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August 16, 2019

Via WDNR Upload

Ms. Cindy Koepke
Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711
Cynthia.Koepke@wisconsin.gov

Subject: Refuse Hideaway Landfill, WDNR BRRTS #02-13-000849
Temporary Repair Measure for Cap – Erosion Control Wattle Installation

Dear Ms. Koepke:

On July 8, 2019, the Wisconsin Department of Natural Resources (WDNR) requested that TRC review an area of the landfill cap for erosion and integrity concerns at the Refuse Hideaway Landfill (the site) and provide recommendations for repairing the area. This letter is to document the site visit and later installation of a temporary erosion control letter.

On July 11, 2019, George Shereda of TRC visited the site and identified the area of concern as an area near the bottom of the south slope of the landfill that is approximately 20 feet wide at its widest and 35 feet long and is without vegetation. TRC determined that stormwater runoff has likely eroded the area of concern due to the location near the toe of the slope and observed evidence of concentrated flow and/or channeling at the time of review. Most of the topsoil had eroded away from the area. Refer to the Photographic Log in Attachment 1.

Based on the condition of the area of concern following the July 11, 2019 site visit, and anticipating future repair work for the landfill cover as soon as 2020, TRC recommended an interim measure of installing temporary wattles upslope of the eroded area to aid in diverting surface water while minimizing additional erosion. On August 1, 2019, George Shereda and Ryan Davis of TRC mobilized to the site to install the temporary erosion controls. When TRC arrived at the site, a second eroded area was observed up slope of the area of concern. This second eroded area was not identified during the initial site visit due to dense vegetation covering the slope. The size of the additional eroded area was similar to the initial area of concern. Refer to the Photographic Log in Attachment 1.

On August 1, 2019, TRC installed two, 20-foot-long, 8-inch-diameter wood fiber filled wattles. The two wattles were installed up slope from each of the two eroded areas. Each wattle was installed per the guidance document in Attachment 2. The topsoil where each wattle was installed was excavated to approximately 3-4 inches deep prior to placing the wattle in the trench. Each wattle was installed on contour with the slope with slight angles downslope towards the ends. Wood stakes were driven into the logs every 3-4 feet. Topsoil was used to backfill around the wattles on the upslope side.

The wattles are an interim measure intended to minimize additional erosion until a more comprehensive final cover repair is implemented. The wattles were selected with a probable timeline for the final cover repair in 2020 and may need to be replaced depending on weather conditions and length of installation. The location of the area of concern and erosion control measures installed will be further discussed in TRC's overall current conditions evaluation of the landfill, which will be submitted to the WDNR this fall.

Due to the interim nature of these measures, the wattles should be inspected regularly to evaluate their performance. TRC will review the conditions and performance of the wattles during the upcoming condition assessment. Future inspections should be conducted by DNR or their designee based on the timeline of the final cover repair project.

Sincerely,

TRC

Katherine Vater, PE
Project Manager

Attachments: 1. Photographic Log
2. Wattle Installation Guidance Document

cc: George Shereda, TRC

Attachment 1

Photographic Log

Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Refuse Hideaway	335179.0002

Photo No.	Date
1	7/11/19

Description
Area of concern during initial review. Approximately 20 feet wide at the widest point by 35 feet long.

Photo No.	Date
2	7/11/19

Description
Close up view of surface covering over area of concern. Larger stones are approximately 4 inches in diameter.

Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Refuse Hideaway	335179.0002

Photo No.	Date
3	8/1/19

Description
Trenching prior to wattle installation.

Photo No.	Date
4	8/1/19

Description
Wattle installed upslope from the area of concern.

Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Refuse Hideaway	335179.0002

Photo No.	Date
5	8/1/19

Description
Additional area of concern located during wattle installation.

Photo No.	Date
6	8/1/19

Description
Both wattles installed.

Attachment 2

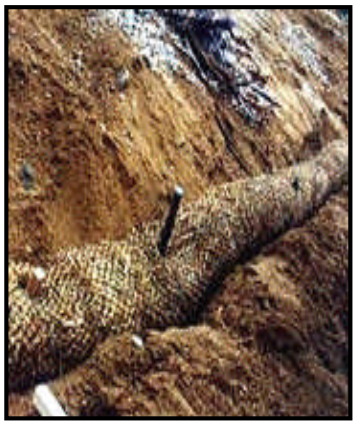
Wattle Installation Guidance Document

A Guide to Straw Wattle Installation

Proper installation of the straw wattle is essential in order to insure the success of the product. Straw wattles are designed for low surface flows, not to exceed 1 cfs for small areas. While they work well on stream banks, they should not be placed in the path of high water flow. On slopes, wattles should be installed on contour with a slight downward angle at the end of the row in order to prevent ponding at the mid-section. No overall slope preparation is needed prior to installation; however, straw wattles should always be installed in shallow trenches according to the guidelines given below. Running lengths of wattles should be abutted firmly to ensure no leakage at the abutments. Guidelines regarding vertical spacing are given below. The wattles should be pinned securely to the ground according to instructions in order to insure their stability and the success of the installation.

SPACING - DOWNSLOPE

Vertical spacing for slope installations should be determined by site conditions: slope gradient and soil type are the main factors.



A good rule-of-thumb is:

- 1:1 slopes = 10 feet apart
- 2:1 slopes = 20 feet apart
- 3:1 slopes = 30 feet apart
- 4:1 slopes = 40 feet apart, etc.

However, adjustments may have to be made for the soil type:

- For soft, loamy soils - adjust the rows closer together.
- For hard, rocky soils - adjust the rows further apart.

TRENCHING

Use a hand tool such as a maddox or pick to score the ground. Using a shovel, dig the trench to the needed depth. Soil from excavating the trenches can be placed on the uphill, or flow side, of the trench to be used during installation.

- For soft, loamy soils: dig a 3-5 inch trench.
- For hard, rocky soils: dig a 2-3 inch trench.

INSTALLING

Lay the first straw wattle snugly in the trench. **No daylight should be seen under the wattle.** Pack soil from trenching against the wattle on the uphill side. When installing running lengths of straw wattles, you must butt the second wattle tightly against the first wattle. **DO NOT overlap the ends on top of each other.** Overlapping behind each other has been done with some success. Stake the straw wattles at each end and four foot on center.

For example:

- 25 foot wattle uses 6 stakes
- 20 foot wattle uses 5 stakes
- 12 foot wattle uses 4 stakes

Stakes should be driven through the middle of the wattle, leaving 2-3 inches of the stake protruding above the wattle. A heavy sediment load will tend to pick the wattle up and could pull it off the stakes if they are driven down too low. It may be necessary to make a hole in the wattle with the pick end of your maddox in order to get the stake through the straw. When straw wattles are used for flat ground applications, drive the stakes straight down; when installing wattles on slopes, drive the stakes perpendicular to the slope.

Drive the first end stake of the second wattle at an angle toward the first wattle in order to help abut them tightly together. If you have difficulty driving the stake into extremely hard or rocky slopes, a pilot bar may be needed to begin the stake hole.

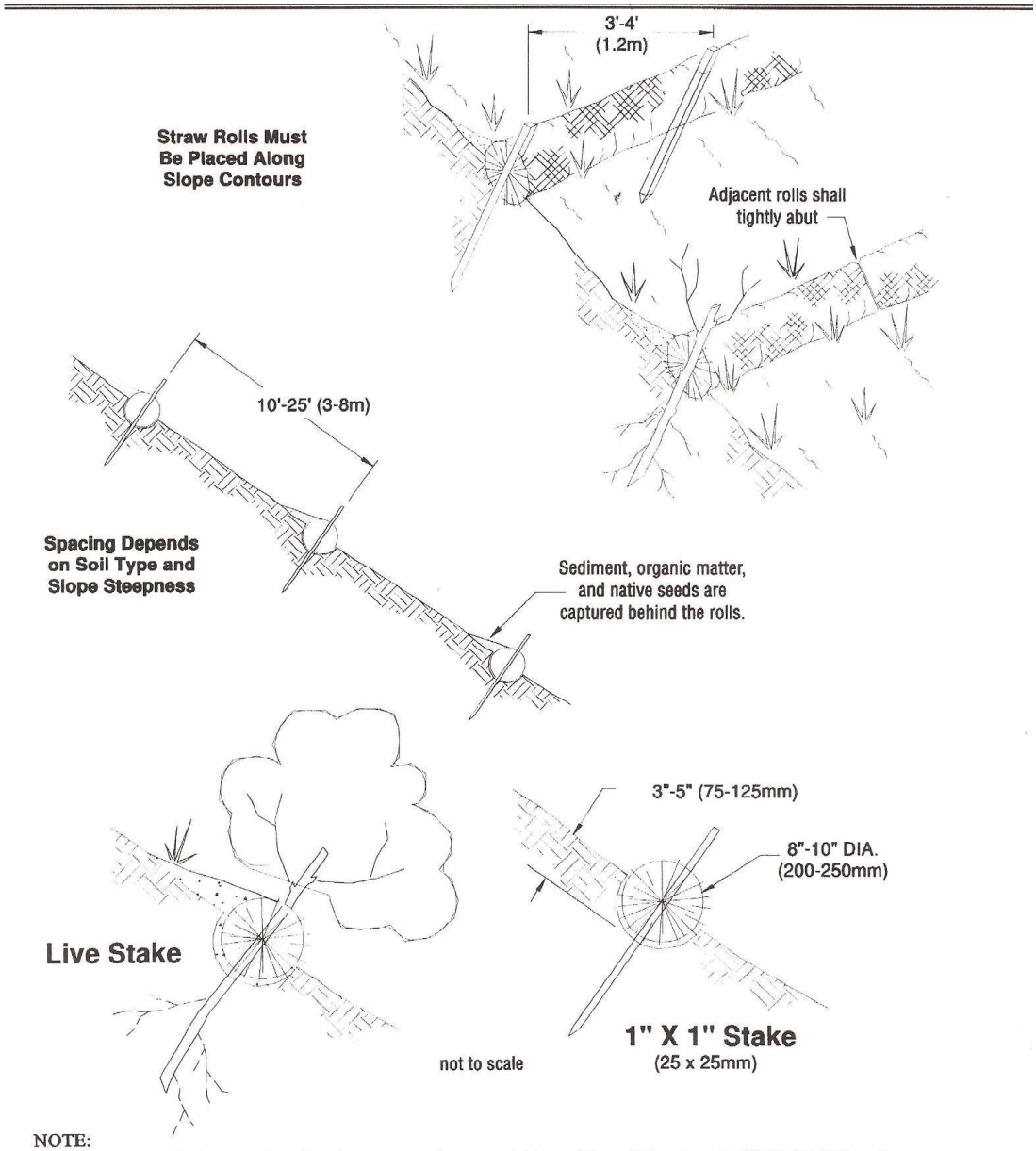
FLAT GROUND APPLICATIONS

For installations along sidewalks or behind curbs it may not be necessary to stake the wattles, however, trenches must still be dug. If you have not yet back-filled behind the sidewalk or curb, lay the wattle snuggly against it first, then backfill behind the wattle. Your trench is done! For installations around storm drains and inlets, trenches and staking will be needed.

Fit wattle in trench snugly up against the sidewalk or curb. Around storm drains or inlets, the wattle should be back 1–1½ ft. and should direct water flow toward the angle of drainage. If all drainage angles into the inlet, snake the wattle all the way around the inlet, using more than one wattle if needed.

STAKING

We recommend using wood stakes or willow cuttings, rather than metal pins, to secure the straw wattles. Wood stakes will eventually bio-degrade, and willow cuttings will grow and provide extra stabilization. Be sure to use a stake that is long enough to protrude several inches above the wattle: 18" is a good length for hard, rocky soil. For soft, loamy soil use a 24" stake for greater security. The diameter of the stake should be approximately 1" for ease of driving through the wattle.



NOTE:
1. Straw roll installation requires the placement and secure staking of the roll in a trench, 3"-5" (75-125mm) deep, dug on contour. runoff must not be allowed to run under or around roll.