Scrape/Vacuum Conversion

Pull-Type Tanker With Open Solar Drying

What is it? Scrape conversion with open solar drying involves switching manure collection from flush to scrape or vacuum, followed by spreading the manure to dry in the sun.

There are several options for scrape/vacuum equipment—chain-pulled scrapers, pull-type scrapers and vacuum tankers, and self-propelled vacuum tankers. This brochure discusses the pull-type tanker, which requires strong concrete due to its loaded weight.

How much does it cost? Total Alternative Manure Management Program funding for three individual projects and estimated operation and maintenance (O & M) costs (2017-2020) are summarized:

Total project cost	$545,901—704,618
Total AMMP funding	$546,799—704,618
Average vacuum equipment cost	$101,205
Estimated annual O&M cost	Not available

In addition to vacuum equipment, the cost of the whole project may include solid separation equipment, concrete, etc.

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How does it work? Diverting manure solids from the storage pond or treatment lagoon reduces the potential for methane production in the anaerobic conditions that exist in those structures. Scraping or vacuuming the manure in its original form allows the material to be dried to a condition where it can be used for bedding or fertilizer for feed crops.

Manure management benefits:

- Reduces solids in liquid storage structures
- Uses the free power of the sun

Additional management considerations:

- Requires a large impermeable surface area with managed drainage
- Requires sun and relatively dry conditions, rain and fog may force need for alternative storage
- Manure may be handled multiple times (spread it out, fly control, stack after drying)

How does it affect sustainability?

- Removes large particles containing carbon from the liquid waste stream
- Estimated methane reduction 24% (freestall housing) and 18% (open lot housing)*
- Removes nominal amounts of salt and nitrogen

*Based on calculations using the California Air Resources Board's 2019 Methane Calculator for AMMP projects available at https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials.

More information about the Alternative Manure Management Program is available at https://www.cdfa.ca.gov/oefi/AMMP/ or https://cdqap.org/ammp-outreach-project/.

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