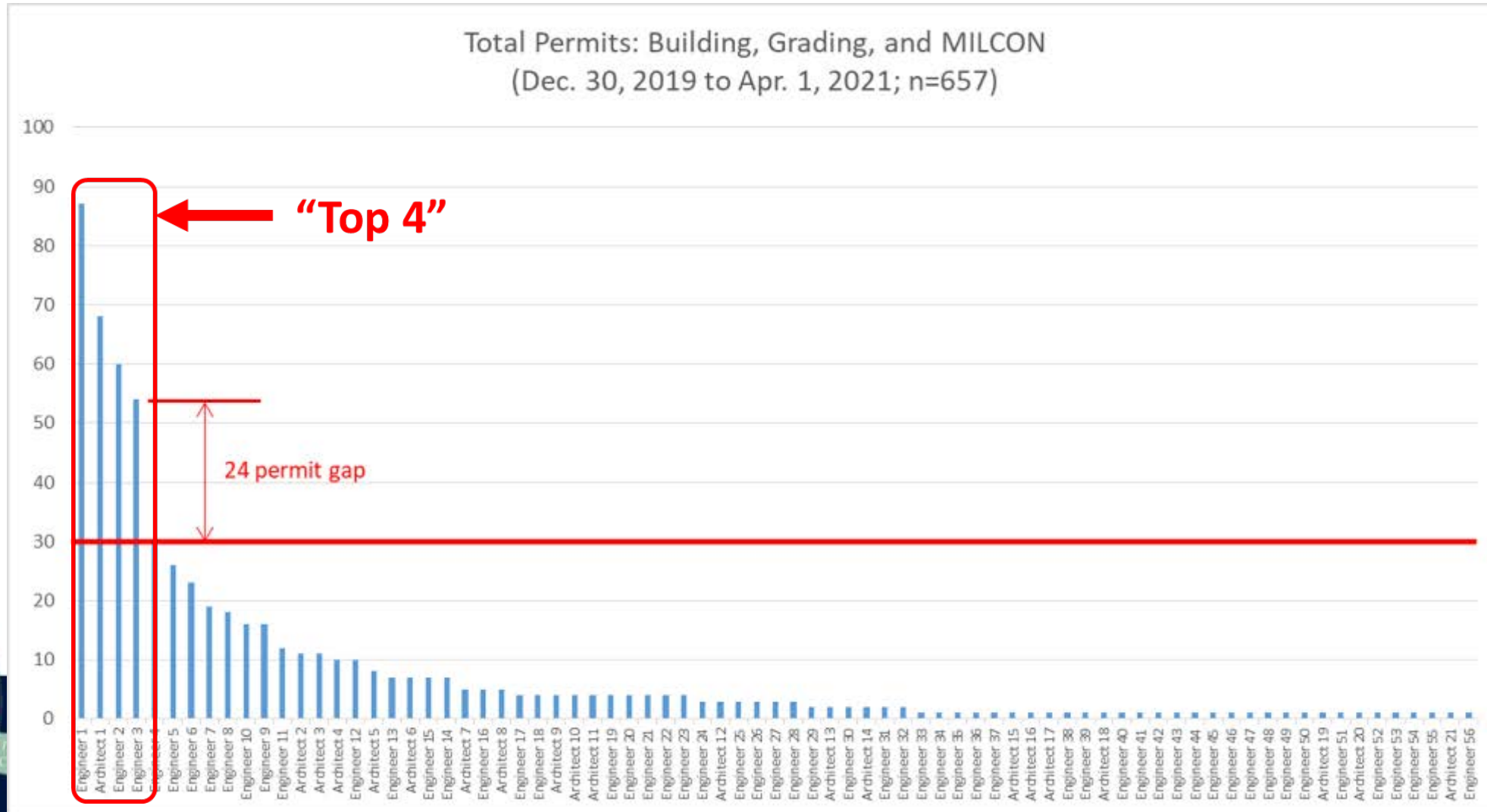
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Design quality issues

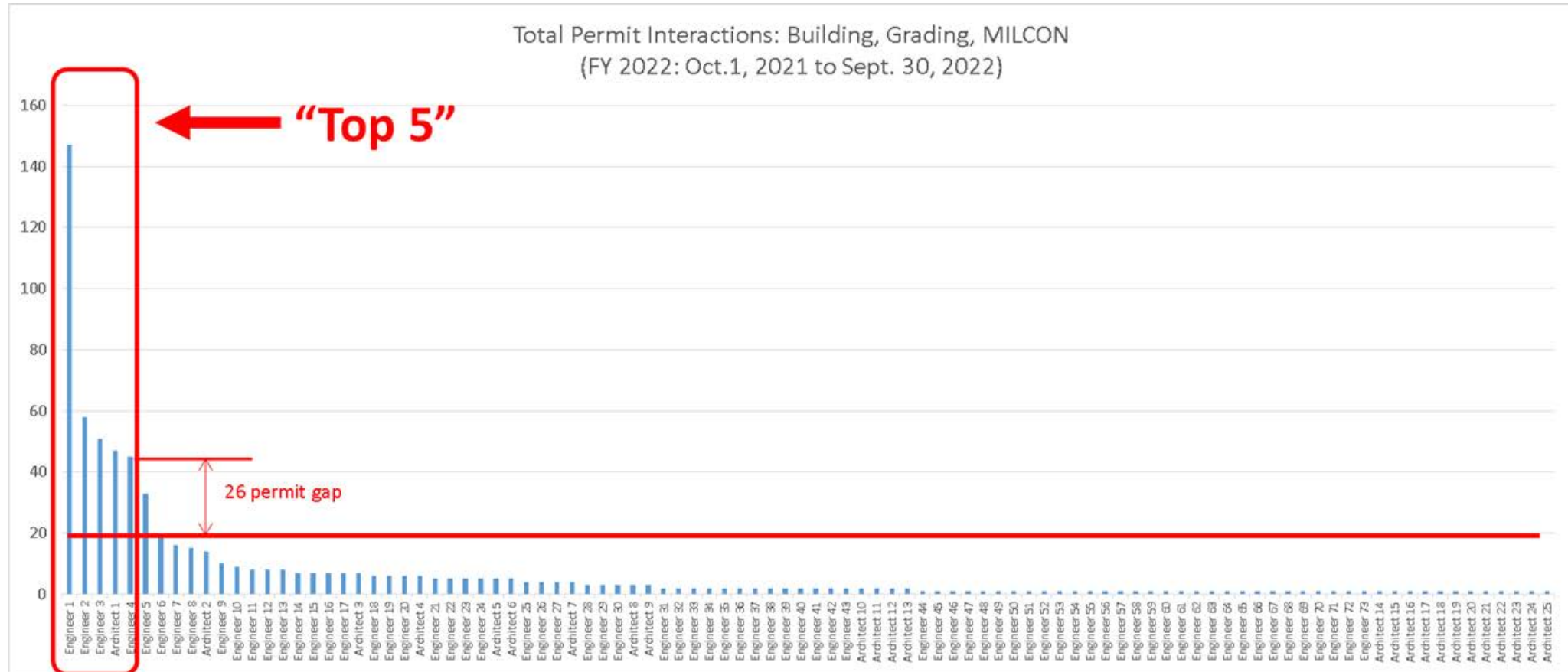
- Be sure you are working directly with the licensed PE or RA responsible for your home design
 - If you are working with a non-licensed “drafter”, “designer” or your contractor to design your home, this is a potential red flag – can refer to PEALS
- Extreme high-volume engineers & architects on Guam
 - Is due diligence possible at 40+ designs per year on a part-time (moonlighting) basis?
 - Statistically much more likely than others to have design errors, delays



High-volume engineers & architects 2020-21



High-volume engineers & architects FY 2022



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Top 4 Engineers & Architects: “Buildings”

Top 4 compared to all other engineers & architects (2019-2021)

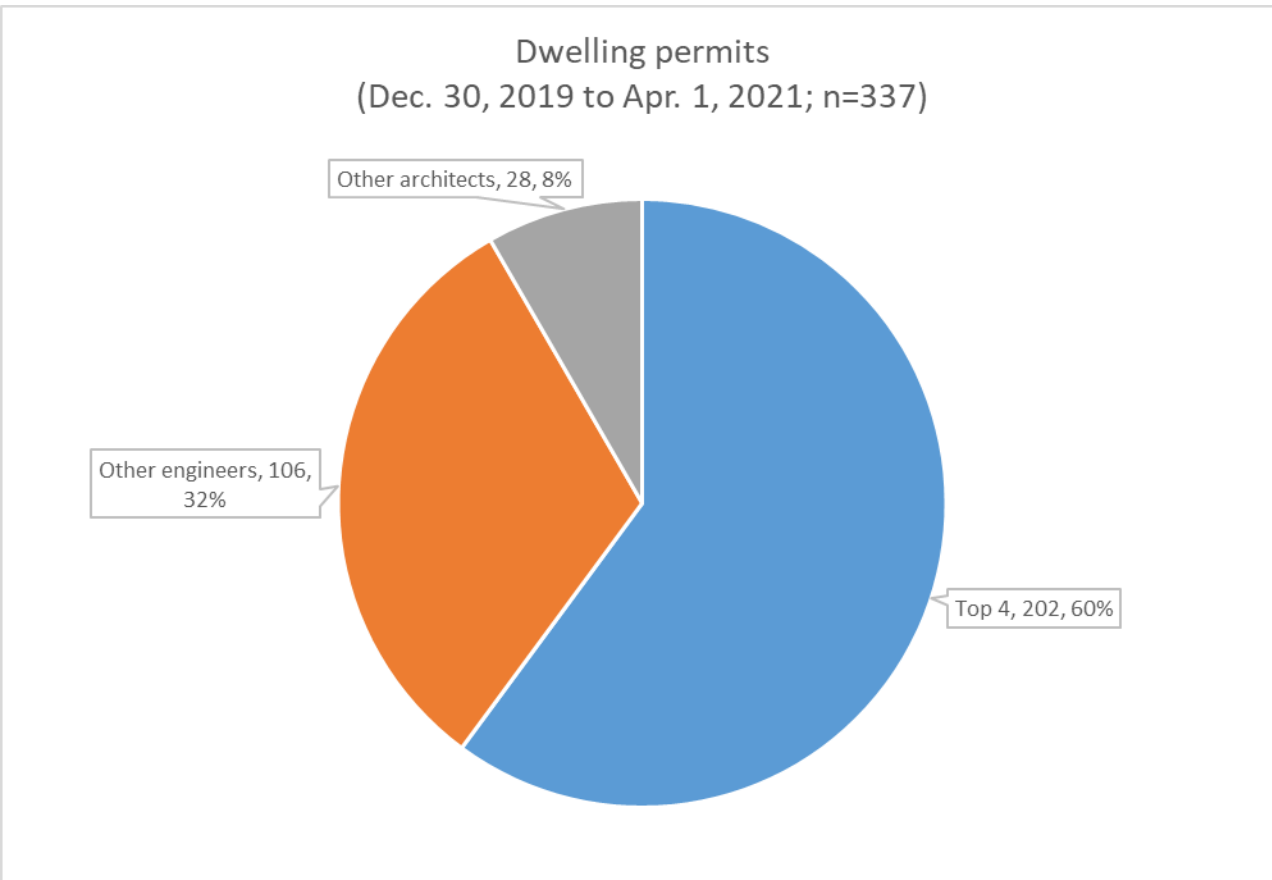
Likelihood of:

- having a permit held: 2.33 times more likely
- having an unresolved hold: 3.19 times more likely
- having a hold greater than 180 days: 2.87 times more likely
- having more than one hold notice: 1.23 times more likely
- design not meeting requirements: 3.19 times more likely



Dwellings

- Dwelling permits dominated by “moonlighters:”
GEPA estimate: 317 of 337 (94%) of dwelling permits certified by Top 4 & moonlighting engs. or archs. (i.e., not associated with a “firm”)



Solid Waste Permitting Tips

- Required documents to be submitted with application:
 - Solid Waste Disposal Plan (GEPA Form)
 - Letter of authorization or contract for waste disposal site (hardfill)
 - Contract or agreement with solid waste hauler
- **COMMON ERRORS** that delay applications:
 - Form not submitted
 - Letters of authorization/contracts not submitted
 - Disposal site or transporter stated on SWMP does not match letters



Permitting Summary

- Grading permit required to clear land
 - Over 1 acre = federal (USEPA) permit
- Building permit required to build – also covers clearing!
 - Save yourself a permit application!
- E&SC plan, stormwater plans not required
 - But you are still responsible for preventing impacts
- Make sure you are working directly with a PE or RA
- You must consider construction waste disposal and prepare a plan



Questions!

- Do you need a building permit for the house, if you already have a DPW grading permit?

Yes – but you don't need a grading permit if you already have a building permit

- I have a great house plan that was drafted by a friend who works for a contractor, I can just get an engineer to stamp it, right?

No – Guam law requires the PE or RA to be in “responsible control” of design

“Reviewing, or reviewing and correcting, technical submissions after they have been prepared by others does not constitute the exercise of responsible control because the reviewer has neither control over, nor detailed professional knowledge of, the content of such submissions throughout their preparation.” [22 GCA §32103(w)]



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Questions!

- Do I need to prepare a stormwater runoff disposal system plan for my single family home lot?

No – but you cannot cause new erosion or drainage issues to neighboring properties. It is strongly recommended that your engineer or architect consider drainage issues in your design, and to include features which mitigate impacts unless you are building in a planned subdivision with an existing stormwater system.



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Construction Requirements



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Construction Requirements

- E&SC measures & maintenance
- Septic System Inspections
- Plumbing Requirements
- Solid Waste Disposal



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Erosion & Sediment Control

- “Silt fence” is usually enough for a single family home project
- Must be installed properly and maintained!
- Location: low side of lot – curve ends to catch runoff



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Silt Fence

- Location: low side of lot
– curve ends to catch runoff
- No need to install on uphill boundaries
- Use “J-hook” installation rather than straight lines

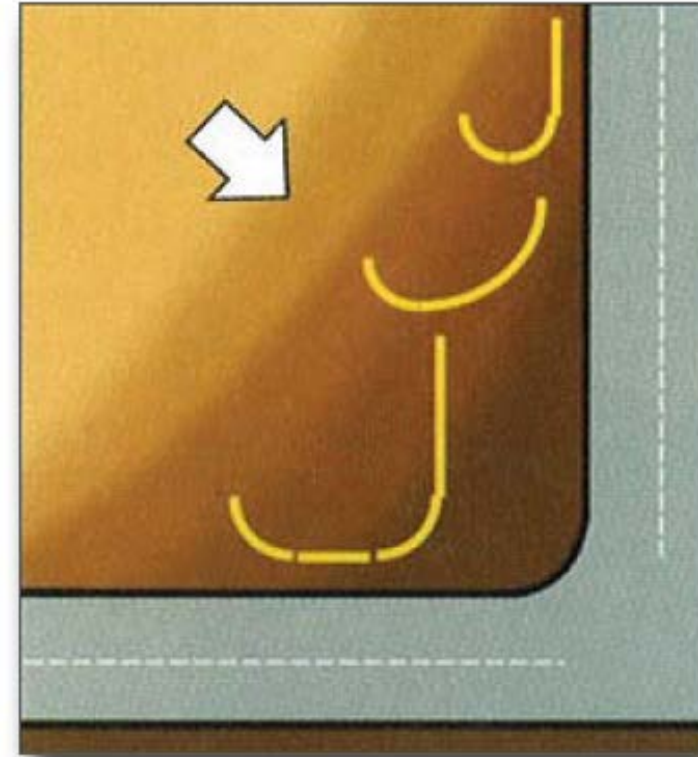


Figure 6. J-hook silt fences provide multiple storage areas

Silt Fence

- Dig 4" by 6" trench



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Silt Fence

- Bury fabric:
 - In bottom of trench:
 - 4" wide, 6" deep



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Silt Fence

- Compact soil
 - By foot is usually enough



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Silt Fence

- Place stakes:
 - Every 5-10 feet
 - Downhill side of fabric!
- Hammer stakes:
 - 16 inches deep, minimum



Silt Fence

- Tie fabric to posts
 - Use wire
 - Two ties per stake usually enough



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Silt Fence

- Test!
 - Must be strong to hold back water during wet season
 - Not necessary to lay on it, but must be strong enough to resist pressure from uphill side without uprooting fabric or falling over



Inlet Protection

- If storm drains nearby
 - Not applicable on all home projects
- Sandbags are not approved!
 - Flood roadway
 - Break and release fill into storm drain



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Erosion & Sediment Control - Maintenance

- Contractor (or self-constructor) is required to inspect, maintain and repair silt fence and other measures until construction is complete and lot is stabilized:
 - “Stabilized”: completely revegetated (grass) and all paved surfaces in place
- Contractor (or self-constructor) is required to keep public roadways clean from tracked mud and silt



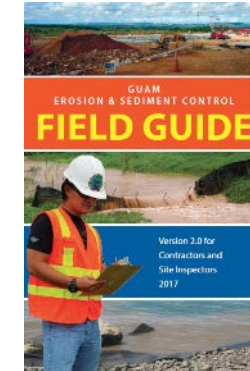
Erosion & Sediment Control Resources

- **GEPA Manuals:**

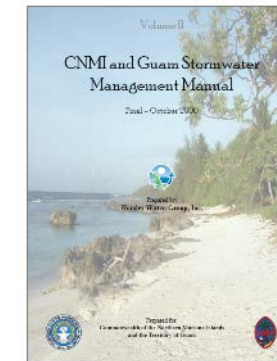
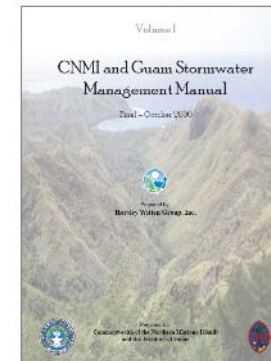
- epa.guam.gov
- Programs >> Water Pollution Control
- <http://epa.guam.gov/programs/water-pollution-control/>

- 22 GAR Chapter 10 Guam Soil Erosion and Sediment Control Regulations

- <http://www.guamcourts.org/CompilerofLaws/GAR/22GAR/22GAR002-10.pdf>



Guam Erosion & Sediment Control Field Guide (2018)



CNMI & Guam Stormwater Management Manual Vols. I & II(2006)



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Leaching Field Construction

- Clayey soils (common in Southern Guam) are very vulnerable to construction damage
 - Compaction of bottom or even “smearing” side walls will create a water-tight clay membrane
- Leaching field/trench construction
 - Do not drive heavy equipment into bottom of excavation!
 - Don’t compact soils at bottom of leaching field/trench with bucket
 - Don’t “smear” soils at sides of leaching field/trench
 - Install aggregate fill very gently – don’t just dump
 - Install layer of sand first for very low perc rate soils to avoid compacting with aggregate



Septic Tank Construction

- Tank must be water-tight – VERY IMPORTANT
 - Leaking tanks pose two problems:
 - They are technically a “cesspool” - which is illegal
 - They can leak both ways – in rainy season you might be draining your backyard into the septic tank!
- Ask your contractor to perform a leak test, for you to witness
 - Fill to outlet & measure water level
 - Do not touch tank or add water
 - Measure level again at 24 hours – there should be no/very little change



Radon-resistant construction

- Break for separate presentation



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Summary: Construction

- All construction requires erosion and sediment controls
 - Learn how to properly install and maintain silt fence
- Contractors must be E&SC certified!
 - Training available through Guam Trades Academy
- Septic tanks must be water-tight!
 - Be sure – test by filling tank and checking level after 24 hours
- Be very careful constructing the leaching field/trench system
 - Don't drive equipment inside excavation
 - Don't compact with bucket



Questions!

- How much silt fence fabric must be buried? (depth and width)

10 inches of fabric: 6 inches deep, 4 inches wide

- How deep and far apart must silt fence posts be driven?

16 inches deep, 5 to 10 feet apart

- Is E&SC certification required for self-construction?

No

- Is silt fence required for self-construction?

Erosion and sediment control is always required



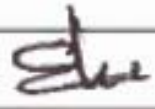

GEPA Occupancy Permit Requirements



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Proof of sewer connection

- Best: have GWA sign Occupancy Clearance Sheet and notate water, or water and sewer service, prior to submitting to GEPA

X	Guam Waterworks Authority	11-16	ELIJO DIZON			EAST MERU WATER
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- Acceptable: Proof of connection signed by GWA (sewer service application form signed with date of connection provided by GWA staff)
 - Common problem: application form submitted without GWA signature and date on bottom portion as proof that installation was completed



Septic Tank Inspection – part 1

- Approved GEPA Inspection Report required for Occupancy
- Only request inspection when BOTH septic tank and leaching field are ready!
 - Otherwise will have to re-schedule
- Septic tank:
 - All formwork removed
 - Tees and extensions glued in place (not friction-fitted)
 - Interior plaster seal in place (also around inlet & outlet Tees)
 - Dimensions must match approved permit documents



Septic Tank Inspection – part 2

- Leaching field (or trench):
 - First layer of aggregate in place
 - Complete distribution piping in place – with caps, perforations visible
 - Filter fabric material on-site, ready to cover final aggregate layer
 - Dimensions must match approved permit documents



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Lead-Free Certification (LFC) Requirements

- Approved LFC Form Required
- Save your boxes and labels!
 - Inspection is not always necessary!
- Make sure your contractor fills out the LFC form – this form contains simple instructions.
- Frequently Asked Questions and links to other information:

<http://epa.guam.gov/programs/safe-drinking-water/>



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INSTRUCTIONS

1. Listing of plumbing products:
 - a. It is only necessary to list plumbing products upstream of regulated endpoint devices. Per 22 GAR §6141.43(b)(1), this means "plumbing fittings and fixtures intended to dispense water from the domestic water piping system for human ingestion" and includes "kitchen and bar faucets, lavatory faucets, water dispensers, drinking fountains, water coolers, glass fillers, residential refrigerator ice makers, supply stops, and endpoint control valves."
 - b. Per 22 GAR §6141.43(c)(1), the lead-free requirements do not apply to the following, which are not required to be listed on this form (subject to verification by inspection):
 - i. Toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, shower valves, service saddles, or water distribution main gate valves that are two (2) inches in diameter or larger; or
 - ii. Pipes, pipe fittings, plumbing fittings, or fixtures, including backflow preventers, that are used exclusively for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption.
2. Example plumbing product listing (example only for typical single family dwelling; the listing of products shown does not constitute an endorsement. Store names are fictional.):

Product	Manufacturer	Purchased from	Certification "N/A" for plastic	
			On product	On package
PIPE				
¾" PVC Schedule 80 pipe	Charlotte Pipe	Bob's Home Supply	N/A	
PIPE FITTINGS				
¾" PVC Sch. 80 elbows	VPC	Bob's Home Supply	N/A	
VALVES				
¾" Ball valve	Everbilt	Corner Plumbing	✓	✓
½" by 3/8" Angle valve	BrassCraft	Corner Plumbing	✓	✓
OTHER PLUMBING MATERIALS (e.g., backflow preventers, solder, flux)				
3/8 x ½" Faucet supply line	BrassCraft	Corner Plumbing		✓
ENDPOINT DEVICES – provide packaging for GEPA inspection!				
Lavatory Faucets	Delta	Home Megastore		✓
Kitchen Faucet	Moen	Home Megastore		✓

How do I know if it's Lead-Free?

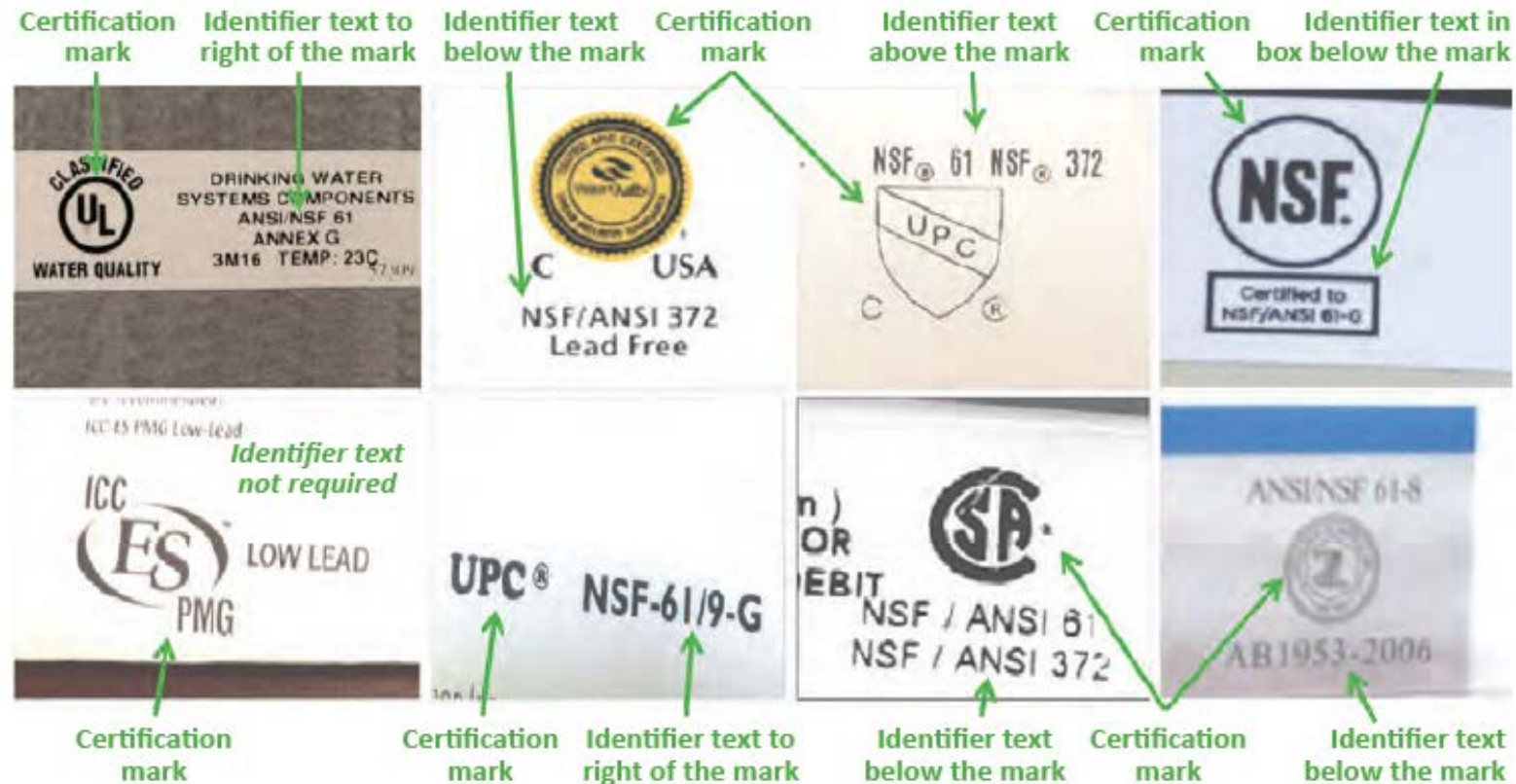
- Sometimes hard to determine – no federal labeling requirements
 - But lead-free is a requirement of federal (& Guam) Safe Drinking Water Act
- MOST products marked with third-party certification that it meets one of the following, acceptable standards:
 - NSF/ANSI Standard 372
 - NSF/ANSI Standard 61, Annex G
 - California HB AB1953, Section 116875
 - ASME A112.18.1-2012/CSA B125.1-12
- See EPA Labeling Guidance:

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100LVYK.txt>



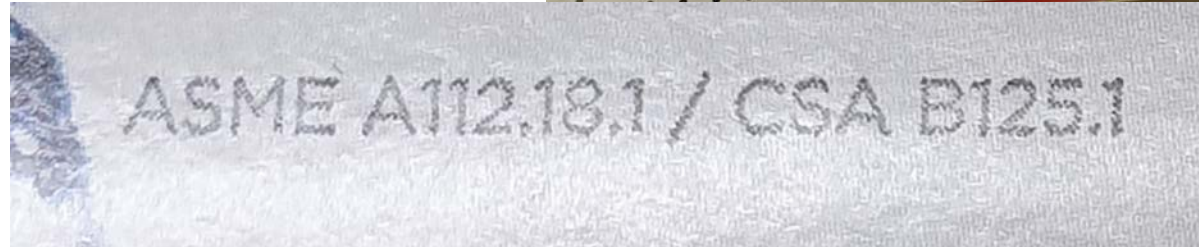
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Lead free marks – confusing!



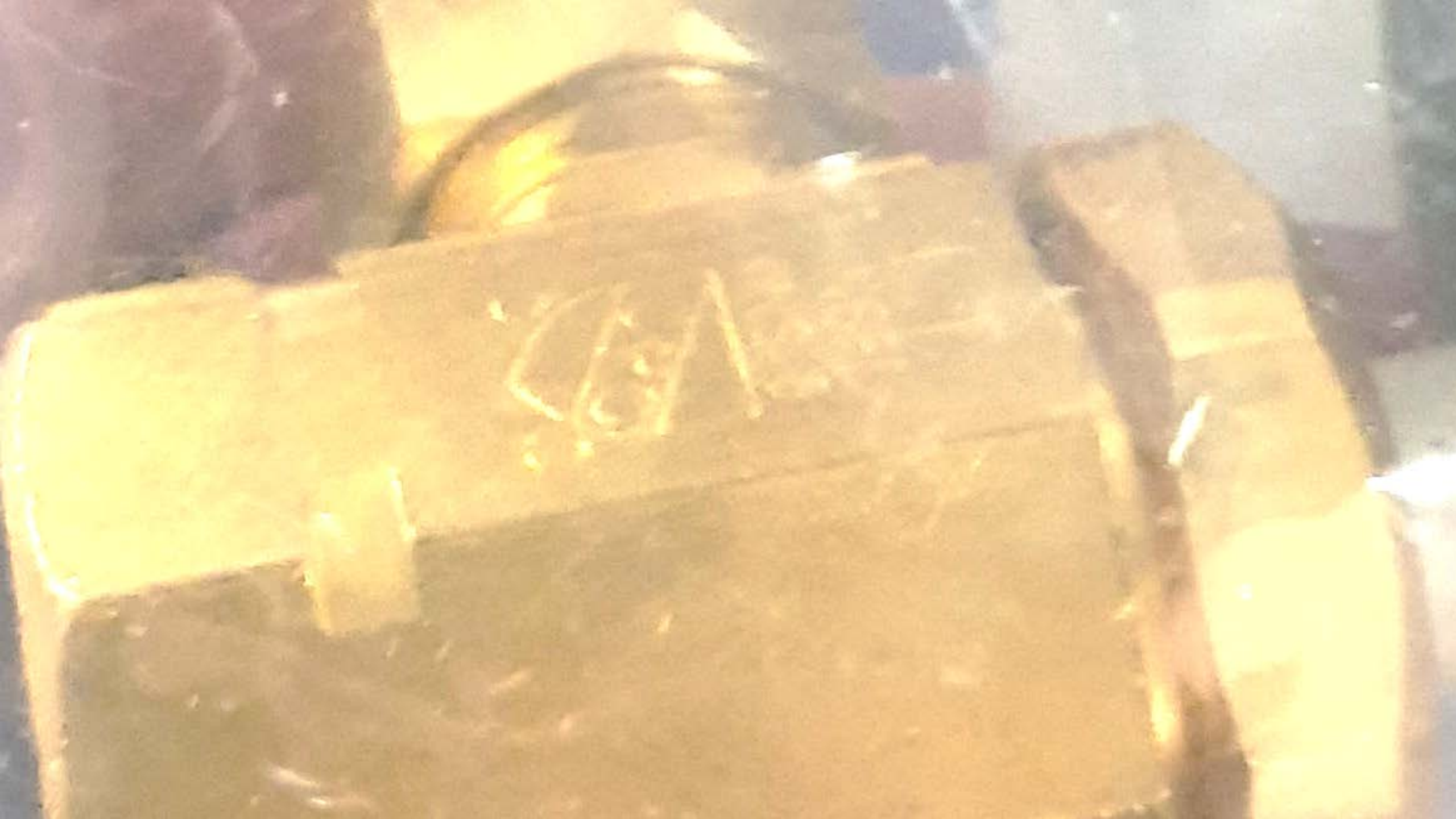
Also acceptable

- ASME A112.18.1
- Found on Delta, Peerless brands



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- Not acceptable
 - Not third-party certified to meet any of the acceptable standards
 - “Stainless steel” alone is not sufficient proof – must be third-party certified (inner components unknown)



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- Not acceptable
 - Not third-party certified to meet any of the acceptable standards
- Be careful buying online, including Amazon!



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绿色环保



绿色建材



国际标准

CHOICE MAIN
EM ESSENTIAL METHOD

, design:

...ing water cock and washbasin, water trough, bathtub

Not all fittings must be lead-free:

Per 22 GAR §6141.43 (c)(1) Exemptions, the lead-free certification requirements do not apply to:

(A) pipes, pipe fittings, plumbing fittings, or fixtures, including backflow preventers, that are used **exclusively for nonpotable services** such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption; or

(B) toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, shower valves, service saddles, or water distribution main gate valves that are two (2) inches in diameter or larger.

In practice, GEPA also exempts all piping, supply hoses, and valves leading up to such exempted fittings and fixtures.



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GEPA Occupancy Requirements – Solid Waste

- Copies of receipts for construction debris disposal must be submitted
- Project site must be inspected & approved by Solid Waste Management Program staff
 - **COMMON ERROR:** contractor requests inspection before construction is completed
 - Don't request inspection until all construction waste has been properly disposed! Additional inspection (delays) if not ready.



Questions!

- Can GEPA approve my Lead-Free Affidavit without an inspection if I have all my labels?

Yes – this is the ideal case!

- Why can't GEPA just perform lead sampling like they used to, instead of checking every single fitting?

Federal and Guam law requires certification – testing is unreliable and cannot substitute for certification

- What must be visible to receive leaching field inspection approval?

The entire leaching field piping w/caps, first layer aggregate, filter fabric on-site



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Additions & Renovations



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Am I allowed to build an extension?

- On sewer: yes*
- On septic system: it depends
 - Original septic system must have been designed for the proposed # rooms
 - If original plans and permit are not available, might not be able to determine
 - New septic system required if original system not large enough
 - **No addition may be built on top of tank or leaching field, 100% reserve area, or within setbacks**



What about a renovation?

- If no change to the dwelling's occupancy (number of bedrooms), no modifications to the septic system are required.
- If renovation includes increasing the number of bedrooms, even just by changing the use of a previously unoccupied room, then the size original septic system must be adequate to serve the proposed new occupancy.
 - If not large enough, the septic system must be replaced.



Can I convert my single-family dwelling to a duplex?

Over Aquifer (within GPZ)

- GEPA lot-size policy applies to dwelling units: a duplex = two units
 - required lot size = 2x minimum dwelling lot size

Outside Aquifer (outside GPZ)

- Consult with Department of Lands Management
 - If approved by DLM, must be able to fit required septic system, including 100% reserve leaching field area, within lot for specified total bedrooms



Can I put a shed, or a pool on top of my septic system?

- No.
- Numerous reasons for this:
 - Prohibited by regulation
 - Structural/foundation instability
 - Toxic and explosive gases
 - Early failure of leaching field
 - Access for maintenance or replacement



Take-aways for additions and renovations:

- Include your ultimate build-out plans in your original septic system design
 - If you want 4 bedrooms but can only afford 2, design & build your septic system for 4 bedrooms – much cheaper than having to re-build it later on.
- Keep your GEPA permit in your records
- Keep your original as-built drawings and GEPA inspection forms as proof of septic system capacity (dimensions)
- Never build on top of septic system or reserve area!



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Frequently Asked Questions: Septic Systems

- Published February 2023:

<http://www.epa.guam.gov/stlf>



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Frequently Asked Questions: Lead-free plumbing

- Published January 2021:

<http://epa.guam.gov/wp-content/uploads/2021/01/FAQ-PS-115-35-Building-and-Occupancy-Permits.pdf>



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Questions

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Helpful Links

GEPA Water Pollution Control Program Page:	http://epa.guam.gov/programs/water-pollution-control/
GEPA Safe Drinking Water Program Page:	http://epa.guam.gov/programs/safe-drinking-water/
GEPA Air Pollution Control Program Page:	http://epa.guam.gov/programs/air-pollution/
GEPA Solid Waste Management Program Page:	http://epa.guam.gov/programs/solid-waste-before-import/
GEPA Hazardous Waste Management Program Page:	http://epa.guam.gov/programs/hazardous-waste/



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