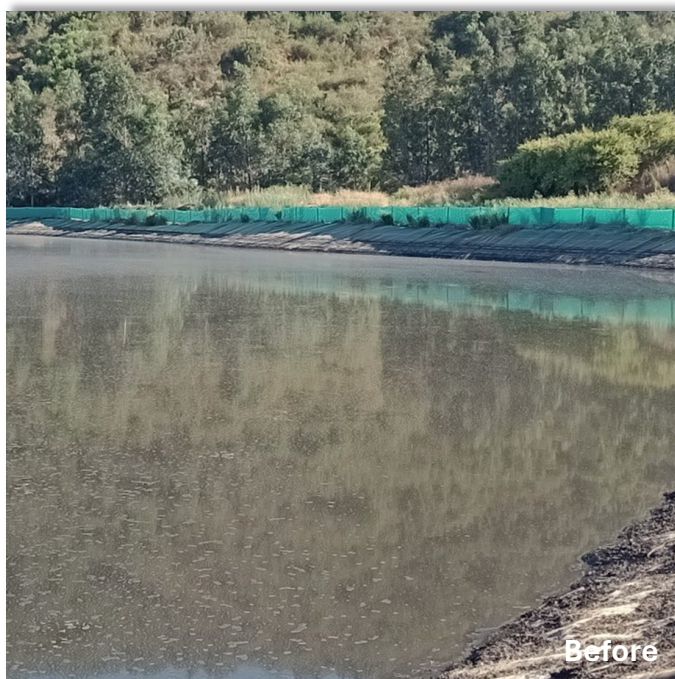


Swine Manure Lagoon: 91% Less Suspended Solids in 6 Weeks

Pit Puck® contains Animal Waste Treat (AWT) microbes and is a high-CFU drop-in microbial tablet designed for livestock manure pits and lagoons operating under mixed aerobic and low-oxygen conditions. The bacterial formulation accelerates digestion of manure solids, reduces sludge buildup, and improves manure handling. Fast-dissolving sinking tablets allow simple application with no mixing or equipment required.

- **Liquefies Manure Solids:** Accelerates breakdown of manure and sludge to reduce crusting and buildup
- **Improves Agitation and Pumping:** Creates a more uniform slurry for easier agitation and pump-out
- **Reduces Odors:** Helps control ammonia, hydrogen sulfide, volatile fatty acids, and mercaptans
- **Enhances Nutrient Uniformity:** Improves nitrogen retention and consistency for land application
- **Reduces Equipment Plugging:** Limits solids accumulation in pumps, lines, and injectors
- **Simple Drop-In Use:** Tablets dissolve quickly and deliver bacteria directly into the manure

Problem: A commercial swine operation held raw slurry in an anaerobic manure lagoon and was measured against its own internal reduction goals across a full effluent panel rather than on fertilizer value. Total suspended solids ran 37,500 mg/L, COD 66,600 mg/L, BOD 11,850 mg/L and phosphorus 363.25 mg/L, with settleable solids pegged at 1,000 mL/L. No aeration, dredging or new equipment was available, so whatever moved the numbers had to work inside a lagoon that kept running exactly as it always had.



Before: The lagoon was full to the top of the bank and fully anaerobic, carrying a heavy sludge blanket. Total suspended solids measured 37,500 mg/L, COD 66,600 mg/L and phosphorus 363.25 mg/L. Settleable solids read 1,000 mL/L, the top of the Imhoff cone scale, meaning the sample never separated into a settled layer and clear liquid.



After: 41 days later, suspended solids were down **91% to 3,400 mg/L**, phosphorus down 85% to 54 mg/L and COD down 84%. Settleable solids fell from 1,000 to 3 mL/L. **The sludge blanket has been digested away** and the level has dropped well below the old waterline, exposing clean liner around the basin.

Trial Results: Full Effluent Panel, Day 0 vs Day 41

Parameter	Baseline, day 0	After 41 days	Change
Total suspended solids	37,500 mg/L	3,400 mg/L	91% lower. Goal 1,500 mg/L, not met
Settleable solids	1,000 mL/L	3 mL/L	99.7% lower
Phosphorus (P)	363.25 mg/L	54 mg/L	85% lower. Goal 120 mg/L, beaten
Chemical oxygen demand	66,600 mg/L	10,720 mg/L	84% lower
Biochemical oxygen demand	11,850 mg/L	5,699 mg/L	52% lower
Turbidity	10,000 UNT	4,823 UNT	52% lower
Ammonia (NH ₃)	2,050 mg/L	1,480 mg/L	28% lower
Total nitrogen	4,100 mg/L	3,012.5 mg/L	27% lower. Goal 1,500 mg/L, not met
Chloride	1,410.2 mg/L	1,230.6 mg/L	13% lower
pH	8.0	8.2	Stable, goal near 8.26
Dissolved oxygen	0.2 mg/L	0.2 mg/L	Unchanged, expected in an anaerobic lagoon
Conductivity	15,700 uS/cm	16,730 uS/cm	6.6% higher

Goals shown are the operation's own internal reduction targets, not a regulatory discharge limit. Nitrate and nitrite were below detection on both sampling dates. Day 0 is a baseline taken before treatment, not an untreated control.

Where the Sludge Went

At baseline the settleable solids reading was 1,000 mL/L, the top of the Imhoff cone scale. That does not mean the sample was solid material. Total suspended solids were 37,500 mg/L, roughly 3.75% solids by weight, so the slurry was still overwhelmingly water. What the reading means is that the sample never separated: after an hour there was no clear liquid above a settled layer, just one flocculent mass filling the cone. After 41 days the same test settled out 3 mL/L with clear liquid above it. That is the sludge blanket being digested rather than dredged, and it is what the photographs show: the level has dropped well below the old waterline and a wide band of clean liner is exposed around the basin, storage capacity the operation had lost to accumulated solids.

How the Trial Was Measured

Pit Puck went in as a drop-in tablet. The tablets sink and dissolve on their own, so there was no mixing, no dosing equipment and no added labor. The published maintenance rate is 1 tablet per week per 100 sows or 300 finisher hogs. This program was run deliberately above that rate, because the operation was being measured on reduction across every component including nitrogen. On a farm that land-applies its slurry the objective is the opposite, nitrogen retention, and the program is dosed for it. A baseline sample was drawn at 07:45 before any product went in, and a second sample 41 days later, a span of 5.9 weeks.

Third-Party Verification

Both samples were analyzed by ANAM, Analisis Ambientales S.A., an environmental laboratory accredited by the American Association for Laboratory Accreditation under A2LA certificates 6134-01 and 6134-02, and certified to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018. Methods followed Standard Methods for the Examination of Water and Wastewater, 23rd edition. Both reports carry advanced electronic signatures and are independently verifiable.

What This Trial Does Not Show

The day-zero reading is a baseline, not a control. There was no second untreated lagoon running in parallel, so this is a before and after comparison rather than treated against untreated. Over 41 days a lagoon also moves through settling, temperature, rainfall and changes in loading, and this trial cannot separate those from the treatment. The operation reports that nothing else at the site changed, and the analysis was third party but the sampling was not. Two of the three numeric targets were not met, and both are reported above.