

New Jersey State
Agriculture Development Committee

Soil Protection Standards

Best Management Practices




Ground-Mounted Solar Energy Facilities

Best Management Practice



Soil Disturbance Land Use Chart

				Land Uses	Soil Effects Classifications
 Degree of Reversibility	SOIL PROTECTION STANDARDS - GENERAL			Cut/fill activities (includes stormwater basins)	Permanent Soil Disturbance ("Red" Category)
				Permanent buildings/structures	
				Permanent travel lanes	
				Permanent livestock training areas	
				Permanent parking and storage areas/hardscape	
	SOIL PROTECTION STANDARDS - BEST MANAGEMENT PRACTICES (BMPs)			Semi-permanent travel lanes	Semi-Permanent Soil Disturbance ("Orange" Category)
				Semi-permanent livestock training areas	
				Semi-permanent parking and storage areas	
				Agricultural water impoundments	
				Soil stockpiles	
				Geotextiles and geomembranes	Temporary Soil Disturbance ("Yellow" Category)
				Temporary structures	
			Temporary travel lanes		
	ANCILLARY STANDARDS			Temporary livestock training areas	Soil Protection ("Green" Category)
				Temporary parking and storage areas	
				Ground-mounted solar energy facilities	
		Cropland/pastureland (equine activities clarification)			
		Woodlands/wetlands (silviculture clarification)			
		Conservation practices (cost-share program clarification)			

Ground-Mounted Solar Energy Facilities

- Must adhere to existing solar rules (NJAC 2:76-24.1 et seq.)
- Roof-mounted panels are counted under disturbance limits for structures.
- Concrete pads for electrical equipment count towards disturbance limits.
- Anchors or approved footings are not counted towards disturbance limits.



Ground-Mounted Solar Energy Facilities

- Minimize disturbance from buried infrastructure during construction
 - Use a trenching tool
 - Bury beneath rooting depth (40")



https://allame.trustpass.alibaba.com/product/50022901096-230624888/Trencher_Machines_manufacturer_from_Turkey.html

Ground-Mounted Solar Energy Facilities

- Vegetative cover shall be maintained at all times
- No gravel underlayment



Ground-Mounted Solar Energy Facilities

- Must comply with Subchapter 24 size limits (1% of premises; 1 acre of impervious cover)





Ag. Water Impoundments

Best Management Practice

- An excavated, unlined farm pond or dammed impoundment fed by surface water or groundwater designed and sized for irrigating agricultural crops or watering livestock.

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Ag Water Impoundments

- BMP does not apply to decorative or recreational ponds, wildlife ponds, stormwater management facilities, aquaculture ponds, manure lagoons, tailwater recovery ponds, ponds constructed primarily for hydropower uses, or naturally occurring ponds and wetlands.
- Farm ponds constructed prior to adoption of the rules are proposed as exempt from the soil disturbance limits.



Ag Water Impoundments

- Only footprint of maximum water level is considered **ORANGE**. (berms/dam **RED**)
- Must be designed as part of farm conservation plan.



Ag. Water Impoundments - Alternatives Analysis

- Need justified with Rutgers Cooperative Extension specialist
- Well vs. irrigation pond
- Include current and future volume requirements



Ag. Water Impoundments - Maintenance



<https://www.clean-flo.com/muck-removal/>



- May spread accumulated sediment on fields
- Cannot use maintenance to increase pond footprint beyond design




Soil Stockpiles

Best Management Practice

- Outlines appropriate measures to best protect topsoil and subsoil during removal, stockpiling, and storage
- Minimizes negative impacts of removal and storage and facilitates eventual reuse of the soil for restoration and crop production

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Topsoil Stockpiles Required to Satisfy Primary BMP Requirement

Improved Parking



Improved Livestock Training



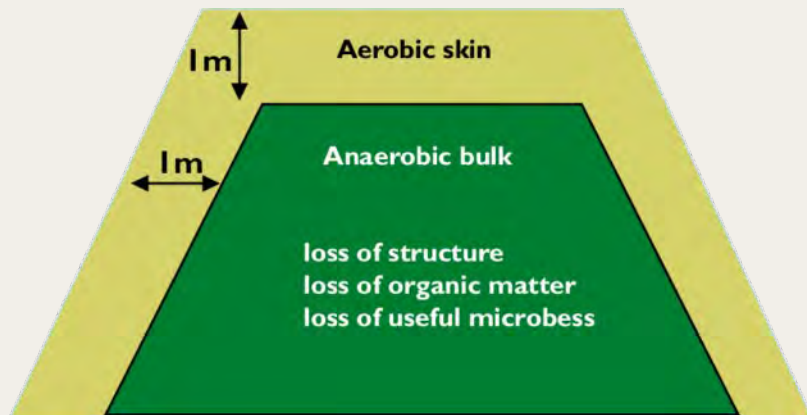
Improved Lanes



- BMPs require stockpiling of topsoil
- Stockpile is “secondary” BMP

Low Intensity Topsoil Stockpiles

- Avoid excessive handling
- Maximum 3-foot height and 4H:1V side slopes



Schematic representation of a poorly designed topsoil stockpile.

https://www.researchgate.net/figure/Schematic-representation-of-a-poorly-designed-topsoil-stockpileThe-profile-shows-the_fig1_260696210



- Permanent, deep rooted vegetation
- Minimal, passive uses

Moderate Intensity Topsoil Stockpiles

- Avoid excessive handling
- Between 1 and 1.5 feet thick over native soil.
- 6:1 side slopes
- Permanent hay crop
- No tillage



Allowable Uses of Topsoil Stockpiles

- Passive uses maintaining 90% vegetative cover
 - Pollinator habitat
 - Low-intensity apiculture
- Farm signage
- Herbaceous or shrub landscaping
- Low-intensity holiday décor



https://www.pinterest.com/pin/554294666631523639/?nic_v2=1ar4zB6CX



<https://www.xerces.org/>



www.landscapingnetwork.com



<https://www.almanac.com/>

Subsoil Stockpiles Following BMP

- Maximum 12-foot height and 3H:1V side slopes
- Permanent, deep rooted vegetation
- Used for Ag. Water Impoundment subsoil
- Could be used to facilitate future restoration of “red” areas



http://www.thebluebook.com/iProView/1016807/hall-farms/subcontractors/gallery/567498_straw-blankets/758793_top-soil-stockpile-using-straw-blankets.html

Topsoil Stockpile Uses Not Following BMP

- Recreation or public access
- Cultivation
- Balled and burlap nursery uses

<https://www.motosport.com/blog/best-motocross-tracks>



<https://sippican.theweektoday.com/>



Topsoil Stockpiles Not Following BMP



Cover-tech.com

- Too steep
- Too tall
- Non-living temporary erosion control material



youtube.com 315DL


- Improper construction
- Unacceptable compaction
- Soil structure loss

Parking and Storage Areas

Best Management Practices



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Parking and Storage Area BMP Categories

SOIL EFFECTS CLASSIFICATION	INTENDED USE	DURATION	GROUND COVER/INFRASTRUCTURE	INTENDED PARTY
Permanent Soil Disturbance	Intensive-use farm yard, frequent parking	Indefinite time	Bare soil	public or private
	Permanent parking/storage	Indefinite time	Asphalt, concrete, millings	public or private
	Mixed topsoil/subsoil	Indefinite time	Any	public or private
Semi-Permanent Soil Disturbance	Improved parking or storage area	Indefinite time	Gravel to standard with topsoil stockpile	public or private
	Grass parking lot (e.g. farm fair lot)	Indefinite time	Fallow land, parking structures	public or private
	Parking or storage on ground protection mats	Indefinite time	Ground protection mats	public or private
Temporary Soil Disturbance	Seasonal parking on ag field	Indefinite if crop is maintained for 5 consecutive months or 2 periods of 3 months annually	Actively cropped land with designated lanes during use	public or private
	Low intensity, long term personal storage; tractors, RVs, trailers	Indefinite time	Low intensity ground cover, no woody plants	private only
	Parking or storage on ground protection mats.	Less than 180 days	Ground protection mats	public or private
Soil Protection	Occasional use, storage/staging/parking	Infrequent use	Fallow or actively cropped land	private only

Agricultural Production

- Occasionally parking agricultural vehicles in a field



Temporary Parking Areas

- Used on actively cropped land
- Dense vegetative cover is maintained for at least 120 days/year
- Maintains low intensity ground cover during use
- No parking structures



Actively Cropped Land

- Crops or forages grown directly in the soil
 - 150 consecutive days/year OR
 - 2 non-consecutive 90 day periods/year
 - Crops are harvested annually (includes hay) or forages are consumed by grazing or cover crops are utilized.



Temporary Parking Areas



- Use temporary traffic control devices
- Bulk density testing only if compaction is suspected



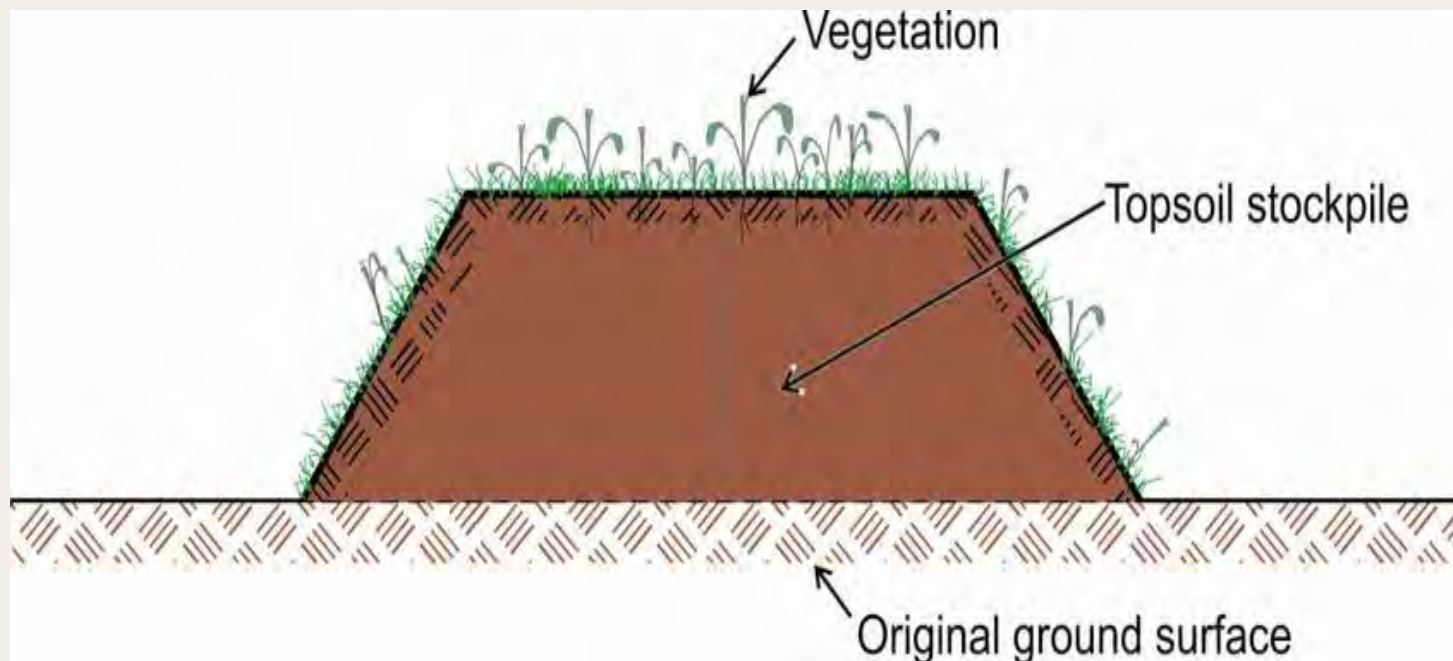
Temporary Storage

- Maintain low intensity cover
- Control woody vegetation
- Not available for public use



Improved Semi-Permanent Parking and Storage

- Improved
- Stockpile topsoil
- Separate layers
- Minimum 6 inches of 1-3 inch gravel



Vtwatershedblog.com

Vegetated Semi-Permanent Parking and Storage

- Same BMP requirements as temporary parking EXCEPT:
 - May occur on fallow land
 - May use parking structures
 - No requirement to maintain dense vegetative cover
- Maintains soil bulk density, with annual testing requirement.



Permanent Parking and Farmyards

