

TABLE 3.1

**COST ESTIMATE OF ALTERNATIVES  
TOBICO MARSH  
SAGINAW BAY, MICHIGAN**

	<i>Alternative 1</i>	<i>Alternative 2</i>	<i>Alternative 3</i>	<i>Alternative 4</i>
<b><i>Total Capital Costs</i></b>	\$0.00	\$6,813.25	\$21,186.50	\$49,583.00
<b><i>Total Annual Operation and Maintenance Costs</i></b>	\$0.00	\$1,890.00	\$2,720.00	\$4,130.00
<b><i>Total Present Worth Cost (3.5% Discount Rate - Infinite Years of Operation)</i></b>	\$0.00	\$53,997.30	\$77,710.40	\$117,994.10
<b><i>TOTAL PRESENT WORTH COST FOR ALTERNATIVE</i></b>	\$0.00	\$60,810.55	\$98,896.90	\$167,577.10

TABLE 3.2

DETAILED COST ESTIMATE  
TOBICO MARSH ALTERNATIVES  
SAGINAW BAY, MICHIGAN

	<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Rate</i>	<i>Total Costs</i>
ALTERNATIVE 1					
	No Action				\$ -

**TABLE 3.2**  
**DETAILED COST ESTIMATE**  
**TOBICO MARSH ALTERNATIVES**  
**SAGINAW BAY, MICHIGAN**

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Rate</i>	<i>Total Costs</i>
<b>ALTERNATIVE 2</b>				
<b>CAPITAL COSTS</b>				
<b>A. Parish Rd Culvert Upgrades and Cleanout</b>				
<i>A.1. Project Management</i>				
Project Manager	5	hours	\$ 104.65	\$ 523.25
<i>A.2. Riprap Placement</i>				
Supply of Rip-Rap Material	1	load	\$ 500.00	\$ 500.00
Mob. / Demob.	--	L.S.	--	\$ 500.00
Backhoe and Operator	1	day	\$ 1,200.00	\$ 1,200.00
Project Engineer / Oversight	10	hour	\$ 77.00	\$ 770.00
Disbursements	--	L.S.	--	\$ 500.00
<i>A.3. Initial Clean-out of Culverts</i>				
Technician	40	hour	\$ 58.00	\$ 2,320.00
Disbursements	--	L.S.	--	\$ 500.00
<b>TOTAL CAPITAL COSTS</b>				<b>\$ 6,813.25</b>
<b>OPERATION AND MAINTENANCE COSTS</b>				
<i>A.4. Annual Remote Monitoring Equipment</i>				
	12	month	\$ 40.00	\$ 480.00
<i>A.5. Annual Clean-out of Culverts</i>				
Technician	20	hour	\$ 58.00	\$ 1,160.00
Disbursements	--	L.S.	--	\$ 250.00
<i>Total Annual Operation and Maintenance Costs</i>				\$ 1,890.00
<b>TOTAL PRESENT WORTH COST FOR O&amp;M (3.5% Discount Rate - Infinite Years of Operation)</b>				<b>\$ 53,997.30</b>
<b>TOTAL PRESENT WORTH COST FOR ALTERNATIVE</b>				<b>\$ 60,810.55</b>

TABLE 3.2

**DETAILED COST ESTIMATE  
TOBICO MARSH ALTERNATIVES  
SAGINAW BAY, MICHIGAN**

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Rate</i>	<i>Total Costs</i>
<b>ALTERNATIVE 3</b>				
<b>CAPITAL COSTS</b>				
<b>A. Parish Rd Culvert Upgrades and Cleanout</b>				
<i>A.1. Project Management</i>				
Project Manager	5	hours	\$ 104.65	\$ 523.25
<i>A.2. Riprap Placement</i>				
Supply of Rip-Rap Material	1	load	\$ 500.00	\$ 500.00
Mob. / Demob.	--	L.S.	--	\$ 500.00
Backhoe and Operator	1	day	\$ 1,200.00	\$ 1,200.00
Project Engineer / Oversight	10	hour	\$ 77.00	\$ 770.00
Disbursements	--	L.S.	--	\$ 500.00
<i>A.3. Initial Clean-out of Culverts</i>				
Technician	40	hour	\$ 58.00	\$ 2,320.00
Disbursements	--	L.S.	--	\$ 500.00
<i>Total Capital Costs for Parish Rd Culvert Upgrades and Cleanout</i>				<u>\$ 6,813.25</u>
<b>B. Cleanout &amp; Flap-Gate Upgrades</b>				
<i>B.1. Project Management</i>				
Project Manager	5	hours	\$ 104.65	\$ 523.25
<i>B.2. Upgrade of Existing Flap-Gate</i>				
Design	40	hr	\$ 100.00	\$ 4,000.00
Construction Materials	--	L.S.	--	\$ 2,500.00
Laborer	50	hour	\$ 58.00	\$ 500.00
Miscellaneous Construction Equipment	--	L.S.	--	\$ 1,500.00
Construction Oversight	50	hour	\$ 77.00	\$ 3,850.00
Disbursements	--	L.S.	--	\$ 1,500.00
<i>Total Capital Costs for Cleanout &amp; Flap-Gate Upgrades</i>				<u>\$ 14,373.25</u>
<b>TOTAL CAPITAL COSTS</b>				<u><b>\$ 21,186.50</b></u>
<b>OPERATION AND MAINTENANCE COSTS</b>				
<b>A. Parish Rd Culvert Upgrades and Cleanout</b>				
<i>A.4. Annual Remote Monitoring Equipment</i>				
	12	month	\$ 40.00	\$ 480.00
<i>A.5. Annual Clean-out of Parish Rd Culverts</i>				
Technician	20	hour	\$ 58.00	\$ 1,160.00
Disbursements	--	L.S.	--	\$ 250.00
<b>B. Cleanout &amp; Flap-Gate Upgrades</b>				
<i>B.3. Annual Maintenance of Flap-Gate</i>				
Technician	10	hour	\$ 58.00	\$ 580.00
Disbursements - Additional Materials as needed	--	L.S.	--	\$ 250.00
<i>Total Annual Operation and Maintenance Costs</i>				<u>\$ 2,720.00</u>
<b>TOTAL PRESENT WORTH COST FOR O&amp;M (3.5% Discount Rate - Infinite Years of Operation)</b>				<u><b>\$ 77,710.40</b></u>
<b>TOTAL PRESENT WORTH COST FOR ALTERNATIVE</b>				<u><b>\$ 98,896.90</b></u>

**TABLE 3.2**  
**DETAILED COST ESTIMATE**  
**TOBICO MARSH ALTERNATIVES**  
**SAGINAW BAY, MICHIGAN**

<b>Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Rate</b>	<b>Total Costs</b>
<b>ALTERNATIVE 4</b>				
<b>CAPITAL COSTS</b>				
<b>A. Parish Rd Culvert Upgrades and Cleanout</b>				
<i>A.1. Project Management</i>				
Project Manager	5	hours	\$ 104.65	\$ 523.25
<i>A.2. Riprap Placement</i>				
Supply of Rip-Rap Material	1	load	\$ 500.00	\$ 500.00
Mob. / Demob.	--	L.S.	--	\$ 500.00
Backhoe and Operator	1	day	\$ 1,200.00	\$ 1,200.00
Project Engineer / Oversight	10	hour	\$ 77.00	\$ 770.00
Disbursements	--	L.S.	--	\$ 500.00
<i>A.3. Initial Clean-out of Culverts</i>				
Technician	40	hour	\$ 58.00	\$ 2,320.00
Disbursements	--	L.S.	--	\$ 500.00
<i>Total Capital Costs for Parish Rd Culvert Upgrades and Cleanout</i>				\$ 6,813.25
<b>B. Cleanout &amp; Flap-Gate Upgrades</b>				
<i>B.1. Project Management</i>				
Project Manager	5	hours	\$ 104.65	\$ 523.25
<i>B.2. Upgrade of Existing Flap-Gate</i>				
Design	40	hr	\$ 100.00	\$ 4,000.00
Construction Materials	--	L.S.	--	\$ 2,500.00
Laborer	50	hour	\$ 58.00	\$ 500.00
Miscellaneous Construction Equipment	--	L.S.	--	\$ 1,500.00
Construction Oversight	50	hour	\$ 77.00	\$ 3,850.00
Disbursements	--	L.S.	--	\$ 1,500.00
<i>Total Capital Costs for Cleanout &amp; Flap-Gate Upgrades</i>				\$ 14,373.25
<b>C. Re-Routing of Hadd Drain</b>				
<i>C.1. Project Management</i>				
Project Manager	10	hours	\$ 104.65	\$ 1,046.50
<i>C.2. Re-routing of Hadd Drain and Construction of Additional Culverts</i>				
Design	40	hr	\$ 100.00	\$ 4,000.00
Excavation of Material Under Road Bedding	120	yd <sup>3</sup>	\$ 10.00	\$ 1,200.00
18-inch, 40-foot Corrugated Steel Culvert Pipe	4	each	\$ 2,000.00	\$ 8,000.00
Backfill and Compaction	120	yd <sup>3</sup>	\$ 25.00	\$ 3,000.00
Asphalt Restoration	480	ft <sup>2</sup>	\$ 10.00	\$ 4,800.00
Placement of Rip-Rap	2	loads	\$ 500.00	\$ 1,000.00
Construction Oversight	50	hour	\$ 77.00	\$ 3,850.00
Disbursements	--	L.S.	--	\$ 1,500.00
<i>Total Capital Costs of Re-Routing of Hadd Drain</i>				\$ 28,396.50
<b>TOTAL CAPITAL COSTS</b>				<b>\$ 49,583.00</b>

TABLE 3.2

**DETAILED COST ESTIMATE  
TOBICO MARSH ALTERNATIVES  
SAGINAW BAY, MICHIGAN**

<i>Item</i>	<i>Quantity</i>	<i>Unit</i>	<i>Unit Rate</i>	<i>Total Costs</i>
<b>ALTERNATIVE 4 CONTINUED</b>				
<b>OPERATION AND MAINTENANCE COSTS</b>				
<b>A. Parish Rd Culvert Upgrades and Cleanout</b>				
<i>A.4. Annual Remote Monitoring Equipment</i>	12	month	\$ 40.00	\$ 480.00
<i>A.5. Annual Clean-out of Parish Rd Culverts</i>				
Technician	20	hour	\$ 58.00	\$ 1,160.00
Disbursements	--	L.S.	--	\$ 250.00
<b>B. Cleanout &amp; Flap-Gate Upgrades</b>				
<i>B.3. Annual Maintenance of Flap-Gate</i>				
Technician	10	hour	\$ 58.00	\$ 580.00
Disbursements - Additional Materials as needed	--	L.S.	--	\$ 250.00
<b>C. Re-Routing of Hadd Drain</b>				
<i>C.3. Annual Clean-out of Culverts for Hadd Drain Re-Routing</i>				
Technician	20	hour	\$ 58.00	\$ 1,160.00
Disbursements	--	L.S.	--	\$ 250.00
<i>Total Annual Operation and Maintenance Costs</i>				\$ 4,130.00
<b>TOTAL PRESENT WORTH COST FOR O&amp;M (3.5% Discount Rate - Infinite Years of Operation)</b>				<b>\$ 117,994.10</b>
<b>TOTAL PRESENT WORTH COST FOR ALTERNATIVE</b>				<b>\$ 167,577.10</b>