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- **What Is It?**
- **When is it needed?**
- **What are the planning components?**



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What is It?

- Managed Release Concept (MRC)) is a post-construction stormwater management (PCSM) strategy that comprises the collection, management, and filtration of captured runoff from the contributing drainage area through a best management practice (BMP) that is preferably vegetated and includes release of a portion of the captured runoff through an underdrain within the BMP. It's an **alternative** approach for managing volume and water quality.



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When is it needed?

This approach should be used when all other volume reducing BMPs have been exhausted and the soils on the site have been proven to not infiltrate, infiltrate at a rate slower than 0.2 in/hr or have problematic limiting zones.



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Planning Components:

- Soils testing – pits and infiltration testing.
- Site analysis and testing for hazardous or contaminated materials.
- Alternatives analysis showing that other structural and non-structural BMPs are not practical for volume control for this site. Demonstrate that MRC was minimized to the extent practicable.



Soils Analysis

- The applicant has completed a thorough pre-development site characterization and assessment of soil and geology of the **project site** (not just the proposed location of the BMP), and the applicant's licensed professional engineer has determined that it is not feasible to manage the required volume through infiltration and ET alone due to soil and/or geologic conditions or other environmental constraints on the project site. DEP intends for the **use of MRC to be limited to sites where infiltration is extremely limited (i.e., very slow infiltration rate), not feasible (i.e., groundwater and/or regularly occurring seasonally high-water tables within one foot of the bottom of the BMP's soil media), or undesirable (e.g., sinkhole-prone areas or contaminated soils)**



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Soils Analysis Continued

Test don't Guess - Test pit data including depths, soil descriptions, and limiting zone depths / type and infiltration testing data should be submitted as part of the application. Include all data collected. The entire site should be tested to rule out infiltration. Look at all soil horizons and test which one has the highest potential for infiltration.



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Soils Analysis Continued

HOW MANY TESTS ARE ENOUGH?????

- Common question without an easy answer.
 - How many soil types are present?
 - Geology?
 - High variability during tests?
 - Site constraints?
 - Consistent shallow limiting zone?



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Soils Analysis



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Soils Analysis



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TEST PIT LOG TP-1



Test Loc. No. **TP-1**
 Contract No. **21098.1**
 Date Excavated: 08/05/21
 ME, Inc. Rep.: KC
 Equip. Used: Hand Excavated
 Surface Elev.: 1761.8

Groundwater Observations

Encountered: 08/05/21 Depth: none
 Completion: 08/05/21 Depth: dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing		M (%)	Remarks
					Depth	Geo. Pen.		
0	8" topsoil							
1	brown sandy SILT	ML	A1		1		15.0	infiltration testing @ 2.0', El 1759.8
2					2			
3					3			
4	Bottom of Test Pit at 4.0 feet			1757.8	4			
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			

Comments: Backfilled upon completion.

Hazardous or Contaminated Materials

- Phase 1 – screening tool is usually the first step.
- Testing to identify the location and concentrations.
- If hazards and or contaminates are isolated and not site wide, utilize the areas outside of the hazards and or contaminates for BMPs. – DEP involvement – potential pollutants discovered during the completeness stage of the permit process.



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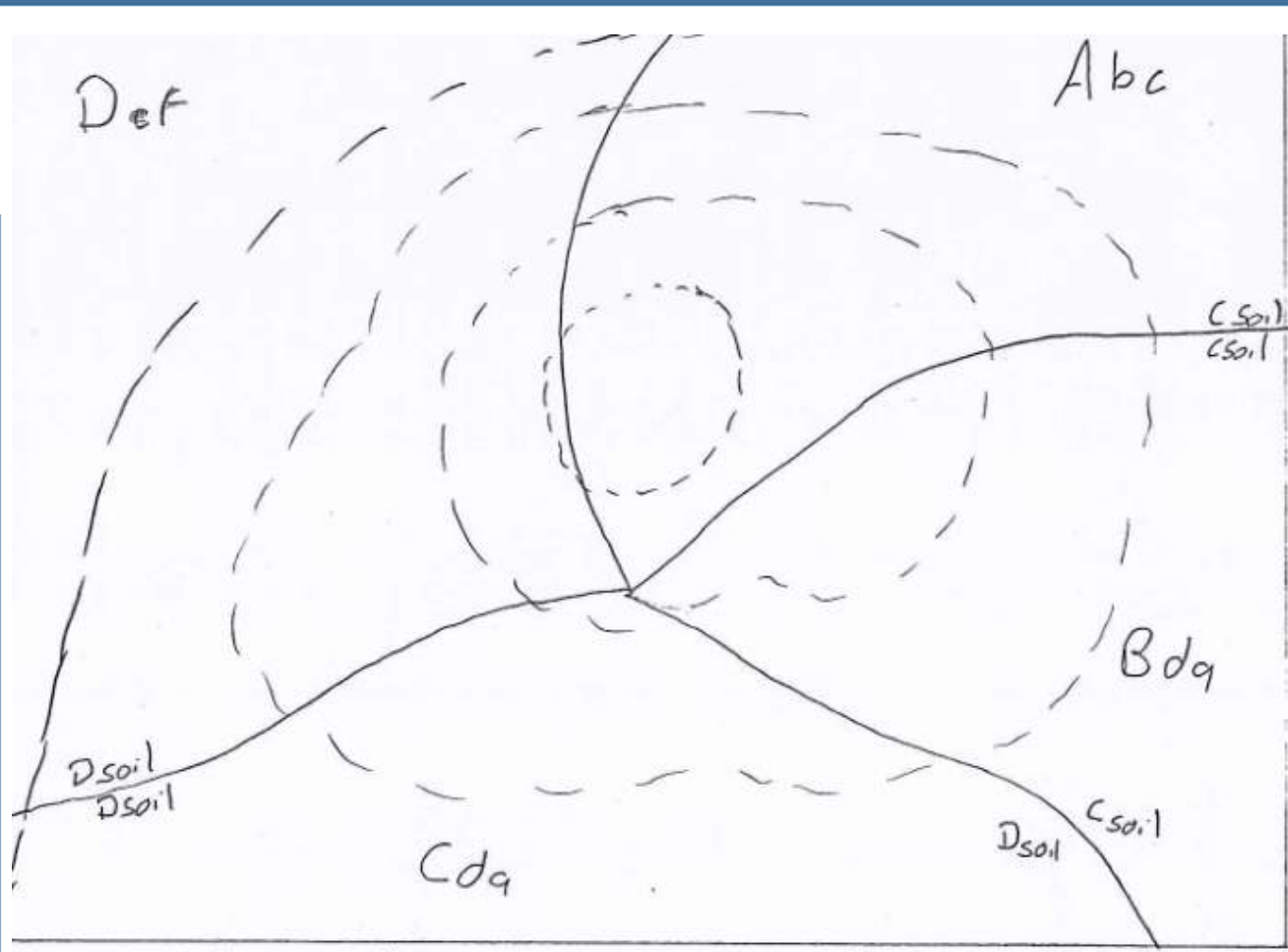
Examples



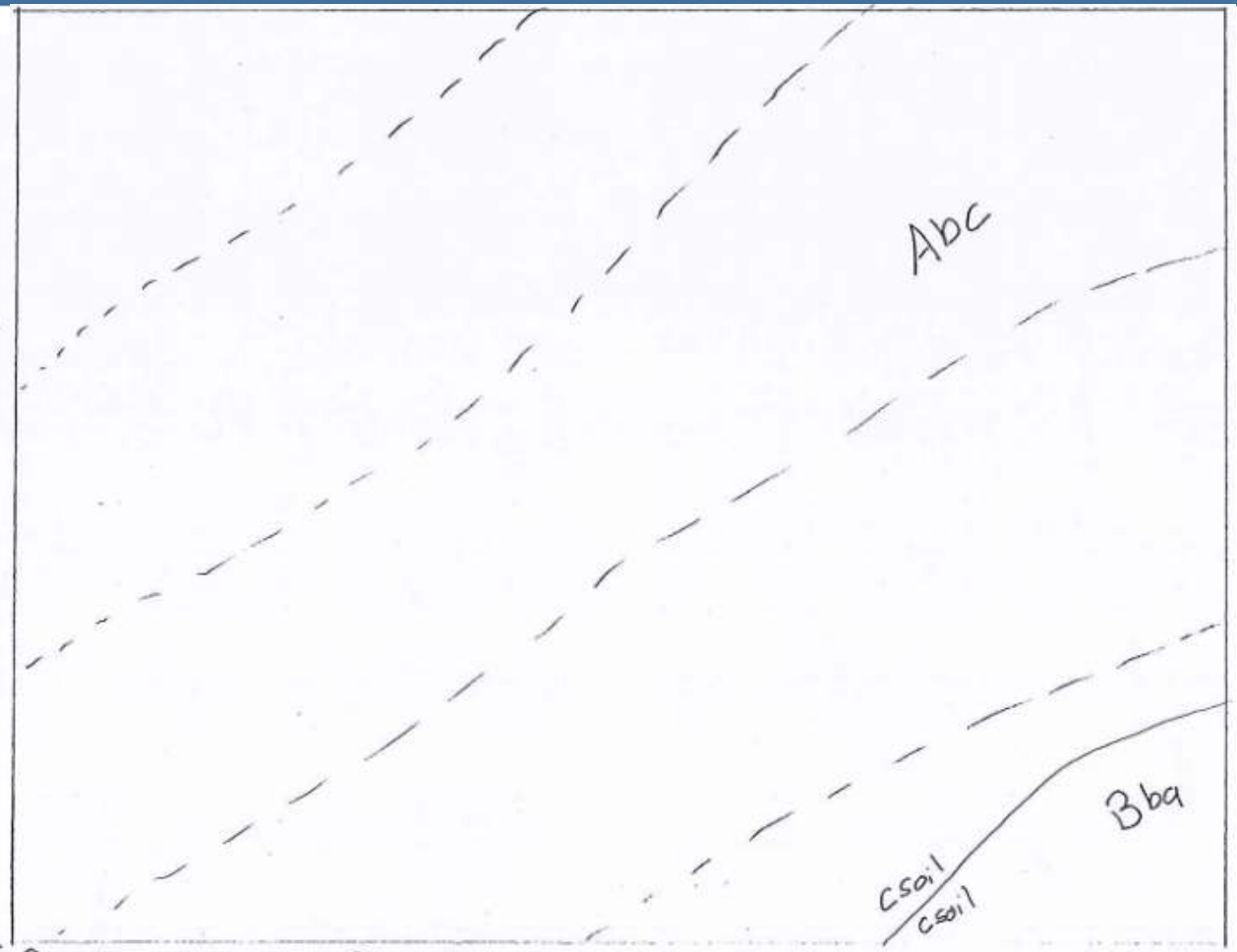
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Site A 3 Ac Project Area



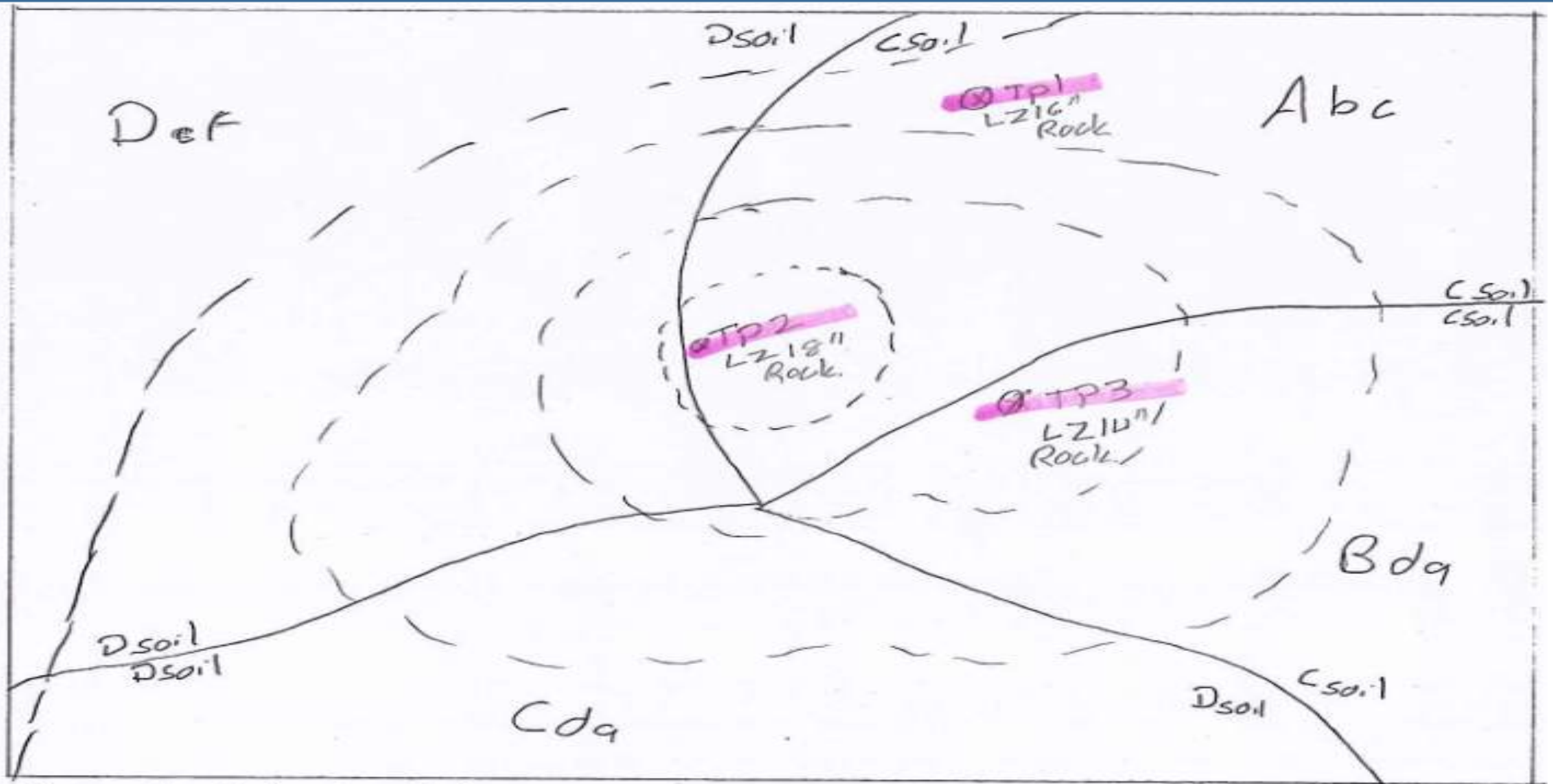
Site B 200 Ac Project site



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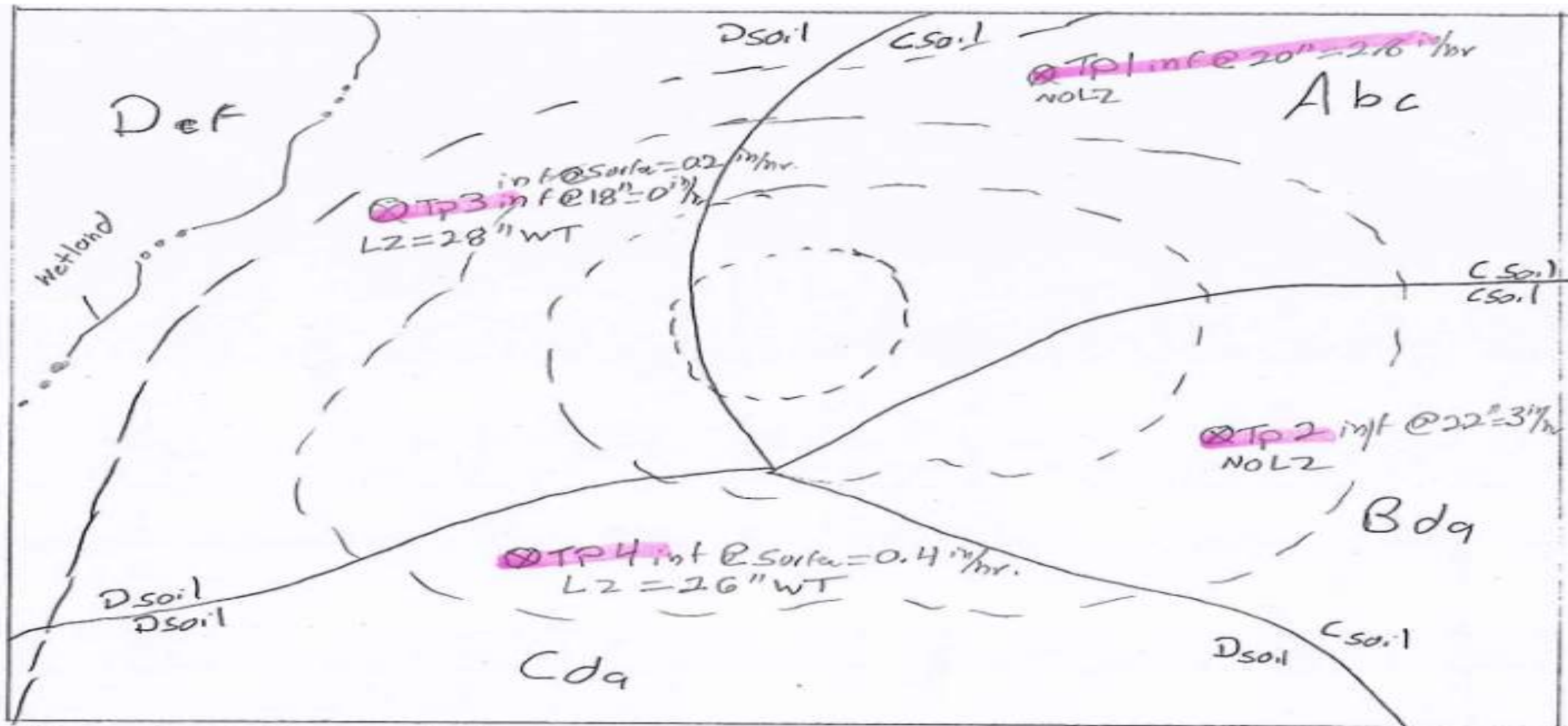


Site A, 3 Ac Project Area

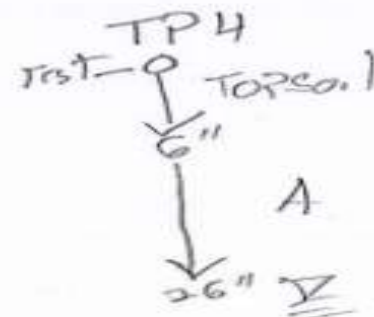
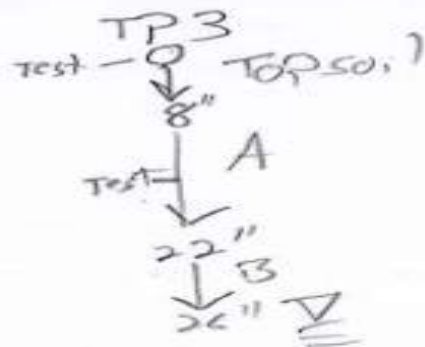
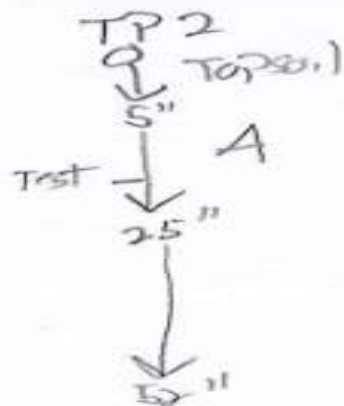
TP1
 O Topsoil
 ↓ 4"
 ↓ 16" Retusal

TP2
 O Topsoil
 ↓ 1"
 ↓ 18" Retusal

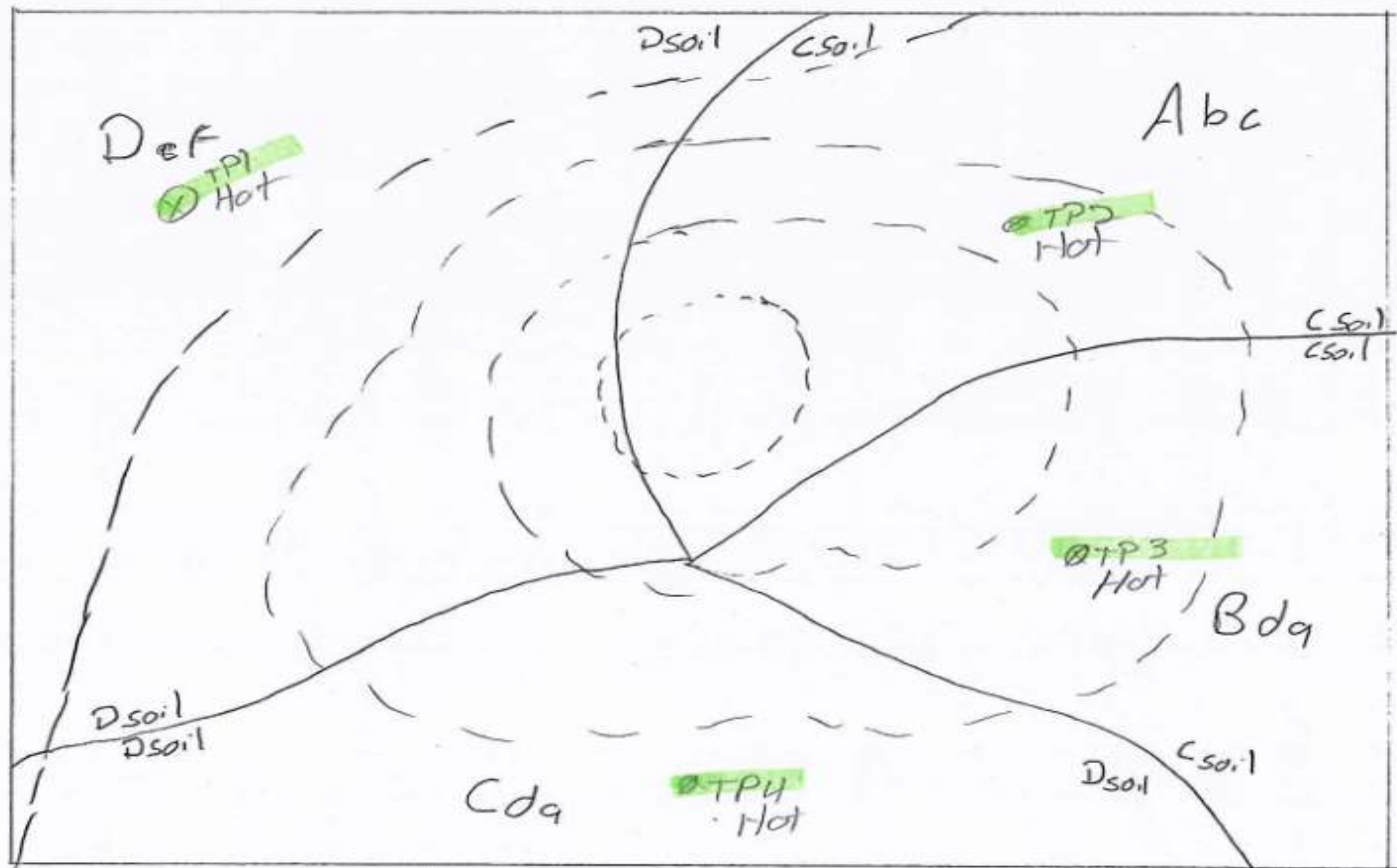
TP3
 O Topsoil
 ↓ 3"
 ↓ 14" Retusal



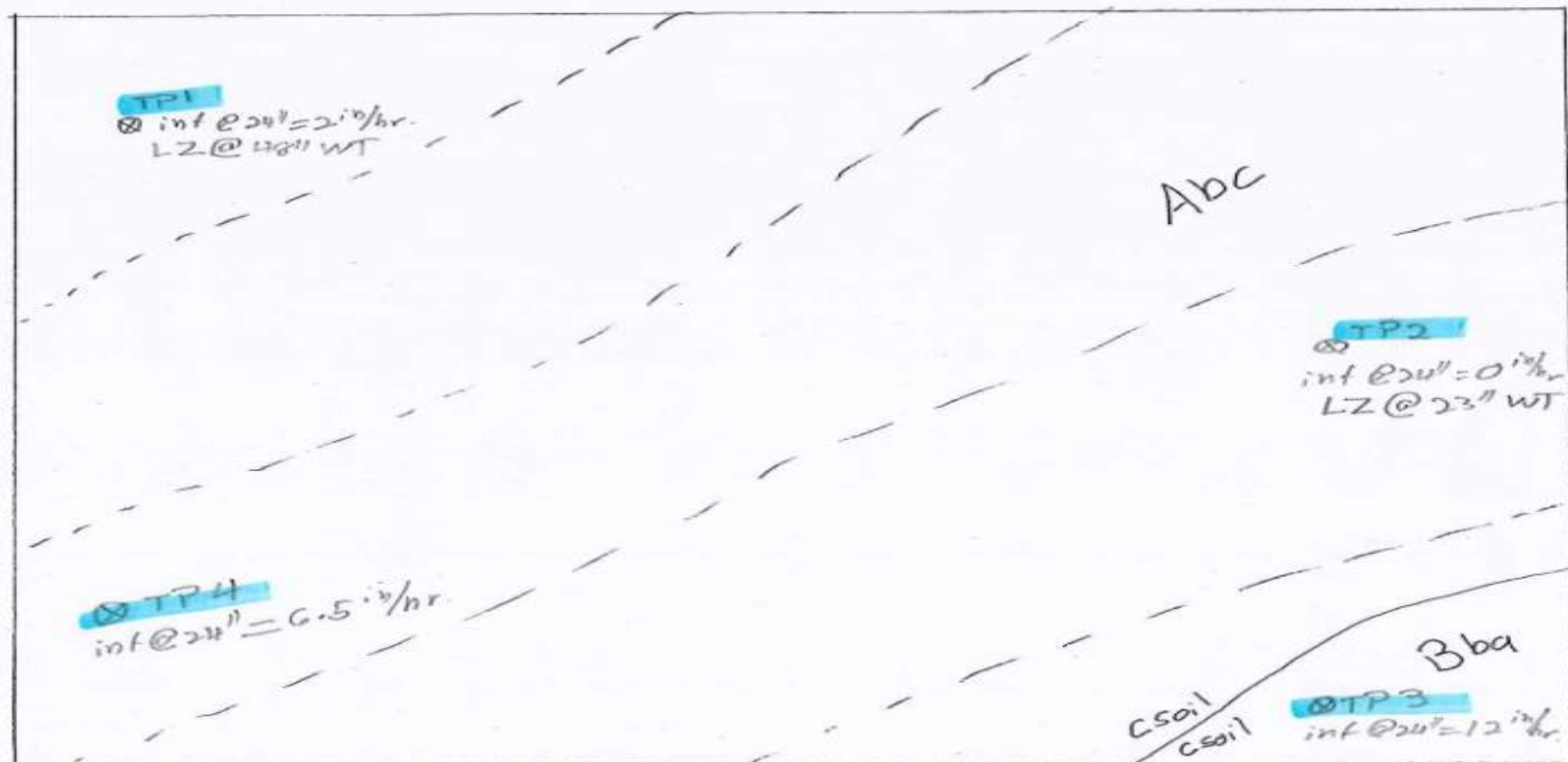
Site A₂ 3 Ac Project Area



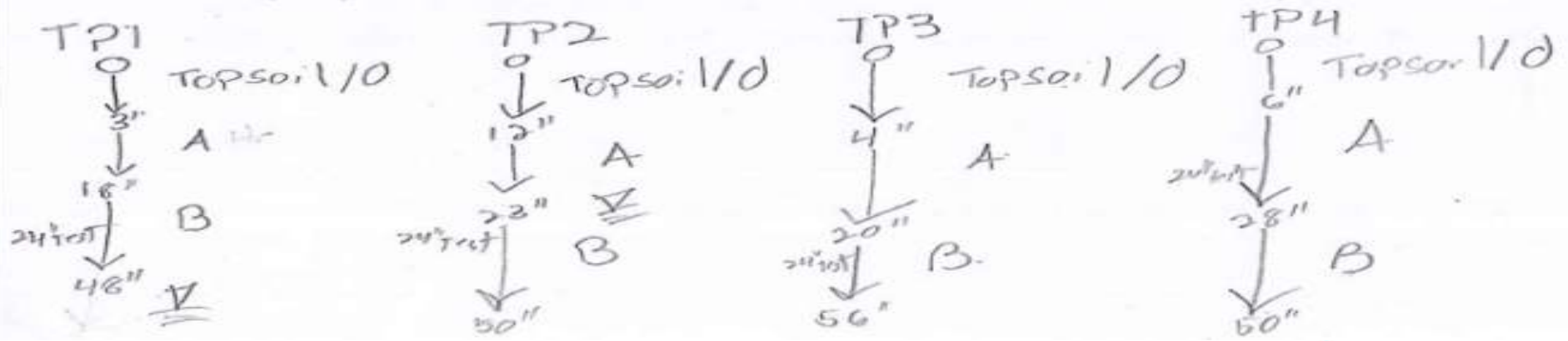
* Geotech has indicated that C and D soil tests represent Entire Soil group

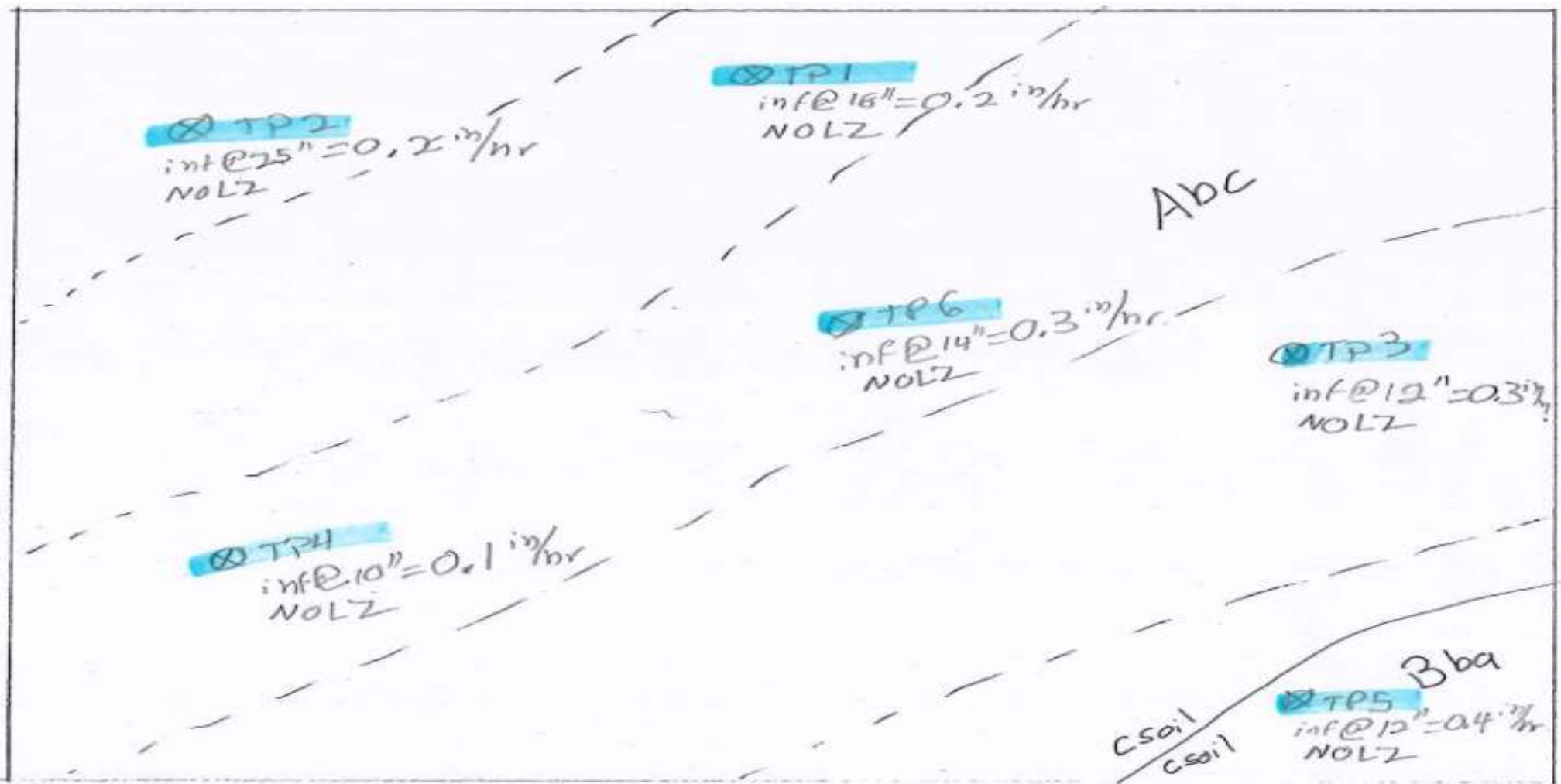


Site A₃ 3 Ac Project Area
 Phase 1 indicates site is a former orchard

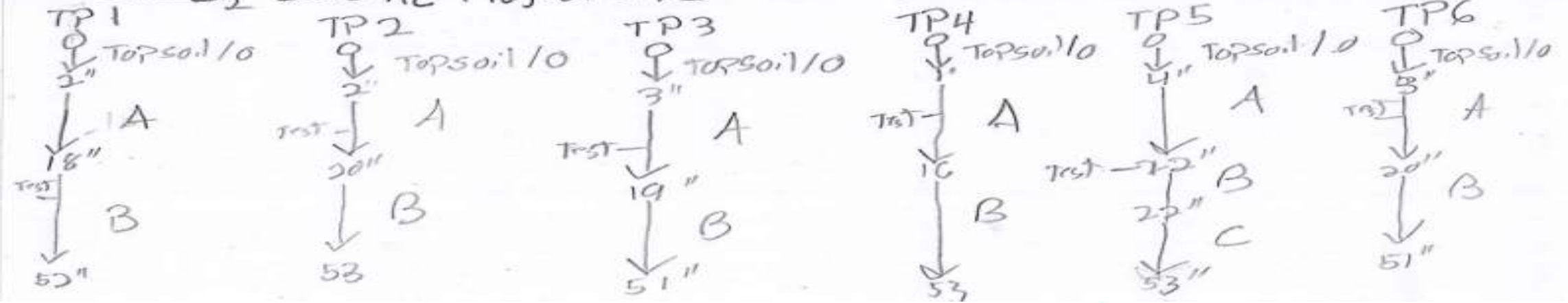


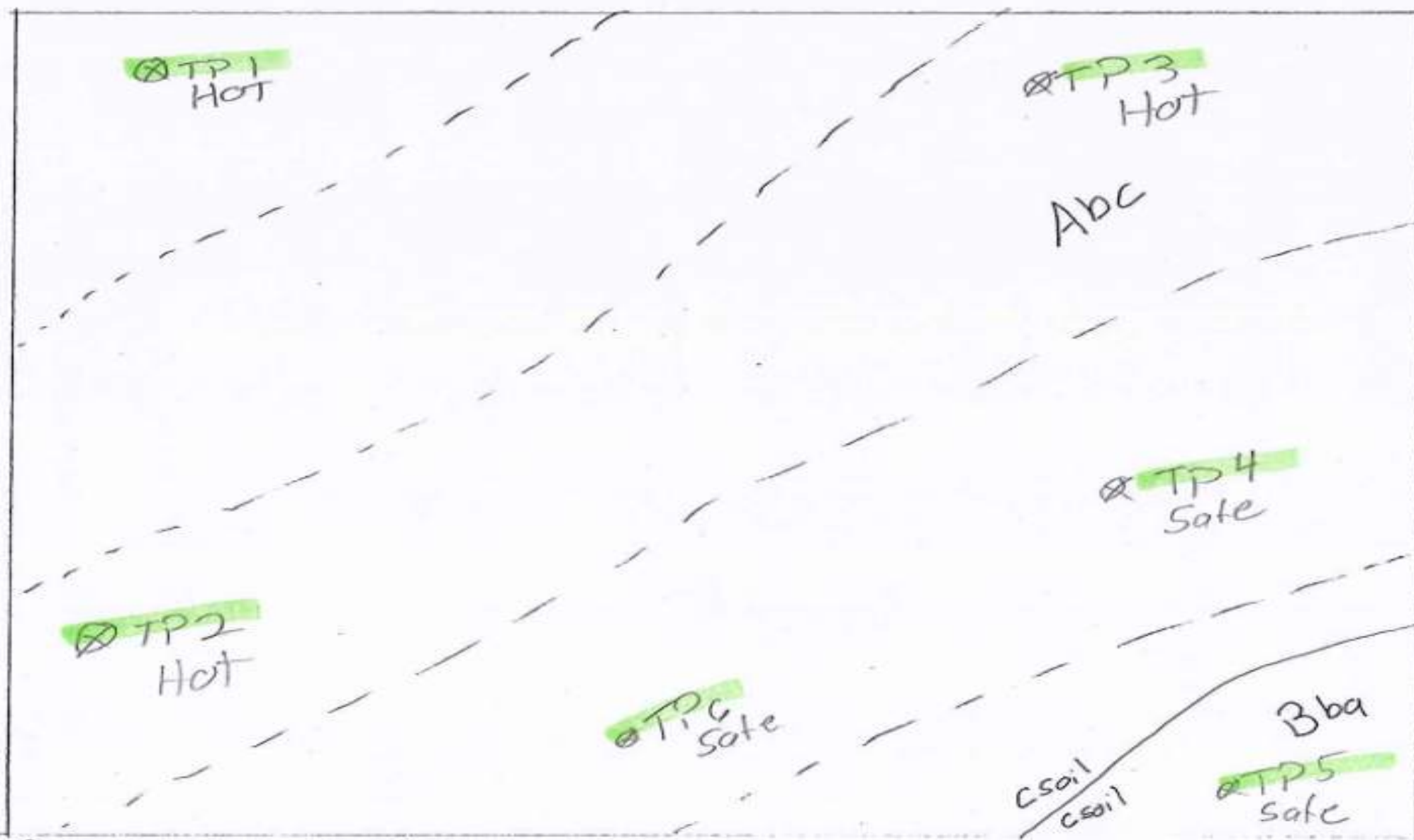
Site B, 200 Ac Project site





Site B₂ 200 Ac Project site





Site B₃ 200 Ac Project Site
Phase I indicates the site was a former junk yard.

Alternatives Analysis

Many BMPs are overlooked when designing projects.

- Can the E/T credit on the BMP Spreadsheet be used to address volume management? This should be maximized for the site prior to considering MRC
- Design the project to look at non-structural BMPs first. Maximize the use of non-structural BMPs by the layout of the project. Remember saying it so doesn't make it so. Design guidelines still need to be met for non- structural BMPs.
- Look to take advantage of the “good” soils by reserving them for stormwater similar to what is done for on-site septic. Maximize infiltration in the good soils even if it's not enough to treat volume alone. It's not all or nothing!



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Alternatives Analysis

Many BMPs are overlooked when designing projects.

- Consider green roofs, pervious pave, infiltration berms, raingardens etc. for those areas with good infiltration but shallow limiting zones.
- Explore the possibility of infiltrating below shallow limiting zones where the geotechnical engineer feels it is appropriate.
- By following these steps, the MRC need will be reduced or eliminated.



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Questions?



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