LNE95-062

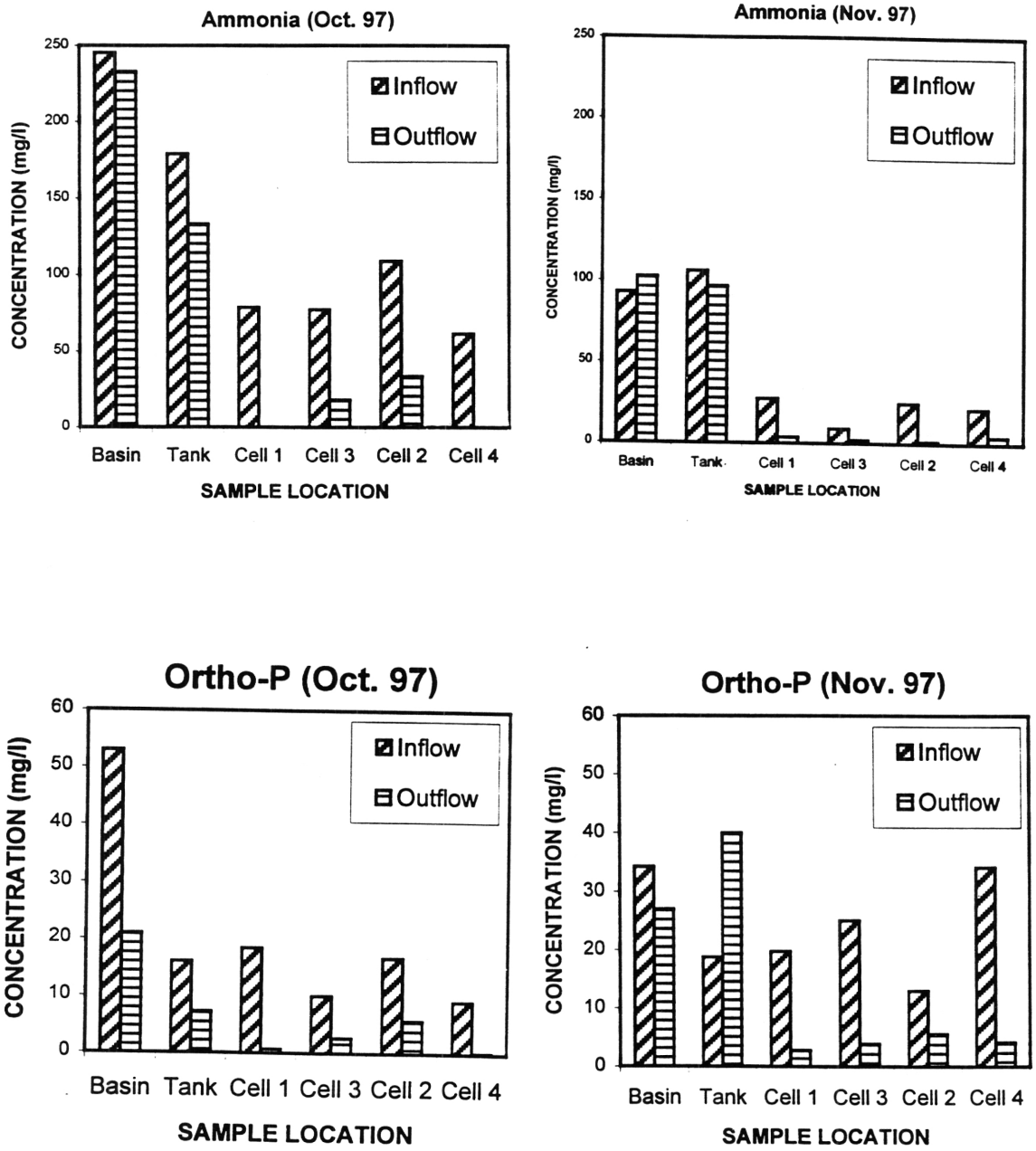

Fig. 2. Concentrations of nutrients in water flowing into and out of components of the wetland treatment system. Wetland Cells 1 and 3 receive effluent from the aerated tank (which received effluent from the settling basin). Cells 2 and 4 receive effluent directly from the settling basin.

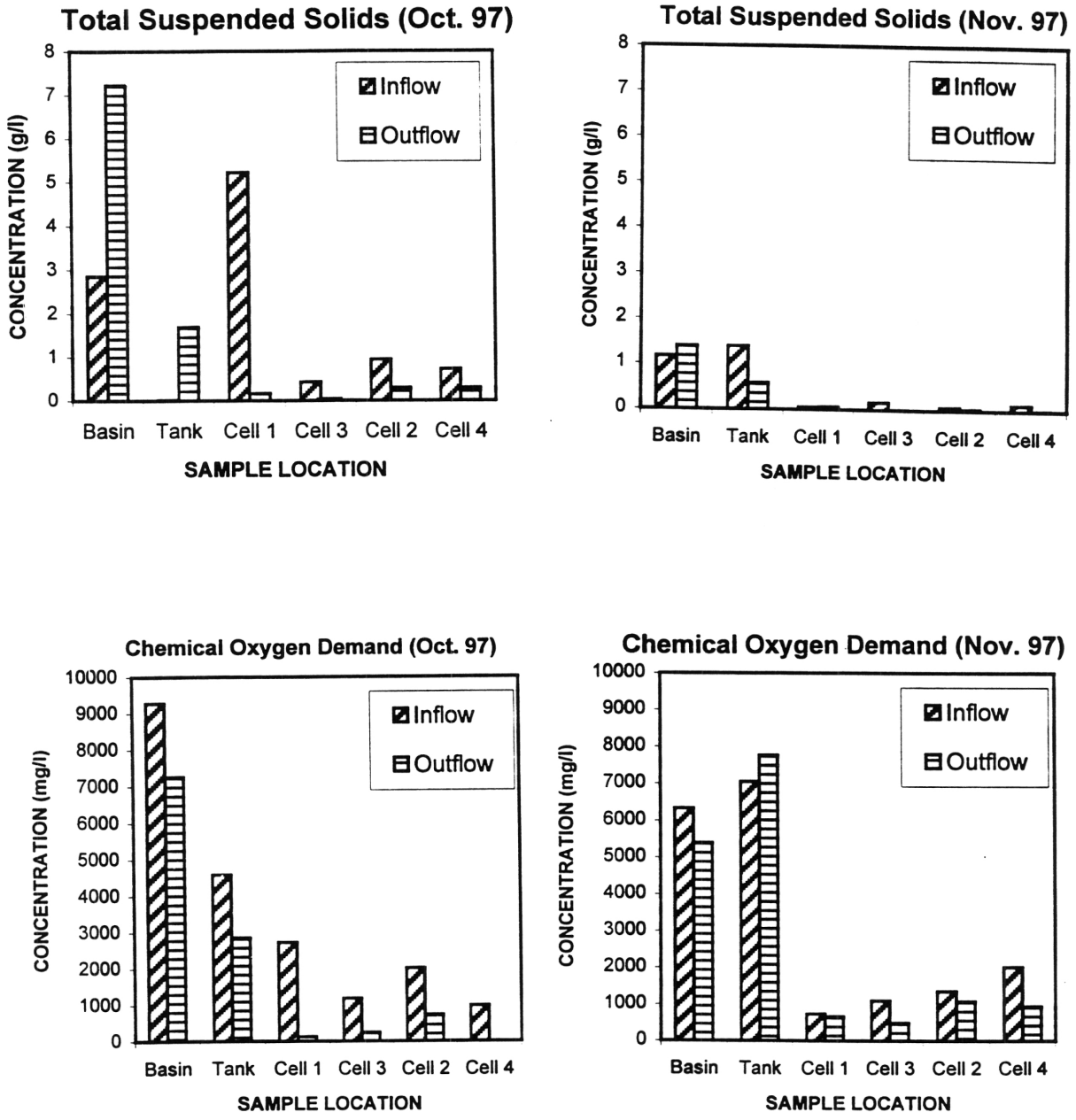

Fig. 3. Concentrations of suspended solids and oxygen demand in water flowing into and out of components of the wetland treatment system. Wetland Cells 1 and 3 receive effluent from the aerated tank (which received effluent from the settling basin). Cells 2 and 4 receive effluent directly from the settling basin.

Table 1. Overall removal efficiency of dairy facility effluent in wetland cells receiving effluent from two pretreatment configurations in October and November 1997.

Parameter	Pretreatment Configuration	October	November
Ammonia	Settling basin only	-93.18%	-96.98%
	Settling basin followed by aerated tank	-96.33%	-96.87%
Ortho-phosphate	Settling basin only	-94.37%	-85.83%
	Settling basin followed by aerated tank	-96.78%	-90.26%
Total Suspended Solids (TSS)	Settling basin only	-89.82%	-98.24%
	Settling basin followed by aerated tank	-96.53%	-96.95%
Chemical Oxygen Demand (COD)	Settling basin only	-96.12%	-84.04%
	Settling basin followed by aerated tank	-98.06%	-90.92%
Biochemical Oxygen Demand (BOD_5)	Settling basin only	Out of range	-96.71%
	Settling basin followed by aerated tank	Out of range	-96.81%

Table 2. Comparison of initial and net annual costs associated with alternative and conventional technologies for management of dairy facility effluent. Costs are presented on a per-cow basis.

Alternative Technologies

System Configuration	Initial Investment Costs*	Net Annual Costs†
Constructed wetlands with settling basin (passive) and PAWS composting of on-farm wastes	$ 664	$ 156
Constructed wetlands with settling basin (passive) and PAWS composting of urban wastes	$ 712	$ 65
Constructed wetlands with settling basin (passive) and windrow composting of on-farm wastes	$ 777	$ 204
Constructed wetlands with settling basin (passive) and windrow composting of urban wastes	$ 795	$ 123
Constructed wetlands with settling basin plus aerated tank (mechanical) and PAWS composting of on-farm wastes	$ 678	$ 171
Constructed wetlands with settling basin plus aerated tank (mechanical) and PAWS composting of urban wastes	$ 726	$ 80
Constructed wetlands with settling basin plus aerated tank (mechanical) and windrow composting of on-farm wastes	$ 791	$ 219
Constructed wetlands with settling basin plus aerated tank (mechanical) and windrow composting of urban wastes	$ 809	$ 138

Conventional Technologies

System Configuration	Initial Investment Costs*	Net Annual Costs†
Earth berm storage and spreading	$ 600	$ 125
Liquid tank storage and spreading	$ 1,070	$ 180

* Excludes cost sharing

† Net annual costs after compost revenue and tipping fees or fertilizer value

PAWS = Passively Aerated Windrow System