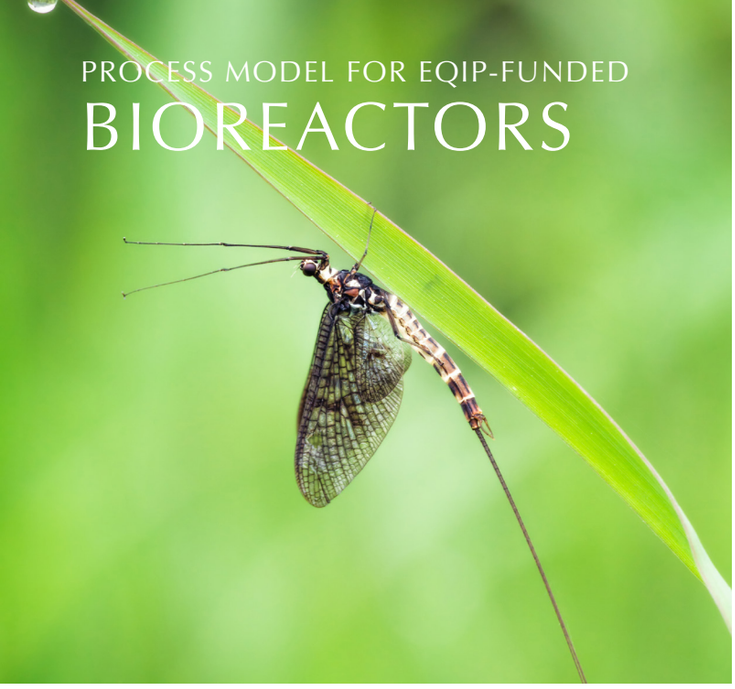


PROCESS MODEL FOR EQIP-FUNDED

BIOREACTORS

WHAT IS A BIOREACTOR?

A bioreactor is a buried trench on the edge of a farm field that is traditionally filled with woodchips. Agricultural drainage tiles outlet into the woodchips where bacteria convert tile water nitrate-nitrogen into nitrogen gas.

According to the Iowa Nutrient Reduction Strategy, a bioreactor, on average, removes 43% of nitrate-nitrogen from water diverted through it.

BENEFITS OF A BIOREACTOR

- Decreases nitrate being deposited in waterways
- Does not impact in-field management, requires little-to-no maintenance
- Vegetation on top of the bioreactor can have habitat benefits
- Has a lifespan of 10 to 15 years before woodchips need to be replaced

BIOREACTORS WORK BEST WHEN:

- The trench is
  - Between 10 to 25 feet wide
  - Between 100 to 120 feet long
  - Filled with woodchips that are between ¼- to 1-inch in size range; also avoid treated or preserved wood

THE ENVIRONMENTAL QUALITY INCENTIVE PROGRAM (EQIP) is a voluntary conservation effort that provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against increasing weather volatility.

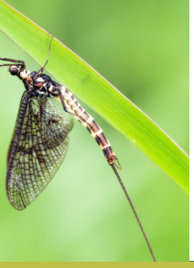
The Iowa Department of Agriculture and Land Stewardship manages Iowa's land stewardship and agriculture programs for the good of both city and rural Iowa residents.

The Soil and Water Conservation Society is the premier international organization for professionals who practice and advance the science and art of natural resource conservation.

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

SOIL AND WATER CONSERVATION SOCIETY

ADMC Agricultural Drainage Management Coalition



PROCESS MODEL FOR EQIP-FUNDED

BIOREACTORS

KEY — Important steps for the landowner

Decision point | Delays possible | Landowner's signature required

1 GATHER INFORMATION
takes ~2-3 MONTHS+

TASK	DURATION	RESPONSIBLE PARTY
Gather site information: soil maps, tile maps, under CRP contract?	< 2 weeks	IDALS
Landowner meeting: Discuss funding options, gain permission to do topographic survey, reference practice feasibility assessment form (IDALS) for additional questions.	< 2 weeks	IDALS
NRCS initiates wetland determination [if needed].	< 1 month	NRCS
Landowner locate legal entity form if not on file at local field office.	< 2 weeks	IDALS

2 PRELIMINARY DESIGN
takes ~2 MONTHS

TASK	DURATION	RESPONSIBLE PARTY
Site survey including tile grade, main size, main material, soil cores, bank cross sections; topographic survey of buffer, stream, and over tile line.	<1 month	Engineer
Initial design with NRCS design spreadsheet and CAD drawings.	<1 month	Engineer
Initiate CPA-52.	<1 month	NRCS

3 LANDOWNER PREVIEW
takes ~1 MONTH

TASK	DURATION	RESPONSIBLE PARTY
Landowner meeting: Review preliminary design.	<1 month	IDALS
SWCD Application (includes legal entity form) & W9 needed to enter information into FARMS.	<1 month	IDALS

4 FINAL DESIGN AND APPLICATION takes ~4 MONTHS

TASK	DURATION	RESPONSIBLE PARTY
Adjust design based on LO feedback.	<1 month	Engineer
Share design with NRCS engineer to approve. Update CPA-52 if needed.	<1 month	NRCS
Complete quantities and cost estimates (NRCS component code form).	<2 weeks	Engineer
EQIP contract signed.	<2 weeks	IDALS
Obtain LO signatures on updated conservation plan and Operation and Maintenance forms (NRCS form).	<2 weeks	IDALS
Landowner seeks out construction contractor using design and estimated quantities. Select contractor.	<1 month	LO

5 CONSTRUCTION AND FINAL PAYMENTS takes ~5 MONTHS

TASK	DURATION	RESPONSIBLE PARTY
Pre-construction meeting with LO and contractor.	> 1 month	Engineer
Source wood chips.	< 1 month	Contractor
Construction.	< 2 weeks	Contractor
Site inspection and construction checkout.	<2 weeks	Engineer
Landowner pays construction contractor. IDALS will reimburse.	< 2 weeks	Landowner
Landowner compiles bills and eligible expenses that were not covered by NRCS. Submit to Conservation Assistant at SWCD.	< 1 month	Landowner
NRCS signs technical certification form.	<2 weeks	NRCS
Landowner signs Maintenance Agreement (IDALS form).	<2 weeks	IDALS

ACRONYMS

CREP: Conservation Reserve Enhancement Program (this is another federal funding source for conservation)

CRP: Conservation Reserve Program (a federal program to remove land from agricultural production.

CPA-52: This is the National Environmental Evaluation Worksheet. Basically it is the first step needed in receiving funding from the NRCS—it is often referred to as "conservation planning."

EQIP: Environmental Quality Incentives Program (a federal funding source for conservation)

IDALS: Iowa Department of Agriculture and Land Stewardship

LO: Landowner

NRCS: Natural Resources Conservation Service (a part of the US Department of Agriculture)

SWCD: Soil and Water Conservation District

WQI: Water Quality Initiative (a state-run funding initiative for conservation practices that is managed by IDALS)

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