Installing Surface Elevation Table (SET) Points

Purpose: Place 3 permanent SET points in each salt marsh unit so that marsh level can be determined over time.

Checklist for SET Installation

(Required supplies for one array comprised of three SETs)

Equipment (mark all field gear with flagging or orange label tape)

- ☐ map/aerial photo showing SET locations
- ☐ GPS with location points
- ☐ extra batteries for GPS
- ☐ waterproof data book/ datasheet & clipboard
- ☐ pencils (2)
- ☐ knife
- ☐ five-gallon buckets (3)
- ☐ small plastic cups (3)/ boat pump
- ☐ concrete trowels (2)
- ☐ trash bag
- ☐ Ten foot aluminum planks (2)
- ☐ step stools for aluminum planks (4)
- ☐ plywood footprint for stools (4)
- ☐ sleds (3)

Hand Tools

- ☐ narrow planting (sharpshooter) shovel
- ☐ post hole digger
- ☐ small hand sledge hammer
- ☐ rubber hand sledge hammer
- ☐ tool box (black and yellow) with various tools
- ☐ vise grip pliers (2)
- ☐ wrench (9/16 inch)

Supplies (per set array)

- ☐ driving points (3)
- ☐ driving heads (2) (cut off portions of steel rods)
- ☐ rods (60+a few extra) (NB: Berntsen and Surv-Cap rods may not be compatible)
- ☐ several extra rod screws
- ☐ 6” PVC pipe ~18” in length (3)
- ☐ white PVC/ fiberglass marker (3)
- ☐ 60 lb bag of concrete (3)
- ☐ receiver heads (3)
- ☐ extra screws for driving heads & rods (6)

Power Tools

- ☐ jackhammer
- ☐ driving attachment receiver for jackhammer
- ☐ gas can with gas/oil mix for jackhammer
- ☐ sawzall with charged battery
- ☐ sawzall metal cutting blades (2)
- ☐ sawzall extra battery fully charged

Alternate Power Tools

- ☐ Bosch demo hammer with driving bit
- ☐ Gas generator, filled with gas
- ☐ Angle grinder with 2 metal cutting blades
- ☐ Angle grinder blade wrench

SAFETY GEAR

- ☐ work gloves (1 per person)
- ☐ eye protection for entire crew
- ☐ hearing protection (3 muffs + foam plugs for crew)
- ☐ hardhat (fire hardhat with ear muffs works well for low person guiding rods into marsh)
- ☐ dust face masks (1 per person)

End of the Day

- ☐ Clean tools that contacted salt water and spray with WD40, be sure to dry them
- ☐ Flush boat motors with fresh water
- ☐ Refill gas cans (if gas-oil mix, be sure ratio is correct (usually 50:1)
- ☐ If a boat trailer was used, check/grease wheel bearings

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Procedure:

1. Select SET point by randomly generating a point within each Salt Marsh Unit. Load the coordinates into your GPS. Bring GPS and GIS map into field.

2. Navigate to the point vicinity, being careful not to step on the marsh within a 2meter radius of the SET point. A sled helps transport tools across the marsh.

3. Erect a work platform over the SET point:
   a. Place four plywood footprints (2' x 20")
   b. Place plastic steps on the footprints
   c. Place aluminum planks (13-15' to read; 10' to install) on the first step

4. Standing on the platform, cut an 8-inch hole in the marsh turf, about 18 inches deep using the posthole digger or sharp shooter shovel. Test with 6" PVC to make sure hole is properly sized.

5. Place the driving tip on the first steel rod and counter tighten with 2 vise-grip pliers.

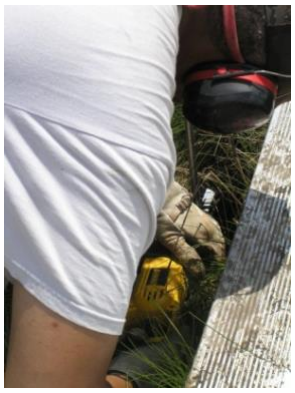
6. Drive the first stainless steel rod into the marsh by hand, keeping it as vertical as possible. Use 2 observers to indicate rod is plumb.

7. Connect successive rods, flipping each new rod so that a new screw is on top. Hand screw in the driver head. Next ensure the new rod is tightened into the one below using 2 counter-turning vise grips. Remove the lower vise grip and turn the entire assembly, tightening all the rods into one unit.

8a. Using jack or demo hammer, insert rods until the point of refusal. Use 1 person (wearing hardhat) to guide the rod into the hole to prevent bending or breaking. Point of refusal = 20 rods or > 2 minutes to drive 1 rod.

8b. As you insert rods, keep track of them in a waterproof field book/data sheet.
For each point record:
   a. SET ID/Name
   b. Actual GPS Lat & Longitude
   c. No. rods used
   d. Length of last rod in the ground.

9. When no more rods can be driven (the point of refusal), cut off the last rod at marsh level.



10. Place a 6-inch PVC pipe into the hole so that it rests just above marsh level. (This step can also be done after step 4)

11. Fill the PVC pipe with cement to about 6-inches below the top.
    a. Everyone in vicinity of cement dust must wear dust masks.
    b. Bail water out of the pipe
    c. Pour in dry cement
    d . Mix with a narrow shovel.
    e. Add more dry mix.

12. Place the receiver at the top of the stainless steel rod.
    a. . Orient notch of receiver head to N
    b. Be sure the longer screws are at the bottom
    b. Tighten with a wrench

13. Overfill the PVC pipe, smoothing the top so that it sheds water.

14. Place a 1.5 inch PVC pipe or 4 ft fiberglass rod near the SET point to aid locating it in the future. Check local conventions (NE: rod is to upland; NJ rod is to N)

15. Clean up tools, dismantle the work platform, and leave the site tidy (peat from digging the hole could be used to fill holes outside of the SET plot boundaries (10m away).