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Review and Analysis of Railroad Passenger Car Waste Retention Systems

Volume II: Appendices C, D and E

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16. Abstract <p>The traditional practice of dumping railroad toilet and other waste directly onto the tracks is still used on most passenger cars operated by Amtrak. However, this practice is being questioned and legislation to require full waste retention systems is under consideration. This report has been prepared in response to a Congressional directive to identify, describe and evaluate waste-retention systems able to eliminate the need for direct dumping on the track.</p> <p>This report provides the following information:</p> <ul style="list-style-type: none"> • A description of waste retention systems currently used by intercity and local passenger railroads in the United States and elsewhere, including service experience. • A discussion of waste disposal and environmental issues. • An evaluation of the performance of the different waste retention technologies and systems. • Review and estimate of capital, operating and maintenance costs. • Recommendations regarding test programs for waste retention systems. 			
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METRIC / ENGLISH CONVERSION FACTORS

ENGLISH TO METRIC

LENGTH (APPROXIMATE)

1 inch (in) = 2.5 centimeters (cm)
 1 foot (ft) = 30 centimeters (cm)
 1 yard (yd) = 0.9 meter (m)
 1 mile (mi) = 1.6 kilometers (km)

AREA (APPROXIMATE)

1 square inch (sq in, in²) = 6.5 square centimeters (cm²)
 1 square foot (sq ft, ft²) = 0.09 square meter (m²)
 1 square yard (sq yd, yd²) = 0.8 square meter (m²)
 1 square mile (sq mi, mi²) = 2.6 square kilometers (km²)
 1 acre = 0.4 hectares (he) = 4,000 square meters (m²)

MASS - WEIGHT (APPROXIMATE)

1 ounce (oz) = 28 grams (gr)
 1 pound (lb) = .45 kilogram (kg)
 1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)

VOLUME (APPROXIMATE)

1 teaspoon (tsp) = 5 milliliters (ml)
 1 tablespoon (tbsp) = 15 milliliters (ml)
 1 fluid ounce (fl oz) = 30 milliliters (ml)
 1 cup (c) = 0.24 liter (l)
 1 pint (pt) = 0.47 liter (l)
 1 quart (qt) = 0.96 liter (l)
 1 gallon (gal) = 3.8 liters (l)
 1 cubic foot (cu ft, ft³) = 0.03 cubic meter (m³)
 1 cubic yard (cu yd, yd³) = 0.76 cubic meter (m³)

TEMPERATURE (EXACT)

$$[(x - 32) (5/9)]^{\circ}F = y^{\circ}C$$

METRIC TO ENGLISH

LENGTH (APPROXIMATE)

1 millimeter (mm) = 0.04 inch (in)
 1 centimeter (cm) = 0.4 inch (in)
 1 meter (m) = 3.3 feet (ft)
 1 meter (m) = 1.1 yards (yd)
 1 kilometer (km) = 0.6 mile (mi)

AREA (APPROXIMATE)

1 square centimeter (cm²) = 0.16 square inch (sq in, in²)
 1 square meter (m²) = 1.2 square yards (sq yd, yd²)
 1 square kilometer (km²) = 0.4 square mile (sq mi, mi²)
 1 hectare (he) = 10,000 square meters (m²) = 2.5 acres

MASS - WEIGHT (APPROXIMATE)

1 gram (gr) = 0.036 ounce (oz)
 1 kilogram (kg) = 2.2 pounds (lb)
 1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons

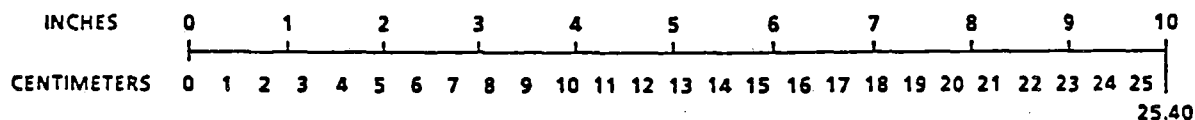
VOLUME (APPROXIMATE)

1 milliliter (ml) = 0.03 fluid ounce (fl oz)
 1 liter (l) = 2.1 pints (pt)
 1 liter (l) = 1.06 quarts (qt)
 1 liter (l) = 0.26 gallon (gal)
 1 cubic meter (m³) = 36 cubic feet (cu ft, ft³)
 1 cubic meter (m³) = 1.3 cubic yards (cu yd, yd³)

TEMPERATURE (EXACT)

$$[(9/5)y + 32]^{\circ}C = x^{\circ}F$$

QUICK INCH-CENTIMETER LENGTH CONVERSION



QUICK FAHRENHEIT-CELCIUS TEMPERATURE CONVERSION

°F	-40°	-22°	-4°	14°	32°	50°	68°	86°	104°	122°	140°	158°	176°	194°	212°
°C	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°

For more exact and/or other conversion factors, see NBS Miscellaneous Publication 286, Units of Weights and Measures. Price \$2.50. SD Catalog No. C13 10 266.

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- Monogram Industries
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- Railtech Ltd.
Tim Secord, Manager, Engineering and Product Development
- Microphor
Vern Haselswerdt, Vice President Sales

Other Rail Systems

Several rail systems responded to our inquiries or entertained visits by ADL staff. These included:

North America

Long Island Railroad
Metro-North Commuter Railroad
Massachusetts Bay Transportation Authority
GO Transit (Toronto)
METRA (Chicago)
Via-Rail Canada

International

Japan Railways
British Rail
Danish State Railways
German Federal Railways
French National Railways

ABBREVIATIONS

Most abbreviations used in the tables are self explanatory. The meaning of those that are not are:

Coach-HEP-HLV:	Ex Santa-Fe "El Capitan" bilevel coach equipped with head end power.
Lounge-HEP-HLV:	Ex Santa-Fe "El Capitan" bilevel lounge equipped with head end power.
Coach (HDCP):	Even with the help of Amtrak, we have been unable to determine the meaning of the abbreviation. However, the vehicle itself appears to be a conventional Heritage coach car.

TABLE OF CONTENTS
APPENDICES C, D AND E
DETAILED TOILET SYSTEM COST ANALYSES

**APPENDIX C COST MODEL FOR AMTRAK RETENTION TOILET
SYSTEMS—COST BY ROUTE**

C-1

C1 Summary of Costs by Toilet System and Route	C-1
C2 Cost Details, Expected Scenario, Each Toilet System	C-17
C2.1 Sunset Limited, New Orleans-Los Angeles	C-17
C2.2 California Zephyr, Chicago-Oakland	C-28
C2.3 City of New Orleans, New Orleans-Chicago	C-39
C2.4 Silver Meteor, New York-Tampa	C-50
C2.5 Benjamin Franklin, Boston-Philadelphia	C-61
C2.6 Metroliner, Washington DC-New York	C-72
C2.7 Hudson Highlander, Albany-New York	C-83
C2.8 Electric City Express, Schenectady-New York	C-94
C3 Cost Details, Favorable Scenario, Each Toilet System	C-105
C3.1 Sunset Limited, New Orleans-Los Angeles	C-105
C3.2 California Zephyr, Chicago-Oakland	C-116
C3.3 City of New Orleans, New Orleans-Chicago	C-127
C3.4 Silver Meteor, New York-Tampa	C-138
C3.5 Benjamin Franklin, Boston-Philadelphia	C-149
C3.6 Metroliner, Washington DC-New York	C-160
C3.7 Hudson Highlander, Albany-New York	C-171
C3.8 Electric City Express, Schenectady-New York	C-182
C4 Cost Details, Unfavorable Scenario, Each Toilet System	C-193
C4.1 Sunset Limited, New Orleans-Los Angeles	C-193
C4.2 California Zephyr, Chicago-Oakland	C-204
C4.3 City of New Orleans, New Orleans-Chicago	C-215
C4.4 Silver Meteor, New York-Tampa	C-226
C4.5 Benjamin Franklin, Boston-Philadelphia	C-237
C4.6 Metroliner, Washington DC-New York	C-248
C4.7 Hudson Highlander, Albany-New York	C-259
C4.8 Electric City Express, Schenectady-New York	C-264

**APPENDIX D COST MODEL FOR AMTRAK RETENTION TOILET
SYSTEMS—COST BY CAR TYPE**

D-1

D1 Monogram Modified Vacuum	D-1
D2 Monogram Self-Contained Recirculating	D-29
D3 Microphor Gravity	D-57
D4 Evac Ultimate	D-85
D5 Railtech WTS 8300	D-113

APPENDIX E EXPLANATION OF COST MODELS IN APPENDICES C AND D E1

E1	Introduction	E-1
E2	The Equipment Table	E-1
E3	The General Parameter Table	E-8
E4	The Route Table	E-10
E5	The Amtrak Car Table	E-12
E6	Route Cost Model Explanation	E-13
E7	Car Type Cost Model Explanation	E-23

Introduction to Appendices C, D and E

Appendices C, D and E provide full details of the cost estimates for capital operating and maintenance costs by toilet system type, car type and Amtrak route.

Section C1, the first part of Appendix C, provides a summary of these costs for individual cars of each type and for the present Amtrak fleet of each car type. Costs are presented by each of five toilet types and for favorable, expected and unfavorable cost scenarios. These scenarios cover the range of expected costs for each cost element.

Section C2 presents a detailed breakdown of these costs by a representative set of Amtrak routes for the "expected" cost scenario and each toilet type. The appropriate car types as used on each route are covered in the costings.

Section C3 presents a detailed breakdown of costs in the same way as Section C2, but for the "favorable" scenario.

Section C4 presents a detailed breakdown of costs in the same way as Section C2, but for the "unfavorable" scenario.

Appendix D presents a detailed breakdown of costs by individual car type for each of five toilet types for each cost scenario. The toilet types are:

- Monogram Modified Vacuum
- Monogram Self-Contained Recirculating
- Microphor Gravity
- Evac Ultimate
- Railtech WTS 8300

Appendix E presents a detailed definition and description of each parameter used in the cost model and the sources of the numerical data used in the analysis.

APPENDIX C

**COST MODEL FOR AMTRAK RETENTION TOILET SYSTEMS—
COST BY ROUTE**

C1 Summary of Costs by Toilet System and Route

Equipment Type:	Monogram	Modified Vacuum				
Scenario:	Expected					
Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$13,532	\$55,896
Coach Super	34000	6	4	40	\$7,337	\$39,168
Coach-HEP-HLV	39940	4	1	21	\$5,208	\$33,592
Lounge-HEP-HLV	39970	2	1	6	\$3,160	\$28,016
Bag Coach Super	31000	5	3	48	\$4,927	\$36,380
Sleeper Super	32000	12	3	34	\$10,416	\$55,896
Coach Super	34000	6	5	51	\$5,718	\$39,168
Trans Dorm Coach	39900	4	1	36	\$3,985	\$33,592
Sleeper 10-6	2400(30)	17	1	27	\$31,746	\$69,836
Am lounge, II	28000	2	1	13	\$4,519	\$28,016
Coach (HDCP)	4000	3	1	21	\$6,319	\$30,804
Coach	4600	2	4	78	\$4,514	\$28,016
Horizon	54000	2	1	103	\$4,682	\$28,016
Dome Coach	9400	2	1	12	\$4,504	\$28,016
Slumbercoach 24-8	2080	32	1	16	\$34,595	\$111,656
Viewliner-Sleeper	2300	17	1	2	\$18,714	\$69,836
Sleeper 10-6	2400(30)	17	2	55	\$18,676	\$69,836
Amcoach II	25000	2	7	119	\$2,929	\$28,016
Am lounge II	28000	2	1	13	\$2,898	\$28,016
Amcafe	20000	2	1	45	\$4,582	\$28,016
Amclub	20100	2	3	24	\$4,513	\$28,016
Amcoach	21000	2	1	67	\$4,759	\$28,016
Met-Srvc Dinette	20900	2	1	13	\$4,705	\$28,016
Met-Srvc Club	20970	2	1	13	\$4,891	\$28,016
Met-Srvc Coach	21900	2	4	50	\$5,393	\$28,016
Amdinette	20200	2	1	25	\$4,681	\$28,016
Amcoach	21000	2	3	200	\$5,749	\$28,016
Amcoach	21800	2	1	31	\$5,328	\$28,016
Turbo Power Coach	150-Even	1	1	14	\$2,830	\$25,228
Turbo Power Club	151-Odd	1	1	6	\$2,708	\$25,228
Turbo Cafe	170	1	1	3	\$2,943	\$25,228
Turbo Coach	170	2	3	21	\$4,955	\$28,016
		Total:		1,239		
		Entire Fleet:		1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$460,103	\$1,900,464	#1-2	Sunset Limited	New Orleans/Los Angeles
\$296,745	\$1,584,128	#1-2	Sunset Limited	New Orleans/Los Angeles
\$109,360	\$705,432	#1-2	Sunset Limited	New Orleans/Los Angeles
\$18,961	\$168,096	#1-2	Sunset Limited	New Orleans/Los Angeles
\$236,494	\$1,746,240	#5-6	California Zephyr	Chicago/Oakland
\$354,140	\$1,900,464	#5-6	California Zephyr	Chicago/Oakland
\$289,073	\$1,980,160	#5-6	California Zephyr	Chicago/Oakland
\$143,466	\$1,209,312	#5-6	California Zephyr	Chicago/Oakland
\$859,054	\$1,889,762	#58	City of New Orleans	New Orleans/Chicago
\$56,489	\$350,200	#58	City of New Orleans	New Orleans/Chicago
\$132,689	\$646,884	#58	City of New Orleans	New Orleans/Chicago
\$352,110	\$2,185,248	#58	City of New Orleans	New Orleans/Chicago
\$482,201	\$2,885,648	#58	City of New Orleans	New Orleans/Chicago
\$54,053	\$336,192	#58	City of New Orleans	New Orleans/Chicago
\$553,520	\$1,786,496	#87-88	Silver Meteor	New York City/Tampa
\$37,428	\$139,672	#87-88	Silver Meteor	New York City/Tampa
\$1,026,074	\$3,836,790	#87-88	Silver Meteor	New York City/Tampa
\$348,598	\$3,333,904	#87-88	Silver Meteor	New York City/Tampa
\$36,227	\$350,200	#87-88	Silver Meteor	New York City/Tampa
\$206,181	\$1,260,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$108,312	\$672,384	#193	Benjamin-Franklin	Boston/Philadelphia
\$316,505	\$1,863,064	#193	Benjamin-Franklin	Boston/Philadelphia
\$61,169	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$63,584	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$269,632	\$1,400,800	#200	Metroliner	Washington DC/New York Cit
\$117,017	\$700,400	#242	Hudson Highlander	Albany/New York City
\$1,146,865	\$5,589,192	#242	Hudson Highlander	Albany/New York City
\$165,183	\$868,496	#242	Hudson Highlander	Albany/New York City
\$39,621	\$353,192	#250	Electric City Express	Schnecetady/New York City
\$16,247	\$151,368	#250	Electric City Express	Schnecetady/New York City
\$8,829	\$75,684	#250	Electric City Express	Schnecetady/New York City
\$104,052	\$588,336	#250	Electric City Express	Schnecetady/New York City
\$8,469,980	\$43,187,344			
\$9,345,007	\$47,648,991			

Equipment Type: Monogram Self-Cont'd Recirc
Scenario: Expected

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$20,861	\$42,456
Coach Super	34000	6	4	40	\$10,581	\$21,228
Coach-HEP-HLV	39940	4	1	21	\$9,290	\$14,152
Lounge-HEP-HLV	39970	2	1	6	\$4,773	\$7,076
Bag Coach Super	31000	5	3	48	\$9,348	\$17,690
Sleeper Super	32000	12	3	34	\$17,766	\$42,456
Coach Super	34000	6	5	51	\$11,185	\$21,228
Trans Dorm Coach	39900	4	1	36	\$5,977	\$14,152
Sleeper 10-6	2400(30)	17	1	27	\$42,468	\$60,146
Amlounge II	28000	2	1	13	\$5,126	\$7,076
Coach (HDCP)	4000	3	1	21	\$7,607	\$10,614
Coach	4600	2	4	78	\$5,124	\$7,076
Horizon	54000	2	1	103	\$5,219	\$7,076
Dome Coach	9400	2	1	12	\$5,118	\$7,076
Slumbercoach 24-8	2080	32	1	16	\$55,367	\$113,216
Viewliner-Sleeper	2300	17	1	2	\$29,437	\$60,146
Sleeper 10-6	2400(30)	17	2	55	\$29,415	\$60,146
Amcoach II	25000	2	7	119	\$4,636	\$7,076
Amlounge II	28000	2	1	13	\$3,543	\$7,076
Amcafe	20000	2	1	45	\$5,168	\$7,076
Amclub	20100	2	3	24	\$5,128	\$7,076
Amcoach	21000	2	1	67	\$5,273	\$7,076
Met-Srvc Dinette	20900	2	1	13	\$5,249	\$7,076
Met-Srvc Club	20970	2	1	13	\$5,363	\$7,076
Met-Srvc Coach	21900	2	4	50	\$5,668	\$7,076
Amdinette	20200	2	1	25	\$5,234	\$7,076
Amcoach	21000	2	3	200	\$5,885	\$7,076
Amcoach	21800	2	1	31	\$5,629	\$7,076
Turbo Power Coach	150-Even	1	1	14	\$2,722	\$3,538
Turbo Power Club	151-Odd	1	1	6	\$2,648	\$3,538
Turbo Cafe	170	1	1	3	\$2,790	\$3,538
Turbo Coach	170	2	3	21	\$5,398	\$7,076

Total: 1,239
Entire Fleet: 1,367

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$709,264	\$1,443,504	#1-2	Sunset Limited	New Orleans/Los Angeles
\$427,926	\$858,555	#1-2	Sunset Limited	New Orleans/Los Angeles
\$195,089	\$297,192	#1-2	Sunset Limited	New Orleans/Los Angeles
\$28,637	\$42,456	#1-2	Sunset Limited	New Orleans/Los Angeles
\$448,723	\$849,120	#5-6	California Zephyr	Chicago/Oakland
\$604,035	\$1,443,504	#5-6	California Zephyr	Chicago/Oakland
\$565,449	\$1,073,193	#5-6	California Zephyr	Chicago/Oakland
\$215,174	\$509,472	#5-6	California Zephyr	Chicago/Oakland
\$1,149,189	\$1,627,551	#58	City of New Orleans	New Orleans/Chicago
\$64,080	\$88,450	#58	City of New Orleans	New Orleans/Chicago
\$159,744	\$222,894	#58	City of New Orleans	New Orleans/Chicago
\$399,639	\$551,928	#58	City of New Orleans	New Orleans/Chicago
\$537,547	\$728,828	#58	City of New Orleans	New Orleans/Chicago
\$61,416	\$84,912	#58	City of New Orleans	New Orleans/Chicago
\$885,875	\$1,811,456	#87-88	Silver Meteor	New York City/Tampa
\$58,873	\$120,292	#87-88	Silver Meteor	New York City/Tampa
\$1,616,069	\$3,304,421	#87-88	Silver Meteor	New York City/Tampa
\$551,662	\$842,044	#87-88	Silver Meteor	New York City/Tampa
\$44,291	\$88,450	#87-88	Silver Meteor	New York City/Tampa
\$232,570	\$318,420	#193	Benjamin-Franklin	Boston/Philadelphia
\$123,063	\$169,824	#193	Benjamin-Franklin	Boston/Philadelphia
\$350,657	\$470,554	#193	Benjamin-Franklin	Boston/Philadelphia
\$68,242	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$69,714	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$283,415	\$353,800	#200	Metroliner	Washington DC/New York Cit
\$130,860	\$176,900	#242	Hudson Highlander	Albany/New York City
\$1,174,114	\$1,411,662	#242	Hudson Highlander	Albany/New York City
\$174,505	\$219,356	#242	Hudson Highlander	Albany/New York City
\$38,102	\$49,532	#250	Electric City Express	Schnecetady/New York City
\$15,887	\$21,228	#250	Electric City Express	Schnecetady/New York City
\$8,369	\$10,614	#250	Electric City Express	Schnecetady/New York City
\$113,353	\$148,596	#250	Electric City Express	Schnecetady/New York City
\$11,505,536	\$19,522,684			
\$12,694,163	\$21,539,555			

Equipment Type: Scenario:	Microphor Expected	Gravity				
Car Type	Typical Car Number	Toilets per Car	Cars in Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$14,293	\$74,032
Coach Super	34000	6	4	40	\$7,782	\$42,304
Coach-HEP-HLV	39940	4	1	21	\$5,490	\$31,728
Lounge-HEP-HLV	39970	2	1	6	\$3,542	\$21,152
Bag Coach Super	31000	5	3	48	\$5,367	\$37,016
Sleeper Super	32000	12	3	34	\$11,131	\$74,032
Coach Super	34000	6	5	51	\$6,228	\$42,304
Trans Dorm Coach	39900	4	1	36	\$4,087	\$31,728
Sleeper 10-6	2400(30)	17	1	27	\$32,789	\$100,472
Amlounge II	28000	2	1	13	\$4,556	\$21,152
Coach (HDCP)	4000	3	1	21	\$6,408	\$26,440
Coach	4600	2	4	78	\$4,546	\$21,152
Horizon	54000	2	1	103	\$4,864	\$21,152
Dome Coach	9400	2	1	12	\$4,528	\$21,152
Slumbercoach 24-8	2080	32	1	16	\$36,777	\$179,792
Viewliner-Sleeper	2300	17	1	2	\$19,754	\$100,472
Sleeper 10-6	2400(30)	17	2	55	\$19,683	\$100,472
Amcoach II	25000	2	7	119	\$2,915	\$21,152
Amlounge II	28000	2	1	13	\$2,856	\$21,152
Amcafe	20000	2	1	45	\$4,675	\$21,152
Amclub	20100	2	3	24	\$4,544	\$21,152
Amcoach	21000	2	1	67	\$5,012	\$21,152
Met-Srvc Dinette	20900	2	1	13	\$4,909	\$21,152
Met-Srvc Club	20970	2	1	13	\$5,262	\$21,152
Met-Srvc Coach	21900	2	4	50	\$6,214	\$21,152
Amdinette	20200	2	1	25	\$4,863	\$21,152
Amcoach	21000	2	3	200	\$6,890	\$21,152
Amcoach	21800	2	1	31	\$6,092	\$21,152
Turbo Power Coach	150-Even	1	1	14	\$2,913	\$15,864
Turbo Power Club	151-Odd	1	1	6	\$2,681	\$15,864
Turbo Cafe	170	1	1	3	\$3,127	\$15,864
Turbo Coach	170	2	3	21	\$5,383	\$21,152
		Total:		1,239		
		Entire Fleet:		1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$485,972	\$2,517,088	#1-2	Sunset Limited	New Orleans/Los Angeles
\$314,757	\$1,710,962	#1-2	Sunset Limited	New Orleans/Los Angeles
\$115,289	\$666,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$21,250	\$126,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$257,640	\$1,776,768	#5-6	California Zephyr	Chicago/Oakland
\$378,465	\$2,517,088	#5-6	California Zephyr	Chicago/Oakland
\$314,864	\$2,138,702	#5-6	California Zephyr	Chicago/Oakland
\$147,146	\$1,142,208	#5-6	California Zephyr	Chicago/Oakland
\$887,258	\$2,718,772	#58	City of New Orleans	New Orleans/Chicago
\$56,948	\$264,400	#58	City of New Orleans	New Orleans/Chicago
\$134,570	\$555,240	#58	City of New Orleans	New Orleans/Chicago
\$354,626	\$1,649,856	#58	City of New Orleans	New Orleans/Chicago
\$501,010	\$2,178,656	#58	City of New Orleans	New Orleans/Chicago
\$54,334	\$253,824	#58	City of New Orleans	New Orleans/Chicago
\$588,437	\$2,876,672	#87-88	Silver Meteor	New York City/Tampa
\$39,508	\$200,944	#87-88	Silver Meteor	New York City/Tampa
\$1,081,386	\$5,519,932	#87-88	Silver Meteor	New York City/Tampa
\$346,893	\$2,517,088	#87-88	Silver Meteor	New York City/Tampa
\$35,697	\$264,400	#87-88	Silver Meteor	New York City/Tampa
\$210,364	\$951,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$109,060	\$507,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$333,304	\$1,406,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$63,820	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$68,405	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$310,709	\$1,057,600	#200	Metroliner	Washington DC/New York Cit
\$121,563	\$528,800	#242	Hudson Highlander	Albany/New York City
\$1,374,582	\$4,219,824	#242	Hudson Highlander	Albany/New York City
\$188,864	\$655,712	#242	Hudson Highlander	Albany/New York City
\$40,781	\$222,096	#250	Electric City Express	Schnecetady/New York City
\$16,085	\$95,184	#250	Electric City Express	Schnecetady/New York City
\$9,381	\$47,592	#250	Electric City Express	Schnecetady/New York City
\$113,044	\$444,192	#250	Electric City Express	Schnecetady/New York City
\$9,076,011	\$42,282,848			
\$10,013,645	\$46,651,052			

Equipment Type: Evac		Ultimate				
Scenario:		Expected				
Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$13,378	\$51,696
Coach Super	34000	6	4	40	\$7,091	\$32,568
Coach-HEP-HLV	39940	4	1	21	\$4,940	\$26,192
Lounge-HEP-HLV	39970	2	1	6	\$2,859	\$19,816
Bag Coach Super	31000	5	3	48	\$4,679	\$29,380
Sleeper Super	32000	12	3	34	\$10,269	\$51,696
Coach Super	34000	6	5	51	\$5,484	\$32,568
Trans Dorm Coach	39900	4	1	36	\$3,744	\$26,192
Sleeper 10-6	2400(30)	17	1	27	\$31,666	\$67,636
Amlounge II	28000	2	1	13	\$4,241	\$19,816
Coach (HDCP)	4000	3	1	21	\$6,056	\$23,004
Coach	4600	2	4	78	\$4,237	\$19,816
Horizon	54000	2	1	103	\$4,382	\$19,816
Dome Coach	9400	2	1	12	\$4,229	\$19,816
Slumbercoach 24-8	2080	32	1	16	\$34,693	\$115,456
Viewliner-Sleeper	2300	17	1	2	\$18,634	\$67,636
Sleeper 10-6	2400(30)	17	2	55	\$18,601	\$67,636
Amcoach II	25000	2	7	119	\$2,659	\$19,816
Amlounge II	28000	2	1	13	\$2,632	\$19,816
Amcafe	20000	2	1	45	\$4,296	\$19,816
Amclub	20100	2	3	24	\$4,236	\$19,816
Amcoach	21000	2	1	67	\$4,450	\$19,816
Met-Srvc Dinette	20900	2	1	13	\$4,403	\$19,816
Met-Srvc Club	20970	2	1	13	\$4,564	\$19,816
Met-Srvc Coach	21900	2	4	50	\$5,000	\$19,816
Amdinette	20200	2	1	25	\$4,382	\$19,816
Amcoach	21000	2	3	200	\$5,309	\$19,816
Amcoach	21800	2	1	31	\$4,944	\$19,816
Turbo Power Coach	150-Even	1	1	14	\$2,522	\$16,628
Turbo Power Club	151-Odd	1	1	6	\$2,416	\$16,628
Turbo Cafe	170	1	1	3	\$2,620	\$16,628
Turbo Coach	170	2	3	21	\$4,620	\$19,816
		Total:		1,239		
		Entire Fleet:		1,367		

C-5

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$454,866	\$1,757,664	#1-2	Sunset Limited	New Orleans/Los Angeles
\$286,805	\$1,317,195	#1-2	Sunset Limited	New Orleans/Los Angeles
\$103,735	\$550,032	#1-2	Sunset Limited	New Orleans/Los Angeles
\$17,157	\$118,896	#1-2	Sunset Limited	New Orleans/Los Angeles
\$224,598	\$1,410,240	#5-6	California Zephyr	Chicago/Oakland
\$349,130	\$1,757,664	#5-6	California Zephyr	Chicago/Oakland
\$277,223	\$1,646,493	#5-6	California Zephyr	Chicago/Oakland
\$134,775	\$942,912	#5-6	California Zephyr	Chicago/Oakland
\$856,882	\$1,830,230	#58	City of New Orleans	New Orleans/Chicago
\$53,017	\$247,700	#58	City of New Orleans	New Orleans/Chicago
\$127,176	\$483,084	#58	City of New Orleans	New Orleans/Chicago
\$330,492	\$1,545,648	#58	City of New Orleans	New Orleans/Chicago
\$451,381	\$2,041,048	#58	City of New Orleans	New Orleans/Chicago
\$50,742	\$237,792	#58	City of New Orleans	New Orleans/Chicago
\$555,080	\$1,847,296	#87-88	Silver Meteor	New York City/Tampa
\$37,267	\$135,272	#87-88	Silver Meteor	New York City/Tampa
\$1,021,949	\$3,715,922	#87-88	Silver Meteor	New York City/Tampa
\$316,430	\$2,358,104	#87-88	Silver Meteor	New York City/Tampa
\$32,899	\$247,700	#87-88	Silver Meteor	New York City/Tampa
\$193,308	\$891,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$101,664	\$475,584	#193	Benjamin-Franklin	Boston/Philadelphia
\$295,923	\$1,317,764	#193	Benjamin-Franklin	Boston/Philadelphia
\$57,238	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$59,335	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$249,982	\$990,800	#200	Metroliner	Washington DC/New York Cit
\$109,539	\$495,400	#242	Hudson Highlander	Albany/New York City
\$1,059,090	\$3,953,292	#242	Hudson Highlander	Albany/New York City
\$153,262	\$614,296	#242	Hudson Highlander	Albany/New York City
\$35,314	\$232,792	#250	Electric City Express	Schnecetady/New York City
\$14,498	\$99,768	#250	Electric City Express	Schnecetady/New York City
\$7,861	\$49,884	#250	Electric City Express	Schnecetady/New York City
\$97,011	\$416,136	#250	Electric City Express	Schnecetady/New York City
\$8,115,630	\$34,243,544			
\$8,954,049	\$37,781,214			

Equipment Type: Railtech WTS 8300
Scenario: Expected

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$14,153	\$65,184
Coach Super	34000	6	4	40	\$9,364	\$32,592
Coach-HEP-HLV	39940	4	1	21	\$6,524	\$21,728
Lounge-HEP-HLV	39970	2	1	6	\$4,558	\$15,152
Bag Coach Super	31000	5	3	48	\$6,279	\$29,304
Sleeper Super	32000	12	3	34	\$10,953	\$65,184
Coach Super	34000	6	5	51	\$7,066	\$32,592
Trans Dorm Coach	39900	4	1	36	\$4,614	\$21,728
Sleeper 10-6	2400(30)	17	1	27	\$32,630	\$94,488
Amlounge II	28000	2	1	13	\$4,557	\$15,152
Coach (HDCP)	4000	3	1	21	\$6,331	\$18,440
Coach	4600	2	4	78	\$4,544	\$15,152
Horizon	54000	2	1	103	\$7,134	\$15,152
Dome Coach	9400	2	1	12	\$4,518	\$15,152
Slumbercoach 24-8	2080	32	1	16	\$36,571	\$173,824
Viewliner-Sleeper	2300	17	1	2	\$19,594	\$94,488
Sleeper 10-6	2400(30)	17	2	55	\$19,495	\$94,488
Amcoach II	25000	2	7	119	\$3,947	\$15,152
Amlounge II	28000	2	1	13	\$3,864	\$15,152
Amcafe	20000	2	1	45	\$4,723	\$15,152
Amclub	20100	2	3	24	\$4,541	\$15,152
Amcoach	21000	2	1	67	\$5,194	\$15,152
Met-Srvc Dinette	20900	2	1	13	\$5,050	\$15,152
Met-Srvc Club	20970	2	1	13	\$5,543	\$15,152
Met-Srvc Coach	21900	2	4	50	\$6,872	\$15,152
Amdinette	20200	2	1	25	\$4,985	\$15,152
Amcoach	21000	2	3	200	\$7,815	\$15,152
Amcoach	21800	2	1	31	\$6,702	\$15,152
Turbo Power Coach	150-Even	1	1	14	\$2,955	\$7,576
Turbo Power Club	151-Odd	1	1	6	\$2,632	\$7,576
Turbo Cafe	170	1	1	3	\$3,254	\$7,576
Turbo Coach	170	2	3	21	\$5,712	\$15,152
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$481,200	\$2,216,256	#1-2	Sunset Limited	New Orleans/Los Angeles
\$378,729	\$1,318,165	#1-2	Sunset Limited	New Orleans/Los Angeles
\$137,009	\$456,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$27,350	\$90,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$301,370	\$1,406,592	#5-6	California Zephyr	Chicago/Oakland
\$372,401	\$2,216,256	#5-6	California Zephyr	Chicago/Oakland
\$357,240	\$1,647,707	#5-6	California Zephyr	Chicago/Oakland
\$166,112	\$782,208	#5-6	California Zephyr	Chicago/Oakland
\$882,966	\$2,556,845	#58	City of New Orleans	New Orleans/Chicago
\$56,963	\$189,400	#58	City of New Orleans	New Orleans/Chicago
\$132,948	\$387,240	#58	City of New Orleans	New Orleans/Chicago
\$354,432	\$1,181,856	#58	City of New Orleans	New Orleans/Chicago
\$734,763	\$1,560,656	#58	City of New Orleans	New Orleans/Chicago
\$54,215	\$181,824	#58	City of New Orleans	New Orleans/Chicago
\$585,140	\$2,781,184	#87-88	Silver Meteor	New York City/Tampa
\$39,188	\$188,976	#87-88	Silver Meteor	New York City/Tampa
\$1,071,039	\$5,191,171	#87-88	Silver Meteor	New York City/Tampa
\$469,661	\$1,803,088	#87-88	Silver Meteor	New York City/Tampa
\$48,299	\$189,400	#87-88	Silver Meteor	New York City/Tampa
\$212,536	\$681,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$108,978	\$363,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$345,394	\$1,007,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$65,654	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$72,053	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$343,588	\$757,600	#200	Metroliner	Washington DC/New York Cit
\$124,628	\$378,800	#242	Hudson Highlander	Albany/New York City
\$1,559,146	\$3,022,824	#242	Hudson Highlander	Albany/New York City
\$207,755	\$469,712	#242	Hudson Highlander	Albany/New York City
\$41,377	\$106,064	#250	Electric City Express	Schnecetady/New York City
\$15,790	\$45,456	#250	Electric City Express	Schnecetady/New York City
\$9,763	\$22,728	#250	Electric City Express	Schnecetady/New York City
\$119,945	\$318,192	#250	Electric City Express	Schnecetady/New York City
\$9,877,631	\$33,914,448			
\$10,898,080	\$37,418,120			

Equipment Type: Monogram Modified Vacuum
Scenario: Unfavorable

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$16,798	\$55,896
Coach Super	34000	6	4	40	\$9,262	\$39,168
Coach-HEP-HLV	39940	4	1	21	\$6,665	\$33,592
Lounge-HEP-HLV	39970	2	1	6	\$4,176	\$28,016
Bag Coach Super	31000	5	3	48	\$6,414	\$36,380
Sleeper Super	32000	12	3	34	\$13,228	\$55,896
Coach Super	34000	6	5	51	\$7,396	\$39,168
Trans Dorm Coach	39900	4	1	36	\$5,232	\$33,592
Sleeper 10-6	2400(30)	17	1	27	\$37,998	\$69,836
Amlounge II	28000	2	1	13	\$5,698	\$28,016
Coach (HDCP)	4000	3	1	21	\$7,831	\$30,804
Coach	4600	2	4	78	\$5,692	\$28,016
Horizon	54000	2	1	103	\$5,913	\$28,016
Dome Coach	9400	2	1	12	\$5,679	\$28,016
Slumbercoach 24-8	2080	32	1	16	\$42,463	\$111,656
Viewliner-Sleeper	2300	17	1	2	\$23,103	\$69,836
Sleeper 10-6	2400(30)	17	2	55	\$23,054	\$69,836
Amcoach II	25000	2	7	119	\$3,871	\$28,016
Amlounge II	28000	2	1	13	\$3,830	\$28,016
Amcafe	20000	2	1	45	\$5,781	\$28,016
Amclub	20100	2	3	24	\$5,690	\$28,016
Amcoach	21000	2	1	67	\$6,016	\$28,016
Met-Srvc Dinette	20900	2	1	13	\$5,944	\$28,016
Met-Srvc Club	20970	2	1	13	\$6,189	\$28,016
Met-Srvc Coach	21900	2	4	50	\$6,851	\$28,016
Amdinette	20200	2	1	25	\$5,912	\$28,016
Amcoach	21000	2	3	200	\$7,322	\$28,016
Amcoach	21800	2	1	31	\$6,767	\$28,016
Turbo Power Coach	150-Even	1	1	14	\$3,711	\$25,228
Turbo Power Club	151-Odd	1	1	6	\$3,550	\$25,228
Turbo Cafe	170	1	1	3	\$3,860	\$25,228
Turbo Coach	170	2	3	21	\$6,274	\$28,016

Total: 1,239

Entire Fleet: 1,367

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$571,147	\$1,900,464	#1-2	Sunset Limited	New Orleans/Los Angeles
\$374,597	\$1,584,128	#1-2	Sunset Limited	New Orleans/Los Angeles
\$139,963	\$705,432	#1-2	Sunset Limited	New Orleans/Los Angeles
\$25,057	\$168,096	#1-2	Sunset Limited	New Orleans/Los Angeles
\$307,864	\$1,746,240	#5-6	California Zephyr	Chicago/Oakland
\$449,742	\$1,900,464	#5-6	California Zephyr	Chicago/Oakland
\$373,922	\$1,980,160	#5-6	California Zephyr	Chicago/Oakland
\$188,362	\$1,209,312	#5-6	California Zephyr	Chicago/Oakland
\$1,028,224	\$1,889,762	#58	City of New Orleans	New Orleans/Chicago
\$71,229	\$350,200	#58	City of New Orleans	New Orleans/Chicago
\$164,448	\$646,884	#58	City of New Orleans	New Orleans/Chicago
\$443,965	\$2,185,248	#58	City of New Orleans	New Orleans/Chicago
\$609,014	\$2,885,648	#58	City of New Orleans	New Orleans/Chicago
\$68,146	\$336,192	#58	City of New Orleans	New Orleans/Chicago
\$679,409	\$1,786,496	#87-88	Silver Meteor	New York City/Tampa
\$46,207	\$139,672	#87-88	Silver Meteor	New York City/Tampa
\$1,266,574	\$3,836,790	#87-88	Silver Meteor	New York City/Tampa
\$460,699	\$3,333,904	#87-88	Silver Meteor	New York City/Tampa
\$47,877	\$350,200	#87-88	Silver Meteor	New York City/Tampa
\$260,147	\$1,260,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$136,566	\$672,384	#193	Benjamin-Franklin	Boston/Philadelphia
\$400,039	\$1,863,064	#193	Benjamin-Franklin	Boston/Philadelphia
\$77,273	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$80,461	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$342,575	\$1,400,800	#200	Metroliner	Washington DC/New York Cit
\$147,790	\$700,400	#242	Hudson Highlander	Albany/New York City
\$1,460,644	\$5,589,192	#242	Hudson Highlander	Albany/New York City
\$209,771	\$868,496	#242	Hudson Highlander	Albany/New York City
\$51,960	\$353,192	#250	Electric City Express	Schnecetady/New York City
\$21,301	\$151,368	#250	Electric City Express	Schnecetady/New York City
\$11,581	\$75,684	#250	Electric City Express	Schnecetady/New York City
\$131,745	\$588,336	#250	Electric City Express	Schnecetady/New York City
\$10,648,298	\$43,187,344			
\$11,748,365	\$47,648,991			

Equipment Type: Monogram Self-Cont'd Recirc
Scenario: Unfavorable

Car Type	Typical Car Number	Toilets per Car	Cars in Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$26,429	\$42,456
Coach Super	34000	6	4	40	\$13,386	\$21,228
Coach-HEP-HLV	39940	4	1	21	\$11,480	\$14,152
Lounge-HEP-HLV	39970	2	1	6	\$5,886	\$7,076
Bag Coach Super	31000	5	3	48	\$11,762	\$17,690
Sleeper Super	32000	12	3	34	\$22,891	\$42,456
Coach Super	34000	6	5	51	\$14,076	\$21,228
Trans Dorm Coach	39900	4	1	36	\$7,693	\$14,152
Sleeper 10-6	2400(30)	17	1	27	\$52,201	\$60,146
Amlounge II	28000	2	1	13	\$6,290	\$7,076
Coach (HDCP)	4000	3	1	21	\$9,340	\$10,614
Coach	4600	2	4	78	\$6,287	\$7,076
Horizon	54000	2	1	103	\$6,396	\$7,076
Dome Coach	9400	2	1	12	\$6,280	\$7,076
Slumbercoach 24-8	2080	32	1	16	\$70,177	\$113,216
Viewliner-Sleeper	2300	17	1	2	\$37,308	\$60,146
Sleeper 10-6	2400(30)	17	2	55	\$37,283	\$60,146
Amcoach II	25000	2	7	119	\$5,729	\$7,076
Amlounge II	28000	2	1	13	\$4,481	\$7,076
Amcafe	20000	2	1	45	\$6,338	\$7,076
Amclub	20100	2	3	24	\$6,291	\$7,076
Amcoach	21000	2	1	67	\$6,458	\$7,076
Met-Srvc Dinette	20900	2	1	13	\$6,431	\$7,076
Met-Srvc Club	20970	2	1	13	\$6,560	\$7,076
Met-Srvc Coach	21900	2	4	50	\$6,909	\$7,076
Amdinette	20200	2	1	25	\$6,413	\$7,076
Amcoach	21000	2	3	200	\$7,157	\$7,076
Amcoach	21800	2	1	31	\$6,865	\$7,076
Turbo Power Coach	150-Even	1	1	14	\$3,326	\$3,538
Turbo Power Club	151-Odd	1	1	6	\$3,242	\$3,538
Turbo Cafe	170	1	1	3	\$3,404	\$3,538
Turbo Coach	170	2	3	21	\$6,600	\$7,076
		Total:		1,239		
		Entire Fleet:		1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$898,570	\$1,443,504	#1-2	Sunset Limited	New Orleans/Los Angeles
\$541,388	\$858,555	#1-2	Sunset Limited	New Orleans/Los Angeles
\$241,073	\$297,192	#1-2	Sunset Limited	New Orleans/Los Angeles
\$35,316	\$42,456	#1-2	Sunset Limited	New Orleans/Los Angeles
\$564,580	\$849,120	#5-6	California Zephyr	Chicago/Oakland
\$778,308	\$1,443,504	#5-6	California Zephyr	Chicago/Oakland
\$711,639	\$1,073,193	#5-6	California Zephyr	Chicago/Oakland
\$276,965	\$509,472	#5-6	California Zephyr	Chicago/Oakland
\$1,412,559	\$1,627,551	#58	City of New Orleans	New Orleans/Chicago
\$78,625	\$88,450	#58	City of New Orleans	New Orleans/Chicago
\$196,150	\$222,894	#58	City of New Orleans	New Orleans/Chicago
\$490,371	\$551,928	#58	City of New Orleans	New Orleans/Chicago
\$658,762	\$728,828	#58	City of New Orleans	New Orleans/Chicago
\$75,365	\$84,912	#58	City of New Orleans	New Orleans/Chicago
\$1,122,838	\$1,811,456	#87-88	Silver Meteor	New York City/Tampa
\$74,615	\$120,292	#87-88	Silver Meteor	New York City/Tampa
\$2,048,343	\$3,304,421	#87-88	Silver Meteor	New York City/Tampa
\$681,793	\$842,044	#87-88	Silver Meteor	New York City/Tampa
\$56,009	\$88,450	#87-88	Silver Meteor	New York City/Tampa
\$285,202	\$318,420	#193	Benjamin-Franklin	Boston/Philadelphia
\$150,995	\$169,824	#193	Benjamin-Franklin	Boston/Philadelphia
\$429,431	\$470,554	#193	Benjamin-Franklin	Boston/Philadelphia
\$83,598	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$85,280	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$345,467	\$353,800	#200	Metroliner	Washington DC/New York Cit
\$160,337	\$176,900	#242	Hudson Highlander	Albany/New York City
\$1,427,887	\$1,411,662	#242	Hudson Highlander	Albany/New York City
\$212,805	\$219,356	#242	Hudson Highlander	Albany/New York City
\$46,565	\$49,532	#250	Electric City Express	Schnecetady/New York City
\$19,450	\$21,228	#250	Electric City Express	Schnecetady/New York City
\$10,212	\$10,614	#250	Electric City Express	Schnecetady/New York City
\$138,604	\$148,596	#250	Electric City Express	Schnecetady/New York City
\$14,339,101	\$19,522,684			
\$15,820,461	\$21,539,555			

Equipment Type: Microphor Gravity
Scenario: Unfavorable

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$18,032	\$74,032
Coach Super	34000	6	4	40	\$10,145	\$42,304
Coach-HEP-HLV	39940	4	1	21	\$7,288	\$31,728
Lounge-HEP-HLV	39970	2	1	6	\$4,596	\$21,152
Bag Coach Super	31000	5	3	48	\$6,999	\$37,016
Sleeper Super	32000	12	3	34	\$14,394	\$74,032
Coach Super	34000	6	5	51	\$8,098	\$42,304
Trans Dorm Coach	39900	4	1	36	\$5,379	\$31,728
Sleeper 10-6	2400(30)	17	1	27	\$39,717	\$100,472
Amlounge II	28000	2	1	13	\$5,720	\$21,152
Coach (HDCP)	4000	3	1	21	\$7,945	\$26,440
Coach	4600	2	4	78	\$5,707	\$21,152
Horizon	54000	2	1	103	\$6,151	\$21,152
Dome Coach	9400	2	1	12	\$5,681	\$21,152
Slumbercoach 24-8	2080	32	1	16	\$46,080	\$179,792
Viewliner-Sleeper	2300	17	1	2	\$24,820	\$100,472
Sleeper 10-6	2400(30)	17	2	55	\$24,720	\$100,472
Amcoach II	25000	2	7	119	\$3,817	\$21,152
Amlounge II	28000	2	1	13	\$3,734	\$21,152
Amcafe	20000	2	1	45	\$5,886	\$21,152
Amclub	20100	2	3	24	\$5,704	\$21,152
Amcoach	21000	2	1	67	\$6,358	\$21,152
Met-Srvc Dinette	20900	2	1	13	\$6,214	\$21,152
Met-Srvc Club	20970	2	1	13	\$6,707	\$21,152
Met-Srvc Coach	21900	2	4	50	\$8,038	\$21,152
Amdinette	20200	2	1	25	\$6,149	\$21,152
Amcoach	21000	2	3	200	\$8,983	\$21,152
Amcoach	21800	2	1	31	\$7,868	\$21,152
Turbo Power Coach	150-Even	1	1	14	\$3,788	\$15,864
Turbo Power Club	151-Odd	1	1	6	\$3,464	\$15,864
Turbo Cafe	170	1	1	3	\$4,087	\$15,864
Turbo Coach	170	2	3	21	\$6,876	\$21,152

Total: 1,239

Entire Fleet: 1,367

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$613,079	\$2,517,088	#1-2	Sunset Limited	New Orleans/Los Angeles
\$410,325	\$1,710,962	#1-2	Sunset Limited	New Orleans/Los Angeles
\$153,058	\$666,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$27,573	\$126,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$335,945	\$1,776,768	#5-6	California Zephyr	Chicago/Oakland
\$489,382	\$2,517,088	#5-6	California Zephyr	Chicago/Oakland
\$409,394	\$2,138,702	#5-6	California Zephyr	Chicago/Oakland
\$193,627	\$1,142,208	#5-6	California Zephyr	Chicago/Oakland
\$1,074,751	\$2,718,772	#58	City of New Orleans	New Orleans/Chicago
\$71,500	\$264,400	#58	City of New Orleans	New Orleans/Chicago
\$166,838	\$555,240	#58	City of New Orleans	New Orleans/Chicago
\$445,138	\$1,649,856	#58	City of New Orleans	New Orleans/Chicago
\$633,548	\$2,178,656	#58	City of New Orleans	New Orleans/Chicago
\$68,169	\$253,824	#58	City of New Orleans	New Orleans/Chicago
\$737,276	\$2,876,672	#87-88	Silver Meteor	New York City/Tampa
\$49,640	\$200,944	#87-88	Silver Meteor	New York City/Tampa
\$1,358,142	\$5,519,932	#87-88	Silver Meteor	New York City/Tampa
\$454,262	\$2,517,088	#87-88	Silver Meteor	New York City/Tampa
\$46,680	\$264,400	#87-88	Silver Meteor	New York City/Tampa
\$264,878	\$951,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$136,888	\$507,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$422,788	\$1,406,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$80,781	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$87,190	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$401,899	\$1,057,600	#200	Metroliner	Washington DC/New York Cit
\$153,716	\$528,800	#242	Hudson Highlander	Albany/New York City
\$1,792,077	\$4,219,824	#242	Hudson Highlander	Albany/New York City
\$243,900	\$655,712	#242	Hudson Highlander	Albany/New York City
\$53,031	\$222,096	#250	Electric City Express	Schnecetady/New York City
\$20,782	\$95,184	#250	Electric City Express	Schnecetady/New York City
\$12,262	\$47,592	#250	Electric City Express	Schnecetady/New York City
\$144,401	\$444,192	#250	Electric City Express	Schnecetady/New York City
\$11,552,918	\$42,282,848			
\$12,746,439	\$46,651,052			

Equipment Type: Scenario:	Evac	Ultimate				
	Unfavorable					
Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$16,547	\$51,696
Coach Super	34000	6	4	40	\$8,861	\$32,568
Coach-HEP-HLV	39940	4	1	21	\$6,227	\$26,192
Lounge-HEP-HLV	39970	2	1	6	\$3,685	\$19,816
Bag Coach Super	31000	5	3	48	\$6,008	\$29,380
Sleeper Super	32000	12	3	34	\$12,986	\$51,696
Coach Super	34000	6	5	51	\$7,012	\$32,568
Trans Dorm Coach	39900	4	1	36	\$4,833	\$26,192
Sleeper 10-6	2400(30)	17	1	27	\$37,867	\$67,636
Amlounge II	28000	2	1	13	\$5,241	\$19,816
Coach (HDCP)	4000	3	1	21	\$7,398	\$23,004
Coach	4600	2	4	78	\$5,236	\$19,816
Horizon	54000	2	1	103	\$5,424	\$19,816
Dome Coach	9400	2	1	12	\$5,225	\$19,816
Slumbercoach 24-8	2080	32	1	16	\$42,629	\$115,456
Viewliner-Sleeper	2300	17	1	2	\$22,972	\$67,636
Sleeper 10-6	2400(30)	17	2	55	\$22,930	\$67,636
Amcoach II	25000	2	7	119	\$3,425	\$19,816
Amlounge II	28000	2	1	13	\$3,390	\$19,816
Amcafe	20000	2	1	45	\$5,312	\$19,816
Amclub	20100	2	3	24	\$5,234	\$19,816
Amcoach	21000	2	1	67	\$5,511	\$19,816
Met-Srvs Dinette	20900	2	1	13	\$5,450	\$19,816
Met-Srvs Club	20970	2	1	13	\$5,659	\$19,816
Met-Srvs Coach	21900	2	4	50	\$6,223	\$19,816
Amdinette	20200	2	1	25	\$5,423	\$19,816
Amcoach	21000	2	3	200	\$6,624	\$19,816
Amcoach	21800	2	1	31	\$6,151	\$19,816
Turbo Power Coach	150-Even	1	1	14	\$3,208	\$16,628
Turbo Power Club	151-Odd	1	1	6	\$3,070	\$16,628
Turbo Cafe	170	1	1	3	\$3,335	\$16,628
Turbo Coach	170	2	3	21	\$5,731	\$19,816
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$562,593	\$1,757,664	#1-2	Sunset Limited	New Orleans/Los Angeles
\$358,384	\$1,317,195	#1-2	Sunset Limited	New Orleans/Los Angeles
\$130,764	\$550,032	#1-2	Sunset Limited	New Orleans/Los Angeles
\$22,109	\$118,896	#1-2	Sunset Limited	New Orleans/Los Angeles
\$288,368	\$1,410,240	#5-6	California Zephyr	Chicago/Oakland
\$441,524	\$1,757,664	#5-6	California Zephyr	Chicago/Oakland
\$354,508	\$1,646,493	#5-6	California Zephyr	Chicago/Oakland
\$174,005	\$942,912	#5-6	California Zephyr	Chicago/Oakland
\$1,024,674	\$1,830,230	#58	City of New Orleans	New Orleans/Chicago
\$65,514	\$247,700	#58	City of New Orleans	New Orleans/Chicago
\$155,368	\$483,084	#58	City of New Orleans	New Orleans/Chicago
\$408,378	\$1,545,648	#58	City of New Orleans	New Orleans/Chicago
\$558,647	\$2,041,048	#58	City of New Orleans	New Orleans/Chicago
\$62,695	\$237,792	#58	City of New Orleans	New Orleans/Chicago
\$682,057	\$1,847,296	#87-88	Silver Meteor	New York City/Tampa
\$45,945	\$135,272	#87-88	Silver Meteor	New York City/Tampa
\$1,259,791	\$3,715,922	#87-88	Silver Meteor	New York City/Tampa
\$407,614	\$2,358,104	#87-88	Silver Meteor	New York City/Tampa
\$42,377	\$247,700	#87-88	Silver Meteor	New York City/Tampa
\$239,021	\$891,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$125,622	\$475,584	#193	Benjamin-Franklin	Boston/Philadelphia
\$366,506	\$1,317,764	#193	Benjamin-Franklin	Boston/Philadelphia
\$70,856	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$73,571	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$311,165	\$990,800	#200	Metroliner	Washington DC/New York Cit
\$135,569	\$495,400	#242	Hudson Highlander	Albany/New York City
\$1,321,413	\$3,953,292	#242	Hudson Highlander	Albany/New York City
\$190,686	\$614,296	#242	Hudson Highlander	Albany/New York City
\$44,909	\$232,792	#250	Electric City Express	Schnecetady/New York City
\$18,422	\$99,768	#250	Electric City Express	Schnecetady/New York City
\$10,004	\$49,884	#250	Electric City Express	Schnecetady/New York City
\$120,352	\$416,136	#250	Electric City Express	Schnecetady/New York City
\$10,073,411	\$34,243,544			
\$11,114,086	\$37,781,214			

Equipment Type: Railtech WTS 8300
Scenario: Unfavorable

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$21,688	\$65,184
Coach Super	34000	6	4	40	\$11,688	\$32,592
Coach-HEP-HLV	39940	4	1	21	\$8,193	\$21,728
Lounge-HEP-HLV	39970	2	1	6	\$5,819	\$15,152
Bag Coach Super	31000	5	3	48	\$8,018	\$29,304
Sleeper Super	32000	12	3	34	\$16,687	\$65,184
Coach Super	34000	6	5	51	\$8,998	\$32,592
Trans Dorm Coach	39900	4	1	36	\$5,860	\$21,728
Sleeper 10-6	2400(30)	17	1	27	\$39,438	\$94,488
Amlounge II	28000	2	1	13	\$8,142	\$15,152
Coach (HDCP)	4000	3	1	21	\$7,786	\$18,440
Coach	4600	2	4	78	\$8,123	\$15,152
Horizon	54000	2	1	103	\$8,754	\$15,152
Dome Coach	9400	2	1	12	\$8,086	\$15,152
Slumbercoach 24-8	2080	32	1	16	\$45,719	\$173,824
Viewliner-Sleeper	2300	17	1	2	\$24,538	\$94,488
Sleeper 10-6	2400(30)	17	2	55	\$24,397	\$94,488
Amcoach II	25000	2	7	119	\$4,949	\$15,152
Amlounge II	28000	2	1	13	\$4,832	\$15,152
Amcafe	20000	2	1	45	\$5,925	\$15,152
Amclub	20100	2	3	24	\$5,666	\$15,152
Amcoach	21000	2	1	67	\$6,595	\$15,152
Met-Srvc Dinette	20900	2	1	13	\$6,390	\$15,152
Met-Srvc Club	20970	2	1	13	\$7,091	\$15,152
Met-Srvc Coach	21900	2	4	50	\$8,981	\$15,152
Amdinette	20200	2	1	25	\$6,298	\$15,152
Amcoach	21000	2	3	200	\$10,323	\$15,152
Amcoach	21800	2	1	31	\$8,739	\$15,152
Turbo Power Coach	150-Even	1	1	14	\$3,807	\$7,576
Turbo Power Club	151-Odd	1	1	6	\$3,347	\$7,576
Turbo Cafe	170	1	1	3	\$4,232	\$7,576
Turbo Coach	170	2	3	21	\$7,331	\$15,152
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$737,391	\$2,216,256	#1-2	Sunset Limited	New Orleans/Los Angeles
\$472,729	\$1,318,165	#1-2	Sunset Limited	New Orleans/Los Angeles
\$172,044	\$456,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$34,916	\$90,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$384,863	\$1,406,592	#5-6	California Zephyr	Chicago/Oakland
\$567,358	\$2,216,256	#5-6	California Zephyr	Chicago/Oakland
\$454,918	\$1,647,707	#5-6	California Zephyr	Chicago/Oakland
\$210,969	\$782,208	#5-6	California Zephyr	Chicago/Oakland
\$1,067,195	\$2,556,845	#58	City of New Orleans	New Orleans/Chicago
\$101,772	\$189,400	#58	City of New Orleans	New Orleans/Chicago
\$163,510	\$387,240	#58	City of New Orleans	New Orleans/Chicago
\$633,607	\$1,181,856	#58	City of New Orleans	New Orleans/Chicago
\$901,647	\$1,560,656	#58	City of New Orleans	New Orleans/Chicago
\$97,033	\$181,824	#58	City of New Orleans	New Orleans/Chicago
\$731,507	\$2,781,184	#87-88	Silver Meteor	New York City/Tampa
\$49,077	\$188,976	#87-88	Silver Meteor	New York City/Tampa
\$1,340,379	\$5,191,171	#87-88	Silver Meteor	New York City/Tampa
\$588,976	\$1,803,088	#87-88	Silver Meteor	New York City/Tampa
\$60,395	\$189,400	#87-88	Silver Meteor	New York City/Tampa
\$266,625	\$681,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$135,978	\$363,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$438,548	\$1,007,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$83,076	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$92,178	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$449,058	\$757,600	#200	Metroliner	Washington DC/New York Cit
\$157,444	\$378,800	#242	Hudson Highlander	Albany/New York City
\$2,059,461	\$3,022,824	#242	Hudson Highlander	Albany/New York City
\$270,920	\$469,712	#242	Hudson Highlander	Albany/New York City
\$53,302	\$106,064	#250	Electric City Express	Schnecetady/New York City
\$20,080	\$45,456	#250	Electric City Express	Schnecetady/New York City
\$12,697	\$22,728	#250	Electric City Express	Schnecetady/New York City
\$153,954	\$318,192	#250	Electric City Express	Schnecetady/New York City
\$12,963,606	\$33,914,448			
\$14,302,865	\$37,418,120			

Equipment Type: Monogram Modified Vacuum
Scenario: Favorable

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$10,283	\$55,896
Coach Super	34000	6	4	40	\$5,441	\$39,168
Coach-HEP-HLV	39940	4	1	21	\$3,778	\$33,592
Lounge-HEP-HLV	39970	2	1	6	\$2,177	\$28,016
Bag Coach Super	31000	5	3	48	\$3,463	\$36,380
Sleeper Super	32000	12	3	34	\$7,617	\$55,896
Coach Super	34000	6	5	51	\$4,061	\$39,168
Trans Dorm Coach	39900	4	1	36	\$2,750	\$33,592
Sleeper 10-6	2400(30)	17	1	27	\$25,503	\$69,836
Amlounge II	28000	2	1	13	\$3,359	\$28,016
Coach (HDCP)	4000	3	1	21	\$4,823	\$30,804
Coach	4600	2	4	78	\$3,355	\$28,016
Horizon	54000	2	1	103	\$3,482	\$28,016
Dome Coach	9400	2	1	12	\$3,348	\$28,016
Slumbercoach 24-8	2080	32	1	16	\$26,737	\$111,656
Viewliner-Sleeper	2300	17	1	2	\$14,333	\$69,836
Sleeper 10-6	2400(30)	17	2	55	\$14,304	\$69,836
Amcoach II	25000	2	7	119	\$2,002	\$28,016
Amlounge II	28000	2	1	13	\$1,978	\$28,016
Amcafe	20000	2	1	45	\$3,407	\$28,016
Amclub	20100	2	3	24	\$3,354	\$28,016
Amcoach	21000	2	1	67	\$3,541	\$28,016
Met-Srvc Dinette	20900	2	1	13	\$3,500	\$28,016
Met-Srvc Club	20970	2	1	13	\$3,641	\$28,016
Met-Srvc Coach	21900	2	4	50	\$4,022	\$28,016
Amdinette	20200	2	1	25	\$3,482	\$28,016
Amcoach	21000	2	3	200	\$4,292	\$28,016
Amcoach	21800	2	1	31	\$3,973	\$28,016
Turbo Power Coach	150-Even	1	1	14	\$1,978	\$25,228
Turbo Power Club	151-Odd	1	1	6	\$1,886	\$25,228
Turbo Cafe	170	1	1	3	\$2,064	\$25,228
Turbo Coach	170	2	3	21	\$3,690	\$28,016
		Total:		1,239		
		Entire Fleet:		1,367		

C-12

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$349,629	\$1,900,464	#1-2	Sunset Limited	New Orleans/Los Angeles
\$220,049	\$1,584,128	#1-2	Sunset Limited	New Orleans/Los Angeles
\$79,334	\$705,432	#1-2	Sunset Limited	New Orleans/Los Angeles
\$13,063	\$168,096	#1-2	Sunset Limited	New Orleans/Los Angeles
\$166,213	\$1,746,240	#5-6	California Zephyr	Chicago/Oakland
\$258,973	\$1,900,464	#5-6	California Zephyr	Chicago/Oakland
\$205,326	\$1,980,160	#5-6	California Zephyr	Chicago/Oakland
\$98,988	\$1,209,312	#5-6	California Zephyr	Chicago/Oakland
\$690,116	\$1,889,762	#58	City of New Orleans	New Orleans/Chicago
\$41,988	\$350,200	#58	City of New Orleans	New Orleans/Chicago
\$101,290	\$646,884	#58	City of New Orleans	New Orleans/Chicago
\$261,711	\$2,185,248	#58	City of New Orleans	New Orleans/Chicago
\$358,672	\$2,885,648	#58	City of New Orleans	New Orleans/Chicago
\$40,174	\$336,192	#58	City of New Orleans	New Orleans/Chicago
\$427,790	\$1,786,496	#87-88	Silver Meteor	New York City/Tampa
\$28,665	\$139,672	#87-88	Silver Meteor	New York City/Tampa
\$785,871	\$3,836,790	#87-88	Silver Meteor	New York City/Tampa
\$238,230	\$3,333,904	#87-88	Silver Meteor	New York City/Tampa
\$24,728	\$350,200	#87-88	Silver Meteor	New York City/Tampa
\$153,294	\$1,260,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$80,504	\$672,384	#193	Benjamin-Franklin	Boston/Philadelphia
\$235,502	\$1,863,064	#193	Benjamin-Franklin	Boston/Philadelphia
\$45,503	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$47,336	\$364,208	#200	Metroliner	Washington DC/New York Cit
\$201,094	\$1,400,800	#200	Metroliner	Washington DC/New York Cit
\$87,040	\$700,400	#242	Hudson Highlander	Albany/New York City
\$856,266	\$5,589,192	#242	Hudson Highlander	Albany/New York City
\$123,169	\$868,496	#242	Hudson Highlander	Albany/New York City
\$27,697	\$353,192	#250	Electric City Express	Schnecetady/New York City
\$11,314	\$151,368	#250	Electric City Express	Schnecetady/New York City
\$6,192	\$75,684	#250	Electric City Express	Schnecetady/New York City
\$77,483	\$588,336	#250	Electric City Express	Schnecetady/New York City
\$6,343,200	\$43,187,344			
\$6,998,511	\$47,648,991			

Equipment Type: Monogram Self-Cont'd Recirc
Scenario: Favorable

Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars In Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$15,293	\$42,456
Coach Super	34000	6	4	40	\$7,775	\$21,228
Coach-HEP-HLV	39940	4	1	21	\$7,100	\$14,152
Lounge-HEP-HLV	39970	2	1	6	\$3,660	\$7,076
Bag Coach Super	31000	5	3	48	\$6,935	\$17,690
Sleeper Super	32000	12	3	34	\$12,640	\$42,456
Coach Super	34000	6	5	51	\$8,293	\$21,228
Trans Dorm Coach	39900	4	1	36	\$4,261	\$14,152
Sleeper 10-6	2400(30)	17	1	27	\$32,735	\$60,146
Am lounge II	28000	2	1	13	\$3,963	\$7,076
Coach (HDCP)	4000	3	1	21	\$5,873	\$10,614
Coach	4600	2	4	78	\$3,960	\$7,076
Horizon	54000	2	1	103	\$4,042	\$7,076
Dome Coach	9400	2	1	12	\$3,956	\$7,076
Slumbercoach 24-8	2080	32	1	16	\$40,557	\$113,216
Viewliner-Sleeper	2300	17	1	2	\$21,565	\$60,146
Sleeper 10-6	2400(30)	17	2	55	\$21,547	\$60,146
Amcoach II	25000	2	7	119	\$3,542	\$7,076
Am lounge II	28000	2	1	13	\$2,606	\$7,076
Amcafe	20000	2	1	45	\$3,999	\$7,076
Amclub	20100	2	3	24	\$3,964	\$7,076
Amcoach	21000	2	1	67	\$4,088	\$7,076
Met-Srvc Dinette	20900	2	1	13	\$4,068	\$7,076
Met-Srvc Club	20970	2	1	13	\$4,165	\$7,076
Met-Srvc Coach	21900	2	4	50	\$4,427	\$7,076
Am dinette	20200	2	1	25	\$4,055	\$7,076
Amcoach	21000	2	3	200	\$4,613	\$7,076
Amcoach	21800	2	1	31	\$4,394	\$7,076
Turbo Power Coach	150-Even	1	1	14	\$2,117	\$3,538
Turbo Power Club	151-Odd	1	1	6	\$2,054	\$3,538
Turbo Cafe	170	1	1	3	\$2,176	\$3,538
Turbo Coach	170	2	3	21	\$4,195	\$7,076
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$519,959	\$1,443,504	#1-2	Sunset Limited	New Orleans/Los Angeles
\$314,464	\$858,555	#1-2	Sunset Limited	New Orleans/Los Angeles
\$149,105	\$297,192	#1-2	Sunset Limited	New Orleans/Los Angeles
\$21,958	\$42,456	#1-2	Sunset Limited	New Orleans/Los Angeles
\$332,865	\$849,120	#5-6	California Zephyr	Chicago/Oakland
\$429,762	\$1,443,504	#5-6	California Zephyr	Chicago/Oakland
\$419,259	\$1,073,193	#5-6	California Zephyr	Chicago/Oakland
\$153,382	\$509,472	#5-6	California Zephyr	Chicago/Oakland
\$885,819	\$1,627,551	#58	City of New Orleans	New Orleans/Chicago
\$49,534	\$88,450	#58	City of New Orleans	New Orleans/Chicago
\$123,338	\$222,894	#58	City of New Orleans	New Orleans/Chicago
\$308,908	\$551,928	#58	City of New Orleans	New Orleans/Chicago
\$416,333	\$728,828	#58	City of New Orleans	New Orleans/Chicago
\$47,467	\$84,912	#58	City of New Orleans	New Orleans/Chicago
\$648,913	\$1,811,456	#87-88	Silver Meteor	New York City/Tampa
\$43,131	\$120,292	#87-88	Silver Meteor	New York City/Tampa
\$1,183,796	\$3,304,421	#87-88	Silver Meteor	New York City/Tampa
\$421,530	\$842,044	#87-88	Silver Meteor	New York City/Tampa
\$32,572	\$88,450	#87-88	Silver Meteor	New York City/Tampa
\$179,937	\$318,420	#193	Benjamin-Franklin	Boston/Philadelphia
\$95,132	\$169,824	#193	Benjamin-Franklin	Boston/Philadelphia
\$271,882	\$470,554	#193	Benjamin-Franklin	Boston/Philadelphia
\$52,887	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$54,148	\$91,988	#200	Metroliner	Washington DC/New York Cit
\$221,363	\$353,800	#200	Metroliner	Washington DC/New York Cit
\$101,384	\$176,900	#242	Hudson Highlander	Albany/New York City
\$920,342	\$1,411,662	#242	Hudson Highlander	Albany/New York City
\$136,206	\$219,356	#242	Hudson Highlander	Albany/New York City
\$29,640	\$49,532	#250	Electric City Express	Schnecetady/New York City
\$12,323	\$21,228	#250	Electric City Express	Schnecetady/New York City
\$6,527	\$10,614	#250	Electric City Express	Schnecetady/New York City
\$88,103	\$148,596	#250	Electric City Express	Schnecetady/New York City
\$8,671,971	\$19,522,684			
\$9,567,864	\$21,539,555			

Equipment Type: Scenario:	Microphor Favorable	Gravity					
Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car	
Sleeper Super	32000	12	3	34	\$10,601	\$74,032	
Coach Super	34000	6	4	40	\$5,698	\$42,304	
Coach-HEP-HLV	39940	4	1	21	\$3,976	\$31,728	
Lounge-HEP-HLV	39970	2	1	6	\$2,366	\$21,152	
Bag Coach Super	31000	5	3	48	\$3,785	\$37,016	
Sleeper Super	32000	12	3	34	\$7,904	\$74,032	
Coach Super	34000	6	5	51	\$4,267	\$42,304	
Trans Dorm Coach	39900	4	1	36	\$2,828	\$31,728	
Sleeper 10-6	2400(30)	17	1	27	\$25,883	\$100,472	
Amlounge II	28000	2	1	13	\$3,444	\$21,152	
Coach (HDCP)	4000	3	1	21	\$4,918	\$26,440	
Coach	4600	2	4	78	\$3,437	\$21,152	
Horizon	54000	2	1	103	\$3,664	\$21,152	
Dome Coach	9400	2	1	12	\$3,424	\$21,152	
Slumbercoach 24-8	2080	32	1	16	\$27,502	\$179,792	
Viewliner-Sleeper	2300	17	1	2	\$14,711	\$100,472	
Sleeper 10-6	2400(30)	17	2	55	\$14,660	\$100,472	
Amcoach II	25000	2	7	119	\$2,053	\$21,152	
Amlounge II	28000	2	1	13	\$2,010	\$21,152	
Amcafe	20000	2	1	45	\$3,529	\$21,152	
Amclub	20100	2	3	24	\$3,435	\$21,152	
Amcoach	21000	2	1	67	\$3,770	\$21,152	
Met-Srvc Dinette	20900	2	1	13	\$3,697	\$21,152	
Met-Srvc Club	20970	2	1	13	\$3,949	\$21,152	
Met-Srvc Coach	21900	2	4	50	\$4,631	\$21,152	
Amdinette	20200	2	1	25	\$3,663	\$21,152	
Amcoach	21000	2	3	200	\$5,115	\$21,152	
Amcoach	21800	2	1	31	\$4,544	\$21,152	
Turbo Power Coach	150-Even	1	1	14	\$2,119	\$15,864	
Turbo Power Club	151-Odd	1	1	6	\$1,953	\$15,864	
Turbo Cafe	170	1	1	3	\$2,272	\$15,864	
Turbo Coach	170	2	3	21	\$4,036	\$21,152	
		Total:		1,239			
		Entire Fleet:		1,367			

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$360,423	\$2,517,088	#1-2	Sunset Limited	New Orleans/Los Angeles
\$230,456	\$1,710,962	#1-2	Sunset Limited	New Orleans/Los Angeles
\$83,504	\$666,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$14,198	\$126,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$181,663	\$1,776,768	#5-6	California Zephyr	Chicago/Oakland
\$268,736	\$2,517,088	#5-6	California Zephyr	Chicago/Oakland
\$215,720	\$2,138,702	#5-6	California Zephyr	Chicago/Oakland
\$101,808	\$1,142,208	#5-6	California Zephyr	Chicago/Oakland
\$700,398	\$2,718,772	#58	City of New Orleans	New Orleans/Chicago
\$43,047	\$264,400	#58	City of New Orleans	New Orleans/Chicago
\$103,284	\$555,240	#58	City of New Orleans	New Orleans/Chicago
\$268,089	\$1,649,856	#58	City of New Orleans	New Orleans/Chicago
\$377,437	\$2,178,656	#58	City of New Orleans	New Orleans/Chicago
\$41,084	\$253,824	#58	City of New Orleans	New Orleans/Chicago
\$440,030	\$2,876,672	#87-88	Silver Meteor	New York City/Tampa
\$29,423	\$200,944	#87-88	Silver Meteor	New York City/Tampa
\$805,445	\$5,519,932	#87-88	Silver Meteor	New York City/Tampa
\$244,258	\$2,517,088	#87-88	Silver Meteor	New York City/Tampa
\$25,126	\$264,400	#87-88	Silver Meteor	New York City/Tampa
\$158,798	\$951,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$82,449	\$507,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$250,726	\$1,406,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$48,057	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$51,339	\$274,976	#200	Metroliner	Washington DC/New York Cit
\$231,540	\$1,057,600	#200	Metroliner	Washington DC/New York Cit
\$91,581	\$528,800	#242	Hudson Highlander	Albany/New York City
\$1,020,374	\$4,219,824	#242	Hudson Highlander	Albany/New York City
\$140,852	\$655,712	#242	Hudson Highlander	Albany/New York City
\$29,666	\$222,096	#250	Electric City Express	Schnecetady/New York City
\$11,718	\$95,184	#250	Electric City Express	Schnecetady/New York City
\$6,817	\$47,592	#250	Electric City Express	Schnecetady/New York City
\$84,753	\$444,192	#250	Electric City Express	Schnecetady/New York City
\$6,742,796	\$42,282,848			
\$7,439,389	\$46,651,052			

Equipment Type: Scenario:		Ultimate				
		Favorable				
Car Type	Typical Car Number	Toilets per Car	Cars In Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$10,222	\$51,696
Coach Super	34000	6	4	40	\$5,343	\$32,568
Coach-HEP-HLV	39940	4	1	21	\$3,673	\$26,192
Lounge-HEP-HLV	39970	2	1	6	\$2,059	\$19,816
Bag Coach Super	31000	5	3	48	\$3,367	\$29,380
Sleeper Super	32000	12	3	34	\$7,561	\$51,696
Coach Super	34000	6	5	51	\$3,971	\$32,568
Trans Dorm Coach	39900	4	1	36	\$2,663	\$26,192
Sleeper 10-6	2400(30)	17	1	27	\$25,472	\$67,636
Amlounge II	28000	2	1	13	\$3,256	\$19,816
Coach (HDCP)	4000	3	1	21	\$4,726	\$23,004
Coach	4600	2	4	78	\$3,252	\$19,816
Horizon	54000	2	1	103	\$3,365	\$19,816
Dome Coach	9400	2	1	12	\$3,246	\$19,816
Slumbercoach 24-8	2080	32	1	16	\$26,764	\$115,456
Viewliner-Sleeper	2300	17	1	2	\$14,301	\$67,636
Sleeper 10-6	2400(30)	17	2	55	\$14,276	\$67,636
Amcoach II	25000	2	7	119	\$1,904	\$19,816
Amlounge II	28000	2	1	13	\$1,883	\$19,816
Amcafe	20000	2	1	45	\$3,298	\$19,816
Amclub	20100	2	3	24	\$3,252	\$19,816
Amcoach	21000	2	1	67	\$3,417	\$19,816
Met-Srvc Dinette	20900	2	1	13	\$3,381	\$19,816
Met-Srvc Club	20970	2	1	13	\$3,505	\$19,816
Met-Srvc Coach	21900	2	4	50	\$3,842	\$19,816
Amdinette	20200	2	1	25	\$3,364	\$19,816
Amcoach	21000	2	3	200	\$4,081	\$19,816
Amcoach	21800	2	1	31	\$3,799	\$19,816
Turbo Power Coach	150-Even	1	1	14	\$1,859	\$16,628
Turbo Power Club	151-Odd	1	1	6	\$1,777	\$16,628
Turbo Cafe	170	1	1	3	\$1,935	\$16,628
Turbo Coach	170	2	3	21	\$3,548	\$19,816
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$347,565	\$1,757,664	#1-2	Sunset Limited	New Orleans/Los Angeles
\$216,090	\$1,317,195	#1-2	Sunset Limited	New Orleans/Los Angeles
\$77,137	\$550,032	#1-2	Sunset Limited	New Orleans/Los Angeles
\$12,351	\$118,896	#1-2	Sunset Limited	New Orleans/Los Angeles
\$161,639	\$1,410,240	#5-6	California Zephyr	Chicago/Oakland
\$257,060	\$1,757,664	#5-6	California Zephyr	Chicago/Oakland
\$200,760	\$1,646,493	#5-6	California Zephyr	Chicago/Oakland
\$95,858	\$942,912	#5-6	California Zephyr	Chicago/Oakland
\$689,262	\$1,830,230	#58	City of New Orleans	New Orleans/Chicago
\$40,697	\$247,700	#58	City of New Orleans	New Orleans/Chicago
\$99,251	\$483,084	#58	City of New Orleans	New Orleans/Chicago
\$253,692	\$1,545,648	#58	City of New Orleans	New Orleans/Chicago
\$346,564	\$2,041,048	#58	City of New Orleans	New Orleans/Chicago
\$38,950	\$237,792	#58	City of New Orleans	New Orleans/Chicago
\$428,222	\$1,847,296	#87-88	Silver Meteor	New York City/Tampa
\$28,603	\$135,272	#87-88	Silver Meteor	New York City/Tampa
\$784,330	\$3,715,922	#87-88	Silver Meteor	New York City/Tampa
\$226,539	\$2,358,104	#87-88	Silver Meteor	New York City/Tampa
\$23,534	\$247,700	#87-88	Silver Meteor	New York City/Tampa
\$148,400	\$891,720	#193	Benjamin-Franklin	Boston/Philadelphia
\$78,039	\$475,584	#193	Benjamin-Franklin	Boston/Philadelphia
\$227,228	\$1,317,764	#193	Benjamin-Franklin	Boston/Philadelphia
\$43,948	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$45,568	\$257,608	#200	Metroliner	Washington DC/New York Cit
\$192,084	\$990,800	#200	Metroliner	Washington DC/New York Cit
\$84,103	\$495,400	#242	Hudson Highlander	Albany/New York City
\$814,061	\$3,953,292	#242	Hudson Highlander	Albany/New York City
\$117,758	\$614,296	#242	Hudson Highlander	Albany/New York City
\$26,029	\$232,792	#250	Electric City Express	Schnecetady/New York City
\$10,664	\$99,768	#250	Electric City Express	Schnecetady/New York City
\$5,805	\$49,884	#250	Electric City Express	Schnecetady/New York City
\$74,509	\$416,136	#250	Electric City Express	Schnecetady/New York City
\$6,196,299	\$34,243,544			
\$6,836,433	\$37,781,214			

Equipment Type: Railtech WTS 8300
Scenario: Favorable

Car Type	Typical Car Number	Toilets per Car	Cars in Consist	Cars in Service	Operating Cost/Car	Capital Cost/Car
Sleeper Super	32000	12	3	34	\$10,607	\$65,184
Coach Super	34000	6	4	40	\$7,160	\$32,592
Coach-HEP-HLV	39940	4	1	21	\$4,971	\$21,728
Lounge-HEP-HLV	39970	2	1	6	\$3,434	\$15,152
Bag Coach Super	31000	5	3	48	\$4,634	\$29,304
Sleeper Super	32000	12	3	34	\$7,885	\$65,184
Coach Super	34000	6	5	51	\$5,225	\$32,592
Trans Dorm Coach	39900	4	1	36	\$3,429	\$21,728
Sleeper 10-6	2400(30)	17	1	27	\$25,857	\$94,488
Amlounge II	28000	2	1	13	\$3,505	\$15,152
Coach (HDCP)	4000	3	1	21	\$4,947	\$18,440
Coach	4600	2	4	78	\$3,496	\$15,152
Horizon	54000	2	1	103	\$5,647	\$15,152
Dome Coach	9400	2	1	12	\$3,477	\$15,152
Slumbercoach 24-8	2080	32	1	16	\$27,465	\$173,824
Viewliner-Sleeper	2300	17	1	2	\$14,685	\$94,488
Sleeper 10-6	2400(30)	17	2	55	\$14,615	\$94,488
Amcoach II	25000	2	7	119	\$3,005	\$15,152
Amlounge II	28000	2	1	13	\$2,951	\$15,152
Amcafe	20000	2	1	45	\$3,621	\$15,152
Amclub	20100	2	3	24	\$3,493	\$15,152
Amcoach	21000	2	1	67	\$3,952	\$15,152
Met-Srvc Dinette	20900	2	1	13	\$3,851	\$15,152
Met-Srvc Club	20970	2	1	13	\$4,197	\$15,152
Met-Srvc Coach	21900	2	4	50	\$5,130	\$15,152
Amdinette	20200	2	1	25	\$3,805	\$15,152
Amcoach	21000	2	3	200	\$5,793	\$15,152
Amcoach	21800	2	1	31	\$5,011	\$15,152
Turbo Power Coach	150-Even	1	1	14	\$2,228	\$7,576
Turbo Power Club	151-Odd	1	1	6	\$2,000	\$7,576
Turbo Cafe	170	1	1	3	\$2,438	\$7,576
Turbo Coach	170	2	3	21	\$4,316	\$15,152
Total:				1,239		
Entire Fleet:				1,367		

Operating Cost/Fleet	Capital Cost/Fleet	Route Number	Route Name	Origin/ Destination
\$360,648	\$2,216,256	#1-2	Sunset Limited	New Orleans/Los Angeles
\$289,563	\$1,318,165	#1-2	Sunset Limited	New Orleans/Los Angeles
\$104,384	\$456,288	#1-2	Sunset Limited	New Orleans/Los Angeles
\$20,607	\$90,912	#1-2	Sunset Limited	New Orleans/Los Angeles
\$222,422	\$1,406,592	#5-6	California Zephyr	Chicago/Oakland
\$268,098	\$2,216,256	#5-6	California Zephyr	Chicago/Oakland
\$264,166	\$1,647,707	#5-6	California Zephyr	Chicago/Oakland
\$123,438	\$782,208	#5-6	California Zephyr	Chicago/Oakland
\$699,703	\$2,556,845	#58	City of New Orleans	New Orleans/Chicago
\$43,809	\$189,400	#58	City of New Orleans	New Orleans/Chicago
\$103,886	\$387,240	#58	City of New Orleans	New Orleans/Chicago
\$272,657	\$1,181,856	#58	City of New Orleans	New Orleans/Chicago
\$581,598	\$1,560,656	#58	City of New Orleans	New Orleans/Chicago
\$41,727	\$181,824	#58	City of New Orleans	New Orleans/Chicago
\$439,434	\$2,781,184	#87-88	Silver Meteor	New York City/Tampa
\$29,369	\$188,976	#87-88	Silver Meteor	New York City/Tampa
\$802,945	\$5,191,171	#87-88	Silver Meteor	New York City/Tampa
\$357,587	\$1,803,088	#87-88	Silver Meteor	New York City/Tampa
\$36,884	\$189,400	#87-88	Silver Meteor	New York City/Tampa
\$162,959	\$681,840	#193	Benjamin-Franklin	Boston/Philadelphia
\$83,840	\$363,648	#193	Benjamin-Franklin	Boston/Philadelphia
\$262,806	\$1,007,608	#193	Benjamin-Franklin	Boston/Philadelphia
\$50,065	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$54,559	\$196,976	#200	Metroliner	Washington DC/New York Cit
\$256,511	\$757,600	#200	Metroliner	Washington DC/New York Cit
\$95,134	\$378,800	#242	Hudson Highlander	Albany/New York City
\$1,155,659	\$3,022,824	#242	Hudson Highlander	Albany/New York City
\$155,336	\$469,712	#242	Hudson Highlander	Albany/New York City
\$31,189	\$106,064	#250	Electric City Express	Schnecetady/New York City
\$12,002	\$45,456	#250	Electric City Express	Schnecetady/New York City
\$7,313	\$22,728	#250	Electric City Express	Schnecetady/New York City
\$90,627	\$318,192	#250	Electric City Express	Schnecetady/New York City
\$7,480,925	\$33,914,448			
\$8,253,773	\$37,418,120			

C2 Cost Details, Expected Scenario, Each Toilet System

C2.1 Sunset Limited, New Orleans-Los Angeles

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	36.4	34.9	21.3	41.7	NA	NA
Capacity Req'd/day (gals)	70.1	67.3	41.1	80.3	NA	NA
Adj. Capacity Req'd w/ Buffer	87.6	84.1	51.4	100.4	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	64	67	110	56	NA	NA
As a percentage of 72 hours	89%	93%	152%	78%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.7	2.8	4.6	2.3	NA	NA
As a percentage of 3 days	89.45%	93.18%	152.47%	78.01%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$15,000</u>	<u>\$10,000</u>	<u>\$30,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$36,000	\$31,000	\$51,000	\$26,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	<u>\$39,168</u>	<u>\$33,592</u>	<u>\$55,896</u>	<u>\$28,016</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,296	\$864	\$2,592	\$432	NA	NA
Annual spare parts cost per yr	<u>\$1,080</u>	<u>\$930</u>	<u>\$1,530</u>	<u>\$780</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,376	\$1,794	\$4,122	\$1,212	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.70	\$0.67	\$0.41	\$0.80	NA	NA
- Pump out minutes	1.17	1.12	0.69	1.34	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$2.13</u>	<u>\$2.05</u>	<u>\$1.25</u>	<u>\$2.45</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$38.83	\$26.72	\$73.66	\$15.25	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$39	\$27	\$74	\$15	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	23,251	5,366	17,374	1,533	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$4,961	\$3,414	\$9,410	\$1,948	NA	NA
Annual Non-Trip Related per Car	\$2,376	\$1,794	\$4,122	\$1,212	NA	NA
Annual Oprtng Trip Related per Car Type	\$451,460	\$71,686	\$639,909	\$11,689	NA	NA
Annual Non-Trip Related per Car Type	<u>\$216,216</u>	<u>\$37,674</u>	<u>\$280,296</u>	<u>\$7,272</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$7,337	\$5,208	\$13,532	\$3,160	NA	NA
Total CAPITAL COST per Car	\$39,168	\$33,592	\$55,896	\$28,016	NA	NA
Total OPRTNG COST for all cars	\$667,676	\$109,360	\$920,205	\$18,961	NA	NA
Total CAPITAL COST for all cars	\$3,564,288	\$705,432	\$3,800,928	\$168,096	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	33.7	32.3	19.8	38.6	NA	NA
Adj. Capacity Req'd w/ Buffer	42.1	40.4	24.7	48.3	NA	NA
Tank Capacity per Car (gals)	81	54	162	27	NA	NA
Continuous Service Hours Supported	46	32	157	13	NA	NA
As a percentage of 72 hours	64%	45%	219%	19%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.9	1.3	6.6	0.6	NA	NA
As a percentage of 3 days	64.14%	44.54%	218.67%	18.65%	NA	NA
Consecutive Trips before pumpout	1.0	0.0	3.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$19,500</u>	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$6,500</u>	NA	NA
- Total Equip Cost	\$19,500	\$13,000	\$39,000	\$6,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Total Capital Cost	<u>\$21,228</u>	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$7,076</u>	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$5,184	\$3,456	\$10,368	\$1,728	NA	NA
Annual spare parts cost per yr	<u>\$585</u>	<u>\$390</u>	<u>\$1,170</u>	<u>\$195</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$5,769	\$3,846	\$11,538	\$1,923	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.34	\$8.40	\$0.20	\$4.32	NA	NA
- Pump out minutes	0.56	0.00	0.33	0.19	NA	NA
- Connect/Disc. minutes	0.0	14.0	0.0	7.0	NA	NA
- Waste Disposal	<u>\$1.33</u>	<u>\$1.27</u>	<u>\$0.78</u>	<u>\$1.52</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$37.66	\$33.67	\$72.98	\$17.84	NA	NA
Train Delay:						
- Pump out volume req'd	0	54	0	27	NA	NA
- # of stops req'd	0	1	0	1	NA	NA
- Pump out minutes	0.0	0.9	0.0	0.5	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>14.0</u>	<u>0.0</u>	<u>7.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	15	0	7	NA	NA
Average Cost Per Delay	\$0	\$9	\$0	\$4	NA	NA
Subtotal- Oprtng Trip Related	\$38	\$43	\$73	\$22	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	23,251	5,366	17,374	1,533	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$4,812	\$5,444	\$9,323	\$2,850	NA	NA
Annual Non-Trip Related per Car	\$5,769	\$3,846	\$11,538	\$1,923	NA	NA
Annual Oprtng Trip Related per Car Type	\$437,855	\$114,323	\$633,945	\$17,099	NA	NA
Annual Non-Trip Related per Car Type	<u>\$524,979</u>	<u>\$80,766</u>	<u>\$784,584</u>	<u>\$11,538</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$10,581	\$9,290	\$20,861	\$4,773	NA	NA
Total CAPITAL COST per Car	\$21,228	\$14,152	\$42,456	\$7,076	NA	NA
Total OPRTNG COST for all cars	\$962,834	\$195,089	\$1,418,529	\$28,637	NA	NA
Total CAPITAL COST for all cars	\$1,931,748	\$297,192	\$2,887,008	\$42,456	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	99.3	95.4	58.3	113.9	NA	NA
Capacity Req'd/day (gals)	133.0	127.7	78.0	152.5	NA	NA
Adj. Capacity Req'd w/ Buffer	166.3	159.6	97.5	190.6	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	43	45	74	38	NA	NA
As a percentage of 72 hours	60%	63%	103%	52%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.8	1.9	3.1	1.6	NA	NA
As a percentage of 3 days	60.15%	62.65%	102.53%	52.45%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	1.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$30,000	\$20,000	\$60,000	\$10,000	NA	NA
- Total Equip Cost	\$40,000	\$30,000	\$70,000	\$20,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$1,728	\$1,152	\$3,456	\$576	NA	NA
- Total Installation Cost	\$2,304	\$1,728	\$4,032	\$1,152	NA	NA
Total Capital Cost	\$42,304	\$31,728	\$74,032	\$21,152	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$1,296	\$864	\$2,592	\$432	NA	NA
Annual spare parts cost per yr	<u>\$1,200</u>	<u>\$900</u>	<u>\$2,100</u>	<u>\$600</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,496	\$1,764	\$4,692	\$1,032	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.33	\$1.28	\$0.78	\$0.00	NA	NA
- Pump out minutes	2.22	2.13	1.30	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$4.05</u>	<u>\$3.89</u>	<u>\$2.38</u>	<u>\$4.65</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$41.38	\$29.17	\$75.16	\$16.65	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	300	NA	NA
- # of stops req'd	0	0	0	1	NA	NA
- Pump out minutes	0.0	0.0	0.0	5.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	5	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$3	NA	NA
Subtotal- Oprtng Trip Related	\$41	\$29	\$75	\$20	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	23,251	5,366	17,374	1,533	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$5,286	\$3,726	\$9,601	\$2,510	NA	NA
Annual Non-Trip Related per Car	\$2,496	\$1,764	\$4,692	\$1,032	NA	NA
Annual Oprtng Trip Related per Car Type	\$481,066	\$78,245	\$652,888	\$15,058	NA	NA
Annual Non-Trip Related per Car Type	<u>\$227,136</u>	<u>\$37,044</u>	<u>\$319,056</u>	<u>\$6,192</u>	<u>NA</u>	<u>NA</u>
Total OPRNG COST per Car	\$7,782	\$5,490	\$14,293	\$3,542	NA	NA
Total CAPITAL COST per Car	\$42,304	\$31,728	\$74,032	\$21,152	NA	NA
Total OPRNG COST for all cars	\$708,202	\$115,289	\$971,944	\$21,250	NA	NA
Total CAPITAL COST for all cars	\$3,849,664	\$666,288	\$5,034,176	\$126,912	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	27.1	26.1	15.9	31.1	NA	NA
Capacity Req'd/day (gals)	60.8	58.4	35.7	69.7	NA	NA
Adj. Capacity Req'd w/ Buffer	76.0	73.0	44.6	87.2	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	63	66	108	55	NA	NA
As a percentage of 72 hours	88%	91%	149%	76%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.6	2.7	4.5	2.3	NA	NA
As a percentage of 3 days	87.69%	91.35%	149.48%	76.48%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$17,400</u>	<u>\$11,600</u>	<u>\$34,800</u>	<u>\$5,800</u>	NA	NA
- Total Equip Cost	\$29,400	\$23,600	\$46,800	\$17,800	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	<u>\$32,568</u>	<u>\$26,192</u>	<u>\$51,696</u>	<u>\$19,816</u>	NA	NA

Amtrak Route: Sunset Limited **Route Number:** #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,296	\$864	\$2,592	\$432	NA	NA
Annual spare parts cost per yr	<u>\$882</u>	<u>\$708</u>	<u>\$1,404</u>	<u>\$534</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,178	\$1,572	\$3,996	\$966	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.61	\$0.58	\$0.36	\$0.70	NA	NA
- Pump out minutes	1.01	0.97	0.59	1.16	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.85</u>	<u>\$1.78</u>	<u>\$1.09</u>	<u>\$2.12</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$38.46	\$26.36	\$73.44	\$14.82	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$38	\$26	\$73	\$15	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	23,251	5,366	17,374	1,533	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$4,913	\$3,368	\$9,382	\$1,893	NA	NA
Annual Non-Trip Related per Car	\$2,178	\$1,572	\$3,996	\$966	NA	NA
Annual Oprtng Trip Related per Car Type	\$447,114	\$70,723	\$638,004	\$11,361	NA	NA
Annual Non-Trip Related per Car Type	<u>\$198,198</u>	<u>\$33,012</u>	<u>\$271,728</u>	<u>\$5,796</u>	<u>NA</u>	<u>NA</u>
Total OPRPNG COST per Car	\$7,091	\$4,940	\$13,378	\$2,859	NA	NA
Total CAPITAL COST per Car	\$32,568	\$26,192	\$51,696	\$19,816	NA	NA
Total OPRPNG COST for all cars	\$645,312	\$103,735	\$909,732	\$17,157	NA	NA
Total CAPITAL COST for all cars	\$2,963,688	\$550,032	\$3,515,328	\$118,896	NA	NA

Amtrak Route: Sunset Limited **Route Number:** #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	152.0	145.9	89.2	174.3	NA	NA
Capacity Req'd/day (gals)	185.6	178.2	108.9	212.9	NA	NA
Adj. Capacity Req'd w/ Buffer	232.1	222.8	136.1	266.1	NA	NA
Tank Capacity per Car (gals)	150	100	300	100	NA	NA
Continuous Service Hours Supported	16	11	53	9	NA	NA
As a percentage of 72 hours	22%	15%	73%	13%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	0.6	0.4	2.2	0.4	NA	NA
As a percentage of 3 days	21.55%	14.96%	73.45%	12.53%	NA	NA
Consecutive Trips before pumpout	0.0	0.0	1.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$8,000	\$24,000	\$8,000	NA	NA
Toilet Cost per Car	\$18,000	\$12,000	\$36,000	\$6,000	NA	NA
- Total Equip Cost	\$30,000	\$20,000	\$60,000	\$14,000	NA	NA
Equipment Installation						
Collection System per Car	\$864	\$576	\$1,728	\$576	NA	NA
Toilet Cost per Car	\$1,728	\$1,152	\$3,456	\$576	NA	NA
- Total Installation Cost	\$2,592	\$1,728	\$5,184	\$1,152	NA	NA
Total Capital Cost	\$32,592	\$21,728	\$65,184	\$15,152	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	34000 <u>Coach Super</u>	39940 <u>Coach-HEP-HLV</u>	32000 <u>Sleeper Super</u>	39970 <u>Lounge-HEP-HLV</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$1,296	\$864	\$2,592	\$432	NA	NA
Annual spare parts cost per yr	<u>\$900</u>	<u>\$600</u>	<u>\$1,800</u>	<u>\$420</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,196	\$1,464	\$4,392	\$852	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$6.66	\$4.98	\$1.09	\$5.33	NA	NA
- Pump out minutes	0.59	1.30	1.82	1.88	NA	NA
- Connect/Disc. minutes	10.5	7.0	0.0	7.0	NA	NA
- Waste Disposal	<u>\$5.65</u>	<u>\$5.43</u>	<u>\$3.32</u>	<u>\$6.48</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$48.31	\$34.41	\$76.41	\$23.81	NA	NA
Train Delay:						
- Pump out volume req'd	150	100	0	100	NA	NA
- # of stops req'd	1	1	0	1	NA	NA
- Pump out minutes	2.5	1.7	0.0	1.7	NA	NA
- Connect/Disc. minutes	<u>10.5</u>	<u>7.0</u>	<u>0.0</u>	<u>7.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	13	9	0	9	NA	NA
Average Cost Per Delay	\$8	\$5	\$0	\$5	NA	NA
Subtotal- Oprtng Trip Related	\$56	\$40	\$76	\$29	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	23,251	5,366	17,374	1,533	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$7,168	\$5,060	\$9,761	\$3,706	NA	NA
Annual Non-Trip Related per Car	\$2,196	\$1,464	\$4,392	\$852	NA	NA
Annual Oprtng Trip Related per Car Type	\$652,305	\$106,265	\$663,743	\$22,238	NA	NA
Annual Non-Trip Related per Car Type	<u>\$199,836</u>	<u>\$30,744</u>	<u>\$298,656</u>	<u>\$5,112</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$9,364	\$6,524	\$14,153	\$4,558	NA	NA
Total CAPITAL COST per Car	\$32,592	\$21,728	\$65,184	\$15,152	NA	NA
Total OPRTNG COST for all cars	\$852,141	\$137,009	\$962,399	\$27,350	NA	NA
Total CAPITAL COST for all cars	\$2,965,872	\$456,288	\$4,432,512	\$90,912	NA	NA

C2.2 California Zephyr, Chicago-Oakland

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	19.4	21.3	37.8	36.4	NA	NA
Capacity Req'd/day (gals)	37.4	41.1	72.9	70.1	NA	NA
Adj. Capacity Req'd w/ Buffer	46.7	51.4	91.1	87.6	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	121	110	62	64	NA	NA
As a percentage of 72 hours	168%	152%	86%	89%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	5.0	4.6	2.6	2.7	NA	NA
As a percentage of 3 days	167.72%	152.47%	86.01%	89.45%	NA	NA
Consecutive Trips before pumpout	2.0	2.0	1.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$30,000</u>	<u>\$12,500</u>	<u>\$15,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$31,000	\$51,000	\$33,500	\$36,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	<u>\$33,592</u>	<u>\$55,896</u>	<u>\$36,380</u>	<u>\$39,168</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$864	\$2,592	\$1,080	\$1,296	NA	NA
Annual spare parts cost per.yr	<u>\$930</u>	<u>\$1,530</u>	<u>\$1,005</u>	<u>\$1,080</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,794	\$4,122	\$2,085	\$2,376	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.37	\$0.41	\$0.73	\$0.70	NA	NA
- Pump out minutes	0.62	0.69	1.21	1.17	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.35</u>	<u>\$1.49</u>	<u>\$2.64</u>	<u>\$2.54</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$25.73	\$73.90	\$33.37	\$39.24	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$26	\$74	\$33	\$39	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	9,198	17,374	12,264	23,251	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,191	\$6,294	\$2,842	\$3,342	NA	NA
Annual Non-Trip Related per Car	\$1,794	\$4,122	\$2,085	\$2,376	NA	NA
Annual Oprtng Trip Related per Car Type	\$78,882	\$427,984	\$136,414	\$304,115	NA	NA
Annual Non-Trip Related per Car Type	<u>\$64,584</u>	<u>\$280,296</u>	<u>\$100,080</u>	<u>\$216,216</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,985	\$10,416	\$4,927	\$5,718	NA	NA
Total CAPITAL COST per Car	\$33,592	\$55,896	\$36,380	\$39,168	NA	NA
Total OPRTNG COST for all cars	\$143,466	\$708,280	\$236,494	\$520,331	NA	NA
Total CAPITAL COST for all cars	\$1,209,312	\$3,800,928	\$1,746,240	\$3,564,288	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	18.0	19.8	35.0	33.7	NA	NA
Adj. Capacity Req'd w/ Buffer	22.5	24.7	43.8	42.1	NA	NA
Tank Capacity per Car (gals)	54	162	67.5	81	NA	NA
Continuous Service Hours Supported	58	157	37	46	NA	NA
As a percentage of 72 hours	80%	219%	51%	64%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.4	6.6	1.5	1.9	NA	NA
As a percentage of 3 days	80.18%	218.67%	51.40%	64.14%	NA	NA
Consecutive Trips before pumpout	1.0	3.0	0.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$16,250</u>	<u>\$19,500</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$13,000	\$39,000	\$16,250	\$19,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Total Capital Cost	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$17,690</u>	<u>\$21,228</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$3,456	\$10,368	\$4,320	\$5,184	NA	NA
Annual spare parts cost per yr	<u>\$390</u>	<u>\$1,170</u>	<u>\$488</u>	<u>\$585</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$3,846	\$11,538	\$4,808	\$5,769	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.18	\$0.20	\$10.50	\$12.60	NA	NA
- Pump out minutes	0.30	0.33	0.00	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	17.5	21.0	NA	NA
- Waste Disposal	<u>\$0.84</u>	<u>\$0.93</u>	<u>\$1.64</u>	<u>\$1.58</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$25.02	\$73.12	\$42.14	\$50.18	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	68	81	NA	NA
- # of stops req'd	0	0	1	1	NA	NA
- Pump out minutes	0.0	0.0	1.1	1.4	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>17.5</u>	<u>21.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	19	22	NA	NA
Average Cost Per Delay	\$0	\$0	\$11	\$13	NA	NA
Subtotal- Oprtng Trip Related	\$25	\$73	\$53	\$64	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	9,198	17,374	12,264	23,251	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,131	\$6,228	\$4,541	\$5,416	NA	NA
Annual Non-Trip Related per Car	\$3,846	\$11,538	\$4,808	\$5,769	NA	NA
Annual Oprtng Trip Related per Car Type	\$76,718	\$423,487	\$217,963	\$492,830	NA	NA
Annual Non-Trip Related per Car Type	<u>\$138,456</u>	<u>\$784,584</u>	<u>\$230,760</u>	<u>\$524,979</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,977	\$17,766	\$9,348	\$11,185	NA	NA
Total CAPITAL COST per Car	\$14,152	\$42,456	\$17,690	\$21,228	NA	NA
Total OPRTNG COST for all cars	\$215,174	\$1,208,071	\$448,723	\$1,017,809	NA	NA
Total CAPITAL COST for all cars	\$509,472	\$2,887,008	\$849,120	\$1,931,748	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	53.0	58.3	103.3	99.3	NA	NA
Capacity Req'd/day (gals)	70.9	78.0	138.3	133.0	NA	NA
Adj. Capacity Req'd w/ Buffer	88.7	97.5	172.9	166.3	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	81	74	42	43	NA	NA
As a percentage of 72 hours	113%	103%	58%	60%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	3.4	3.1	1.7	1.8	NA	NA
As a percentage of 3 days	112.78%	102.53%	57.83%	60.15%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	0.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$20,000</u>	<u>\$60,000</u>	<u>\$25,000</u>	<u>\$30,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$30,000	\$70,000	\$35,000	\$40,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,728	\$4,032	\$2,016	\$2,304	NA	NA
Total Capital Cost	<u>\$31,728</u>	<u>\$74,032</u>	<u>\$37,016</u>	<u>\$42,304</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$864	\$2,592	\$1,080	\$1,296	NA	NA
Annual spare parts cost per yr	<u>\$900</u>	<u>\$2,100</u>	<u>\$1,050</u>	<u>\$1,200</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,764	\$4,692	\$2,130	\$2,496	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.71	\$0.78	\$0.00	\$0.00	NA	NA
- Pump out minutes	1.18	1.30	0.00	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$2.57</u>	<u>\$2.83</u>	<u>\$5.01</u>	<u>\$4.82</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$27.28	\$75.61	\$35.01	\$40.82	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	300	300	NA	NA
- # of stops req'd	0	0	1	1	NA	NA
- Pump out minutes	0.0	0.0	5.0	5.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	5	5	NA	NA
Average Cost Per Delay	\$0	\$0	\$3	\$3	NA	NA
Subtotal- Oprtng Trip Related	\$27	\$76	\$38	\$44	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	9,198	17,374	12,264	23,251	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,323	\$6,439	\$3,237	\$3,732	NA	NA
Annual Non-Trip Related per Car	\$1,764	\$4,692	\$2,130	\$2,496	NA	NA
Annual Oprtng Trip Related per Car Type	\$83,642	\$437,874	\$155,400	\$339,619	NA	NA
Annual Non-Trip Related per Car Type	<u>\$63,504</u>	<u>\$319,056</u>	<u>\$102,240</u>	<u>\$227,136</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,087	\$11,131	\$5,367	\$6,228	NA	NA
Total CAPITAL COST per Car	\$31,728	\$74,032	\$37,016	\$42,304	NA	NA
Total OPRTNG COST for all cars	\$147,146	\$756,930	\$257,640	\$566,755	NA	NA
Total CAPITAL COST for all cars	\$1,142,208	\$5,034,176	\$1,776,768	\$3,849,664	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	14.5	15.9	28.2	27.1	NA	NA
Capacity Req'd/day (gals)	32.4	35.7	63.3	60.8	NA	NA
Adj. Capacity Req'd w/ Buffer	40.5	44.6	79.1	76.0	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	118	108	61	63	NA	NA
As a percentage of 72 hours	164%	149%	84%	88%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	4.9	4.5	2.5	2.6	NA	NA
As a percentage of 3 days	164.43%	149.48%	84.32%	87.69%	NA	NA
Consecutive Trips before pumpout	2.0	2.0	1.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$11,600</u>	<u>\$34,800</u>	<u>\$14,500</u>	<u>\$17,400</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$23,600	\$46,800	\$26,500	\$29,400	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	<u>\$26,192</u>	<u>\$51,696</u>	<u>\$29,380</u>	<u>\$32,568</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$864	\$2,592	\$1,080	\$1,296	NA	NA
Annual spare parts cost per yr	<u>\$708</u>	<u>\$1,404</u>	<u>\$795</u>	<u>\$882</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,572	\$3,996	\$1,875	\$2,178	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.32	\$0.36	\$0.63	\$0.61	NA	NA
- Pump out minutes	0.54	0.59	1.05	1.01	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.18</u>	<u>\$1.29</u>	<u>\$2.29</u>	<u>\$2.20</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$25.50	\$73.65	\$32.93	\$38.81	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$26	\$74	\$33	\$39	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	9,198	17,374	12,264	23,251	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,172	\$6,273	\$2,804	\$3,306	NA	NA
Annual Non-Trip Related per Car	\$1,572	\$3,996	\$1,875	\$2,178	NA	NA
Annual Oprtng Trip Related per Car Type	\$78,183	\$426,532	\$134,598	\$300,804	NA	NA
Annual Non-Trip Related per Car Type	<u>\$56,592</u>	<u>\$271,728</u>	<u>\$90,000</u>	<u>\$198,198</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,744	\$10,269	\$4,679	\$5,484	NA	NA
Total CAPITAL COST per Car	\$26,192	\$51,696	\$29,380	\$32,568	NA	NA
Total OPRTNG COST for all cars	\$134,775	\$698,260	\$224,598	\$499,002	NA	NA
Total CAPITAL COST for all cars	\$942,912	\$3,515,328	\$1,410,240	\$2,963,688	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	Trans Dorm Coach	Sleeper Super	Bag Coach Super	Coach Super	NA	NA
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	81.1	89.2	158.1	152.0	NA	NA
Capacity Req'd/day (gals)	99.0	108.9	193.1	185.6	NA	NA
Adj. Capacity Req'd w/ Buffer	123.8	136.1	241.3	232.1	NA	NA
Tank Capacity per Car (gals)	100	300	150	150	NA	NA
Continuous Service Hours Supported	19	53	15	16	NA	NA
As a percentage of 72 hours	27%	73%	21%	22%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	0.8	2.2	0.6	0.6	NA	NA
As a percentage of 3 days	26.93%	73.45%	20.72%	21.55%	NA	NA
Consecutive Trips before pumpout	0.0	1.0	0.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$24,000	\$12,000	\$12,000	NA	NA
Toilet Cost per Car	<u>\$12,000</u>	<u>\$36,000</u>	<u>\$15,000</u>	<u>\$18,000</u>	NA	NA
- Total Equip Cost	\$20,000	\$60,000	\$27,000	\$30,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$1,728	\$864	\$864	NA	NA
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	NA	NA
- Total Installation Cost	\$1,728	\$5,184	\$2,304	\$2,592	NA	NA
Total Capital Cost	<u>\$21,728</u>	<u>\$65,184</u>	<u>\$29,304</u>	<u>\$32,592</u>	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

Route Number: #5-6

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$864	\$2,592	\$1,080	\$1,296	NA	NA
Annual spare parts cost per yr	<u>\$600</u>	<u>\$1,800</u>	<u>\$810</u>	<u>\$900</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,464	\$4,392	\$1,890	\$2,196	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.20	\$1.09	\$6.73	\$6.66	NA	NA
- Pump out minutes	0.00	1.82	0.72	0.59	NA	NA
- Connect/Disc. minutes	7.0	0.0	10.5	10.5	NA	NA
- Waste Disposal	<u>\$3.59</u>	<u>\$3.95</u>	<u>\$7.00</u>	<u>\$6.73</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$31.79	\$77.04	\$43.73	\$49.39	NA	NA
Train Delay:						
- Pump out volume req'd	100	0	150	150	NA	NA
- # of stops req'd	1	0	1	1	NA	NA
- Pump out minutes	1.7	0.0	2.5	2.5	NA	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>10.5</u>	<u>10.5</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	0	13	13	NA	NA
Average Cost Per Delay	\$5	\$0	\$8	\$8	NA	NA
Subtotal- Oprtng Trip Related	\$37	\$77	\$52	\$57	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	9,198	17,374	12,264	23,251	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$3,150	\$6,561	\$4,389	\$4,870	NA	NA
Annual Non-Trip Related per Car	\$1,464	\$4,392	\$1,890	\$2,196	NA	NA
Annual Oprtng Trip Related per Car Type	\$113,408	\$446,146	\$210,650	\$443,196	NA	NA
Annual Non-Trip Related per Car Type	<u>\$52,704</u>	<u>\$298,656</u>	<u>\$90,720</u>	<u>\$199,836</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,614	\$10,953	\$6,279	\$7,066	NA	NA
Total CAPITAL COST per Car	\$21,728	\$65,184	\$29,304	\$32,592	NA	NA
Total OPRTNG COST for all cars	\$166,112	\$744,802	\$301,370	\$643,032	NA	NA
Total CAPITAL COST for all cars	\$782,208	\$4,432,512	\$1,406,592	\$2,965,872	NA	NA

C2.3 City of New Orleans, New Orleans-Chicago

Amtrak Route: City of New Orleans **Route Number:** #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	<u>54000</u> <u>Horizon</u>	<u>4600</u> <u>Coach</u>	<u>4000</u> <u>Coach (HDCP)</u>	<u>9400</u> <u>Dome Coach</u>	<u>28000</u> <u>Amlounge II</u>	<u>2400(30)</u> <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	39.8	23.3	21.3	22.3	23.8	10.7
Capacity Req'd/day (gals)	58.5	34.2	31.4	32.8	35.0	15.7
Adj. Capacity Req'd w/ Buffer	73.1	42.8	39.2	41.0	43.7	19.6
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	77	132	144	137	129	287
As a percentage of 72 hours	107%	183%	200%	191%	179%	399%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	4.2	7.2	7.8	7.5	7.0	15.7
As a percentage of 3 days	140.26%	239.61%	261.39%	250.02%	234.72%	522.78%
Consecutive Trips before pumpout	4.0	7.0	7.0	7.0	7.0	15.0

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$7,500</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$42,500</u>
- Total Equip Cost	\$26,000	\$26,000	\$28,500	\$26,000	\$26,000	\$63,500
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$30,804</u>	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$69,836</u>

Amtrak Route: City of New Orleans
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	<u>54000</u> <u>Horizon</u>	<u>4600</u> <u>Coach</u>	<u>4000</u> <u>Coach (HDCP)</u>	<u>9400</u> <u>Dome Coach</u>	<u>28000</u> <u>Amlounge II</u>	<u>2400(30)</u> <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$648	\$432	\$432	\$3,672
Annual spare parts cost per yr	<u>\$780</u>	<u>\$780</u>	<u>\$855</u>	<u>\$780</u>	<u>\$780</u>	<u>\$1,905</u>
Total- Oprtg Non-Trip Related	\$1,212	\$1,212	\$1,503	\$1,212	\$1,212	\$5,577
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.59	\$0.34	\$0.31	\$0.33	\$0.35	\$0.16
- Pump out minutes	0.98	0.57	0.52	0.55	0.58	0.26
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.99</u>	<u>\$0.58</u>	<u>\$0.53</u>	<u>\$0.56</u>	<u>\$0.59</u>	<u>\$0.27</u>
Subtotal- End of Day/Trip Srvc	\$13.58	\$12.92	\$18.85	\$12.89	\$12.94	\$102.42
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtg Trip Related	\$14	\$13	\$19	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	26,317	19,929	5,366	3,066	6,388	20,951
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,470	\$3,302	\$4,816	\$3,292	\$3,307	\$26,169
Annual Non-Trip Related per Car	\$1,212	\$1,212	\$1,503	\$1,212	\$1,212	\$5,577
Annual Oprtg Trip Related per Car Type	\$357,365	\$257,574	\$101,126	\$39,509	\$82,679	\$2,145,880
Annual Non-Trip Related per Car Type	<u>\$124,836</u>	<u>\$94,536</u>	<u>\$31,563</u>	<u>\$14,544</u>	<u>\$30,300</u>	<u>\$457,314</u>
Total OPRTNG COST per Car	\$4,682	\$4,514	\$6,319	\$4,504	\$4,519	\$31,746
Total CAPITAL COST per Car	\$28,016	\$28,016	\$30,804	\$28,016	\$28,016	\$69,836
Total OPRTNG COST for all cars	\$482,201	\$352,110	\$132,689	\$54,053	\$112,979	\$2,603,194
Total CAPITAL COST for all cars	\$2,885,648	\$2,185,248	\$646,864	\$336,192	\$700,400	\$5,726,552

Amtrak Route: City of New Orleans **Route Number:** #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDGP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	0.0
Capacity Req'd/day (gals)	28.1	16.5	15.1	15.8	16.8	7.5
Adj. Capacity Req'd w/ Buffer	35.1	20.6	18.9	19.7	21.0	9.4
Tank Capacity per Car (gals)	27	27	40.5	27	27	229.5
Continuous Service Hours Supported	18	31	52	33	31	584
As a percentage of 72 hours	26%	44%	72%	46%	43%	811%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	1.0	1.7	2.8	1.8	1.7	31.9
As a percentage of 3 days	33.53%	57.27%	93.72%	59.76%	56.10%	1062.14%
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	1.0	31.0
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$9,750</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$55,250</u>
- Total Equip Cost	\$6,500	\$6,500	\$9,750	\$6,500	\$6,500	\$55,250
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$576	\$576	\$864	\$576	\$576	\$4,896
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$10,614</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$60,146</u>

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$864	\$576	\$576	\$4,896
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,728	\$1,728	\$2,592	\$1,728	\$1,728	\$14,688
Annual spare parts cost per yr	<u>\$195</u>	<u>\$195</u>	<u>\$293</u>	<u>\$195</u>	<u>\$195</u>	<u>\$1,658</u>
Total- Oprtng Non-Trip Related	\$1,923	\$1,923	\$2,885	\$1,923	\$1,923	\$16,346
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.28	\$0.16	\$0.15	\$0.16	\$0.17	\$0.08
- Pump out minutes	0.47	0.27	0.25	0.26	0.28	0.13
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.62</u>	<u>\$0.36</u>	<u>\$0.33</u>	<u>\$0.35</u>	<u>\$0.37</u>	<u>\$0.17</u>
Subtotal- End of Day/Trip Srvc	\$12.90	\$12.53	\$18.48	\$12.50	\$12.54	\$102.24
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$13	\$13	\$18	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	26,317	19,929	5,366	3,066	6,388	20,951
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,296	\$3,201	\$4,722	\$3,195	\$3,203	\$26,123
Annual Non-Trip Related per Car	\$1,923	\$1,923	\$2,885	\$1,923	\$1,923	\$16,346
Annual Oprtng Trip Related per Car Type	\$339,478	\$249,645	\$99,170	\$38,340	\$80,085	\$2,142,060
Annual Non-Trip Related per Car Type	<u>\$198,069</u>	<u>\$149,994</u>	<u>\$60,575</u>	<u>\$23,076</u>	<u>\$48,075</u>	<u>\$1,340,331</u>
Total OPRTNG COST per Car	\$5,219	\$5,124	\$7,607	\$5,118	\$5,126	\$42,468
Total CAPITAL COST per Car	\$7,076	\$7,076	\$10,614	\$7,076	\$7,076	\$60,146
Total OPRTNG COST for all cars	\$537,547	\$399,639	\$159,744	\$61,416	\$128,160	\$3,482,391
Total CAPITAL COST for all cars	\$728,828	\$551,928	\$222,894	\$84,912	\$176,900	\$4,931,972

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	108.6	63.6	58.3	60.9	64.9	29.1
Capacity Req'd/day (gals)	111.1	65.0	59.6	62.3	66.4	29.8
Adj. Capacity Req'd w/ Buffer	138.8	81.3	74.5	77.9	83.0	37.2
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	52	89	97	92	87	193
As a percentage of 72 hours	72%	123%	134%	128%	121%	268%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	2.8	4.8	5.3	5.0	4.7	10.5
As a percentage of 3 days	94.31%	161.12%	175.76%	168.12%	157.83%	351.53%
Consecutive Trips before pumpout	2.0	4.0	5.0	5.0	4.0	10.0

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$15,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$85,000</u>
- Total Equip Cost	\$20,000	\$20,000	\$25,000	\$20,000	\$20,000	\$95,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$5,472
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$26,440</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$100,472</u>

Amtrak Route: City of New Orleans Route Number: #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$648	\$432	\$432	\$3,672
Annual spare parts cost per yr	<u>\$600</u>	<u>\$600</u>	<u>\$750</u>	<u>\$600</u>	<u>\$600</u>	<u>\$2,850</u>
Total- Oprtng Non-Trip Related	\$1,032	\$1,032	\$1,398	\$1,032	\$1,032	\$6,522
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.11	\$0.65	\$0.60	\$0.62	\$0.66	\$0.30
- Pump out minutes	1.85	1.08	0.99	1.04	1.11	0.50
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$1.89</u>	<u>\$1.11</u>	<u>\$1.01</u>	<u>\$1.06</u>	<u>\$1.13</u>	<u>\$0.51</u>
Subtotal- End of Day/Trip Srvc	\$15.00	\$13.76	\$19.61	\$13.68	\$13.79	\$102.80
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$15	\$14	\$20	\$14	\$14	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	26,317	19,929	5,366	3,066	6,388	20,951
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,832	\$3,514	\$5,010	\$3,496	\$3,524	\$26,267
Annual Non-Trip Related per Car	\$1,032	\$1,032	\$1,398	\$1,032	\$1,032	\$6,522
Annual Oprtng Trip Related per Car Type	\$394,714	\$274,130	\$105,212	\$41,950	\$88,096	\$2,153,858
Annual Non-Trip Related per Car Type	<u>\$106,296</u>	<u>\$80,496</u>	<u>\$29,358</u>	<u>\$12,384</u>	<u>\$25,800</u>	<u>\$534,804</u>
Total OPRTNG COST per Car	\$4,864	\$4,546	\$6,408	\$4,528	\$4,556	\$32,789
Total CAPITAL COST per Car	\$21,152	\$21,152	\$26,440	\$21,152	\$21,152	\$100,472
Total OPRTNG COST for all cars	\$501,010	\$354,626	\$134,570	\$54,334	\$113,896	\$2,688,662
Total CAPITAL COST for all cars	\$2,178,656	\$1,649,856	\$555,240	\$253,824	\$528,800	\$8,238,704

Amtrak Route: City of New Orleans **Route Number:** #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	<u>54000 Horizon</u>	<u>4600 Coach</u>	<u>4000 Coach (HDCP)</u>	<u>9400 Dome Coach</u>	<u>28000 Amlounge II</u>	<u>2400(30) Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	29.7	17.4	15.9	16.6	17.7	8.0
Capacity Req'd/day (gals)	50.8	29.7	27.3	28.5	30.3	13.6
Adj. Capacity Req'd w/ Buffer	63.5	37.2	34.1	35.6	37.9	17.0
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	76	129	141	135	127	282
As a percentage of 72 hours	105%	179%	196%	187%	176%	391%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	4.1	7.0	7.7	7.4	6.9	15.4
As a percentage of 3 days	137.50%	234.90%	256.26%	245.12%	230.11%	512.51%
Consecutive Trips before pumpout	4.0	7.0	7.0	7.0	6.0	15.0

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$8,700</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>
- Total Equip Cost	\$17,800	\$17,800	\$20,700	\$17,800	\$17,800	\$61,300
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$23,004</u>	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$67,636</u>

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$648	\$432	\$432	\$3,672
Annual spare parts cost per yr	<u>\$534</u>	<u>\$534</u>	<u>\$621</u>	<u>\$534</u>	<u>\$534</u>	<u>\$1,839</u>
Total- Oprtng Non-Trip Related	\$966	\$966	\$1,269	\$966	\$966	\$5,511
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.51	\$0.30	\$0.27	\$0.28	\$0.30	\$0.14
- Pump out minutes	0.85	0.50	0.45	0.47	0.51	0.23
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.86</u>	<u>\$0.51</u>	<u>\$0.46</u>	<u>\$0.48</u>	<u>\$0.52</u>	<u>\$0.23</u>
Subtotal- End of Day/Trip Srvc	\$13.37	\$12.80	\$18.74	\$12.77	\$12.82	\$102.37
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$13	\$13	\$19	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	26,317	19,929	5,366	3,066	6,388	20,951
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,416	\$3,271	\$4,787	\$3,263	\$3,275	\$26,155
Annual Non-Trip Related per Car	\$966	\$966	\$1,269	\$966	\$966	\$5,511
Annual Oprtng Trip Related per Car Type	\$351,883	\$255,144	\$100,527	\$39,150	\$81,884	\$2,144,709
Annual Non-Trip Related per Car Type	<u>\$99,498</u>	<u>\$75,348</u>	<u>\$26,649</u>	<u>\$11,592</u>	<u>\$24,150</u>	<u>\$451,902</u>
Total OPRTRNG COST per Car	\$4,382	\$4,237	\$6,056	\$4,229	\$4,241	\$31,666
Total CAPITAL COST per Car	\$19,816	\$19,816	\$23,004	\$19,816	\$19,816	\$67,636
Total OPRTRNG COST for all cars	\$451,381	\$330,492	\$127,176	\$50,742	\$106,034	\$2,596,611
Total CAPITAL COST for all cars	\$2,041,048	\$1,545,648	\$483,084	\$237,792	\$495,400	\$5,546,152

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amicounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3
<u>Car Waste Data (per car)</u>						
Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	166.2	97.3	89.2	93.2	99.3	44.6
Capacity Req'd/day (gals)	155.0	90.7	83.2	87.0	92.6	41.6
Adj. Capacity Req'd w/ Buffer	193.8	113.4	104.0	108.7	115.8	52.0
Tank Capacity per Car (gals)	100	100	100	100	100	450
Continuous Service Hours Supported	12	21	23	22	21	208
As a percentage of 72 hours	17%	29%	32%	31%	29%	289%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	0.7	1.2	1.3	1.2	1.1	11.3
As a percentage of 3 days	22.52%	38.48%	41.97%	40.15%	37.69%	377.77%
Consecutive Trips before pumpout	0.0	1.0	1.0	1.0	1.0	11.0
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$36,000
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$9,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$51,000</u>
- Total Equip Cost	\$14,000	\$14,000	\$17,000	\$14,000	\$14,000	\$87,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$2,592
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$7,488
Total Capital Cost	\$15,152	\$15,152	\$18,440	\$15,152	\$15,152	\$94,488

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$648	\$432	\$432	\$3,672
Annual spare parts cost per yr	<u>\$420</u>	<u>\$420</u>	<u>\$510</u>	<u>\$420</u>	<u>\$420</u>	<u>\$2,610</u>
Total- Oprtng Non-Trip Related	\$852	\$852	\$1,158	\$852	\$852	\$6,282
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.75	\$0.91	\$0.83	\$0.87	\$0.93	\$0.42
- Pump out minutes	0.92	1.51	1.39	1.45	1.54	0.69
- Connect/Disc. minutes	7.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$2.64</u>	<u>\$1.54</u>	<u>\$1.41</u>	<u>\$1.48</u>	<u>\$1.57</u>	<u>\$0.71</u>
Subtotal- End of Day/Trip Srvc	\$19.39	\$14.45	\$20.25	\$14.35	\$14.50	\$103.12
Train Delay:						
- Pump out volume req'd	100	0	0	0	0	0
- # of stops req'd	1	0	0	0	0	0
- Pump out minutes	1.7	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	9	0	0	0	0	0
Average Cost Per Delay	\$5	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$25	\$14	\$20	\$14	\$15	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	26,317	19,929	5,366	3,066	6,388	20,951
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$6,282	\$3,692	\$5,173	\$3,666	\$3,705	\$26,348
Annual Non-Trip Related per Car	*\$852	\$852	\$1,158	\$852	\$852	\$6,282
Annual Oprtng Trip Related per Car Type	\$647,007	\$287,976	\$108,630	\$43,991	\$92,626	\$2,160,529
Annual Non-Trip Related per Car Type	<u>\$87,756</u>	<u>\$66,456</u>	<u>\$24,318</u>	<u>\$10,224</u>	<u>\$21,300</u>	<u>\$515,124</u>
Total OPRTNG COST per Car	\$7,134	\$4,544	\$6,331	\$4,518	\$4,557	\$32,630
Total CAPITAL COST per Car	\$15,152	\$15,152	\$18,440	\$15,152	\$15,152	\$94,488
Total OPRTNG COST for all cars	\$734,763	\$354,432	\$132,948	\$54,215	\$113,926	\$2,675,653
Total CAPITAL COST for all cars	\$1,560,656	\$1,181,856	\$387,240	\$181,824	\$378,800	\$7,748,016

C2.4 Silver Meteor, New York-Tampa

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						NA
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	7.00
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	1.10
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	7.7
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	0.063
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	NA
Flush Fluids/day (gals)	28.6	23.8	10.7	19.4	16.5	NA
Capacity Req'd/day (gals)	53.5	44.4	19.9	36.2	30.8	NA
Adj. Capacity Req'd w/ Buffer	66.8	55.5	24.9	45.3	38.5	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	84	102	226	124	146	NA
As a percentage of 72 hours	117%	141%	314%	173%	203%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	3.6	4.4	9.7	5.3	6.3	NA
As a percentage of 3 days	120.85%	145.51%	324.10%	178.25%	209.71%	NA
Consecutive Trips before pumpout	3.0	4.0	9.0	5.0	6.0	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$5,000	\$5,000	\$42,500	\$80,000	\$42,500	NA
- Total Equip Cost	\$26,000	\$26,000	\$63,500	\$101,000	\$63,500	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	\$28,016	\$28,016	\$69,836	\$111,656	\$69,836	NA

Amtrak Route: Silver Meteor Route Number: #87-88
Origin/Destination: New York-Tampa
Length in Miles: 1,270
Length in Hours: 23.28
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected
* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$3,672	\$6,912	\$3,672	NA
Annual spare parts cost per yr	<u>\$780</u>	<u>\$780</u>	<u>\$1,905</u>	<u>\$3,030</u>	<u>\$1,905</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,212	\$1,212	\$5,577	\$9,942	\$5,577	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.53	\$0.44	\$0.20	\$0.36	\$0.31	NA
- Pump out minutes	0.89	0.74	0.33	0.60	0.51	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.91</u>	<u>\$0.75</u>	<u>\$0.34</u>	<u>\$0.62</u>	<u>\$0.52</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.44	\$13.20	\$102.54	\$192.98	\$102.83	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$103	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	30,404	6,388	20,951	4,088	511	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$1,717	\$1,686	\$13,099	\$24,653	\$13,137	NA
Annual Non-Trip Related per Car	\$1,212	\$1,212	\$5,577	\$9,942	\$5,577	NA
Annual Oprtng Trip Related per Car Type	\$204,370	\$42,153	\$1,074,139	\$394,448	\$26,274	NA
Annual Non-Trip Related per Car Type	<u>\$144,228</u>	<u>\$30,300</u>	<u>\$457,314</u>	<u>\$159,072</u>	<u>\$11,154</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,929	\$2,898	\$18,676	\$34,595	\$18,714	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$69,836	\$111,656	\$69,836	NA
Total OPRTNG COST for all cars	\$348,598	\$72,453	\$1,531,453	\$553,520	\$37,428	NA
Total CAPITAL COST for all cars	\$3,333,904	\$700,400	\$5,726,552	\$1,786,496	\$139,672	NA

Amtrak Route: Silver Meteor
Origin/Destination: New York-Tampa
Length in Miles: 1,270
Length in Hours: 23.28
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24	2300 Viewliner-Sleeper	NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency-adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	NA
Capacity Req'd/day (gals)	25.7	21.3	9.6	17.4	14.8	NA
Adj. Capacity Req'd w/ Buffer	32.1	26.7	12.0	21.8	18.5	NA
Tank Capacity per Car (gals)	27	27	229.5	432	229.5	NA
Continuous Service Hours Supported	20	24	460	476	298	NA
As a percentage of 72 hours	28%	34%	639%	661%	413%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.9	1.0	19.8	20.5	12.8	NA
As a percentage of 3 days	28.89%	34.78%	658.47%	681.71%	426.07%	NA
Consecutive Trips before pumpout	0.0	1.0	19.0	20.0	12.0	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$6,500	\$6,500	\$55,250	\$104,000	\$55,250	NA
- Total Equip Cost	\$6,500	\$6,500	\$55,250	\$104,000	\$55,250	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
- Total Installation Cost	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Total Capital Cost	\$7,076	\$7,076	\$60,146	\$113,216	\$60,146	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,728	\$1,728	\$14,688	\$27,648	\$14,688	NA
Annual spare parts cost per yr	<u>\$195</u>	<u>\$195</u>	<u>\$1,658</u>	<u>\$3,120</u>	<u>\$1,658</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,923	\$1,923	\$16,346	\$30,768	\$16,346	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.20	\$0.21	\$0.10	\$0.17	\$0.15	NA
- Pump out minutes	0.00	0.36	0.16	0.29	0.25	NA
- Connect/Disc. minutes	7.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.47</u>	<u>\$0.21</u>	<u>\$0.38</u>	<u>\$0.33</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$16.77	\$12.68	\$102.31	\$192.56	\$102.47	NA
Train Delay:						
- Pump out volume req'd	27	0	0	0	0	NA
- # of stops req'd	1	0	0	0	0	NA
- Pump out minutes	0.5	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	7	0	0	0	0	NA
Average Cost Per Delay	\$4	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$21	\$13	\$102	\$193	\$102	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	30,404	6,388	20,951	4,088	511	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$2,713	\$1,620	\$13,070	\$24,599	\$13,091	NA
Annual Non-Trip Related per Car	\$1,923	\$1,923	\$16,346	\$30,768	\$16,346	NA
Annual Oprtng Trip Related per Car Type	\$322,825	\$40,506	\$1,071,713	\$393,587	\$26,182	NA
Annual Non-Trip Related per Car Type	<u>\$228,837</u>	<u>\$48,075</u>	<u>\$1,340,331</u>	<u>\$492,288</u>	<u>\$32,691</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,636	\$3,543	\$29,415	\$55,367	\$29,437	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$60,146	\$113,216	\$60,146	NA
Total OPRTNG COST for all cars	\$551,662	\$88,581	\$2,412,044	\$885,875	\$58,873	NA
Total CAPITAL COST for all cars	\$842,044	\$176,900	\$4,931,972	\$1,811,456	\$120,292	NA

* All data on per car basis (unless noted otherwise)

Car Waste Data (per car)

Consecutive Trips before pumpout	2.0	2.0	6.0	3.0	4.0	NA
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C-55

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$3,672	\$6,912	\$3,672	NA
Annual spare parts cost per yr	<u>\$600</u>	<u>\$600</u>	<u>\$2,850</u>	<u>\$5,100</u>	<u>\$2,850</u>	<u>NA</u>
Total- Oprng Non-Trip Related	\$1,032	\$1,032	\$6,522	\$12,012	\$6,522	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.01	\$0.84	\$0.38	\$0.69	\$0.58	NA
- Pump out minutes	1.69	1.40	0.63	1.15	0.97	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$1.73</u>	<u>\$1.43</u>	<u>\$0.64</u>	<u>\$1.17</u>	<u>\$0.99</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$14.74	\$14.28	\$103.02	\$193.86	\$103.58	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprng Trip Related	\$15	\$14	\$103	\$194	\$104	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	30,404	6,388	20,951	4,088	511	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprng Trip Related per Car	\$1,883	\$1,824	\$13,161	\$24,765	\$13,232	NA
Annual Non-Trip Related per Car	\$1,032	\$1,032	\$6,522	\$12,012	\$6,522	NA
Annual Oprng Trip Related per Car Type	\$224,085	\$45,593	\$1,079,205	\$396,245	\$26,464	NA
Annual Non-Trip Related per Car Type	<u>\$122,808</u>	<u>\$25,800</u>	<u>\$534,804</u>	<u>\$192,192</u>	<u>\$13,044</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,915	\$2,856	\$19,683	\$36,777	\$19,754	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$100,472	\$179,792	\$100,472	NA
Total OPRTNG COST for all cars	\$346,893	\$71,393	\$1,614,009	\$588,437	\$39,508	NA
Total CAPITAL COST for all cars	\$2,517,088	\$528,800	\$8,238,704	\$2,876,672	\$200,944	NA

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Stumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	21.4	17.7	8.0	14.5	12.3	NA
Capacity Req'd/day (gals)	46.4	38.5	17.3	31.5	26.7	NA
Adj. Capacity Req'd w/ Buffer	58.0	48.2	21.6	39.3	33.4	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	83	100	222	122	144	NA
As a percentage of 72 hours	115%	138%	308%	170%	199%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	3.6	4.3	9.5	5.2	6.2	NA
As a percentage of 3 days	118.48%	142.66%	317.74%	174.75%	205.59%	NA
Consecutive Trips before pumpout	3.0	4.0	9.0	5.0	6.0	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>	<u>\$92,800</u>	<u>\$49,300</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$61,300	\$104,800	\$61,300	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	\$19,816	\$19,816	\$67,636	\$115,456	\$67,636	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$3,672	\$6,912	\$3,672	NA
Annual spare parts cost per yr	<u>\$534</u>	<u>\$534</u>	<u>\$1,839</u>	<u>\$3,144</u>	<u>\$1,839</u>	NA
Total- Oprtng Non-Trip Related	\$966	\$966	\$5,511	\$10,056	\$5,511	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.46	\$0.39	\$0.17	\$0.31	\$0.27	NA
- Pump out minutes	0.77	0.64	0.29	0.52	0.45	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.79</u>	<u>\$0.66</u>	<u>\$0.29</u>	<u>\$0.53</u>	<u>\$0.45</u>	NA
Subtotal- End of Day/Trip Svc	\$13.25	\$13.04	\$102.47	\$192.85	\$102.72	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	NA
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$102	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	30,404	6,388	20,951	4,088	511	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$1,693	\$1,666	\$13,090	\$24,637	\$13,123	NA
Annual Non-Trip Related per Car	\$966	\$966	\$5,511	\$10,056	\$5,511	NA
Annual Oprtng Trip Related per Car Type	\$201,476	\$41,649	\$1,073,395	\$394,184	\$26,245	NA
Annual Non-Trip Related per Car Type	<u>\$114,954</u>	<u>\$24,150</u>	<u>\$451,902</u>	<u>\$160,896</u>	<u>\$11,022</u>	NA
Total OPRTNG COST per Car	\$2,659	\$2,632	\$18,601	\$34,693	\$18,634	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$67,636	\$115,456	\$67,636	NA
Total OPRTNG COST for all cars	\$316,430	\$65,799	\$1,525,297	\$555,080	\$37,267	NA
Total CAPITAL COST for all cars	\$2,358,104	\$495,400	\$5,546,152	\$1,847,296	\$135,272	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	119.6	99.3	44.6	81.1	68.9	NA
Capacity Req'd/day (gals)	141.7	117.7	52.8	96.0	81.6	NA
Adj. Capacity Req'd w/ Buffer	177.1	147.1	66.0	120.1	102.0	NA
Tank Capacity per Car (gals)	100	100	450	800	450	NA
Continuous Service Hours Supported	14	16	164	160	106	NA
As a percentage of 72 hours	19%	23%	227%	222%	147%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.6	0.7	7.0	6.9	4.5	NA
As a percentage of 3 days	19.41%	23.37%	234.20%	228.99%	151.54%	NA
Consecutive Trips before pumpout	0.0	0.0	7.0	6.0	4.0	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$36,000	\$64,000	\$36,000	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$51,000</u>	<u>\$96,000</u>	<u>\$51,000</u>	NA
- Total Equip Cost	\$14,000	\$14,000	\$87,000	\$160,000	\$87,000	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$2,592	\$4,608	\$2,592	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	NA
- Total Installation Cost	\$1,152	\$1,152	\$7,488	\$13,824	\$7,488	NA
Total Capital Cost	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$3,672	\$6,912	\$3,672	NA
Annual spare parts cost per yr	<u>\$420</u>	<u>\$420</u>	<u>\$2,610</u>	<u>\$4,800</u>	<u>\$2,610</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$852	\$852	\$6,282	\$11,712	\$6,282	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.62	\$4.38	\$0.53	\$0.96	\$0.82	NA
- Pump out minutes	0.69	0.29	0.88	1.60	1.36	NA
- Connect/Disc. minutes	7.0	7.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$2.41</u>	<u>\$2.00</u>	<u>\$0.90</u>	<u>\$1.63</u>	<u>\$1.39</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$19.02	\$18.38	\$103.43	\$194.59	\$104.20	NA
Train Delay:						
- Pump out volume req'd	100	100	0	0	0	NA
- # of stops req'd	1	1	0	0	0	NA
- Pump out minutes	1.7	1.7	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	9	0	0	0	NA
Average Cost Per Delay	\$5	\$5	\$0	\$0	\$0	NA
Subtotal- Oprtg Trip Related	\$24	\$24	\$103	\$195	\$104	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	30,404	6,388	20,951	4,088	511	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$3,095	\$3,012	\$13,213	\$24,859	\$13,312	NA
Annual Non-Trip Related per Car	\$852	\$852	\$6,282	\$11,712	\$6,282	NA
Annual Oprtg Trip Related per Car Type	\$368,273	\$75,298	\$1,083,441	\$397,748	\$26,624	NA
Annual Non-Trip Related per Car Type	<u>\$101,388</u>	<u>\$21,300</u>	<u>\$515,124</u>	<u>\$187,392</u>	<u>\$12,564</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,947	\$3,864	\$19,495	\$36,571	\$19,594	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA
Total OPRTNG COST for all cars	\$469,661	\$96,598	\$1,598,565	\$585,140	\$39,188	NA
Total CAPITAL COST for all cars	\$1,803,088	\$378,800	\$7,748,016	\$2,781,184	\$188,976	NA

C2.5 Benjamin Franklin, Boston-Philadelphia

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	25.7	40.7	19.9	NA	NA	NA
Capacity Req'd/day (gals)	27.0	42.8	20.9	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	33.8	53.5	26.1	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	167	105	216	NA	NA	NA
As a percentage of 72 hours	232%	146%	300%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	12.7	8.0	16.5	NA	NA	NA
As a percentage of 3 days	424.86%	268.07%	549.21%	NA	NA	NA
Consecutive Trips before pumpout	25.0	16.0	32.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$780</u>	<u>\$780</u>	<u>\$780</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$1,212	\$1,212	\$1,212	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.27	\$0.43	\$0.21	NA	NA	NA
- Pump out minutes	0.45	0.71	0.35	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.92</u>	<u>\$1.46</u>	<u>\$0.71</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$13.19	\$13.88	\$12.92	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$14	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	11,498	67,963	6,132	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,370	\$3,547	\$3,301	NA	NA	NA
Annual Non-Trip Related per Car	\$1,212	\$1,212	\$1,212	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$151,641	\$943,629	\$79,224	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$54,540</u>	<u>\$322,392</u>	<u>\$29,088</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,582	\$4,759	\$4,513	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$206,181	\$1,266,021	\$108,312	NA	NA	NA
Total CAPITAL COST for all cars	\$1,260,720	\$7,452,256	\$672,384	NA	NA	NA

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	13.0	20.6	10.0	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	16.2	25.7	12.6	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	40	25	52	NA	NA	NA
As a percentage of 72 hours	55%	35%	72%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	3.0	1.9	3.9	NA	NA	NA
As a percentage of 3 days	101.55%	64.07%	131.28%	NA	NA	NA
Consecutive Trips before pumpout	6.0	3.0	7.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,728	\$1,728	\$1,728	NA	NA	NA
Annual spare parts cost per yr	<u>\$195</u>	<u>\$195</u>	<u>\$195</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprng Non-Trip Related	\$1,923	\$1,923	\$1,923	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.21	\$0.10	NA	NA	NA
- Pump out minutes	0.22	0.34	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.91</u>	<u>\$0.44</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$12.70	\$13.11	\$12.54	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprng Trip Related	\$13	\$13	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	11,498	67,963	6,132	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprng Trip Related per Car	\$3,245	\$3,350	\$3,205	NA	NA	NA
Annual Non-Trip Related per Car	\$1,923	\$1,923	\$1,923	NA	NA	NA
Annual Oprng Trip Related per Car Type	\$146,035	\$891,109	\$76,911	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$86,535</u>	<u>\$511,518</u>	<u>\$46,152</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,168	\$5,273	\$5,128	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$232,570	\$1,402,627	\$123,063	NA	NA	NA
Total CAPITAL COST for all cars	\$318,420	\$1,882,216	\$169,824	NA	NA	NA

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	70.2	111.2	54.3	NA	NA	NA
Capacity Req'd/day (gals)	51.3	81.3	39.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	64.1	101.6	49.6	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	112	71	145	NA	NA	NA
As a percentage of 72 hours	156%	98%	202%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	8.6	5.4	11.1	NA	NA	NA
As a percentage of 3 days	285.68%	180.25%	369.30%	NA	NA	NA
Consecutive Trips before pumpout	17.0	10.0	22.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$600</u>	<u>\$600</u>	<u>\$600</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,032	\$1,032	\$1,032	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.51	\$0.81	\$0.40	NA	NA	NA
- Pump out minutes	0.86	1.36	0.66	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.74</u>	<u>\$2.76</u>	<u>\$1.35</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$14.26	\$15.58	\$13.75	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$14	\$16	\$14	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	11,498	67,963	6,132	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,643	\$3,980	\$3,512	NA	NA	NA
Annual Non-Trip Related per Car	\$1,032	\$1,032	\$1,032	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$163,924	\$1,058,704	\$84,292	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$46,440</u>	<u>\$274,512</u>	<u>\$24,768</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,675	\$5,012	\$4,544	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$210,364	\$1,333,216	\$109,060	NA	NA	NA
Total CAPITAL COST for all cars	\$951,840	\$5,626,432	\$507,648	NA	NA	NA

Amtrak Route: Benjamin Franklin Route Number: #193
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	20000 Amcafe	21000 Amcoach	20100 Amclub	NA NA	NA NA	NA NA
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	19.2	30.4	14.8	NA	NA	NA
Capacity Req'd/day (gals)	23.5	37.2	18.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	29.3	46.5	22.7	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	164	103	212	NA	NA	NA
As a percentage of 72 hours	227%	143%	294%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	12.5	7.9	16.2	NA	NA	NA
As a percentage of 3 days	416.52%	262.80%	538.43%	NA	NA	NA
Consecutive Trips before pumpout	24.0	15.0	32.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	\$5,800	\$5,800	\$5,800	NA	NA	NA
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Benjamin Franklin Route Number: #193
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$534</u>	<u>\$534</u>	<u>\$534</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$966	\$966	\$966	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.23	\$0.37	\$0.18	NA	NA	NA
- Pump out minutes	0.39	0.62	0.30	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.80</u>	<u>\$1.26</u>	<u>\$0.62</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.03	\$13.64	\$12.80	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$14	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	11,498	67,963	6,132	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,330	\$3,484	\$3,270	NA	NA	NA
Annual Non-Trip Related per Car	\$966	\$966	\$966	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$149,838	\$926,737	\$78,480	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$43,470</u>	<u>\$256,956</u>	<u>\$23,184</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,296	\$4,450	\$4,236	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$193,308	\$1,183,693	\$101,664	NA	NA	NA
Total CAPITAL COST for all cars	\$891,720	\$5,271,056	\$475,584	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	107.4	170.2	83.1	NA	NA	NA
Capacity Req'd/day (gals)	71.6	113.5	55.4	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	89.5	141.9	69.2	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	27	17	35	NA	NA	NA
As a percentage of 72 hours	37%	23%	48%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	2.0	1.3	2.6	NA	NA	NA
As a percentage of 3 days	68.22%	43.05%	88.19%	NA	NA	NA
Consecutive Trips before pumpout	4.0	2.0	5.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Expected

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$420</u>	<u>\$420</u>	<u>\$420</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$852	\$852	\$852	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.72	\$1.13	\$0.55	NA	NA	NA
- Pump out minutes	1.19	1.89	0.92	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$2.43</u>	<u>\$3.86</u>	<u>\$1.88</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$15.15	\$16.99	\$14.44	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$15	\$17	\$14	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	11,498	67,963	6,132	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,871	\$4,342	\$3,689	NA	NA	NA
Annual Non-Trip Related per Car	\$852	\$852	\$852	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$174,196	\$1,154,943	\$88,530	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$38,340</u>	<u>\$226,632</u>	<u>\$20,448</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,723	\$5,194	\$4,541	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$212,536	\$1,381,575	\$108,978	NA	NA	NA
Total CAPITAL COST for all cars	\$681,840	\$4,030,432	\$363,648	NA	NA	NA

C2.6 Metroliner, Washington DC-New York

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 Met-Svc Dinette	21900 Met-Svc Coach	20970 Met-Svc Club	NA NA	NA NA	NA NA
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	11.2	29.1	16.0	NA	NA	NA
Capacity Req'd/day (gals)	14.9	39.0	21.4	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	18.7	48.7	26.8	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	302	116	211	NA	NA	NA
As a percentage of 72 hours	420%	161%	293%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	18.1	6.9	12.6	NA	NA	NA
As a percentage of 3 days	603.87%	231.48%	420.88%	NA	NA	NA
Consecutive Trips before pumpout	108.0	41.0	75.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$5,000	\$5,000	\$5,000	NA	NA	NA
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	\$780	\$780	\$780	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,212	\$1,212	\$1,212	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.15	\$0.39	\$0.21	NA	NA	NA
- Pump out minutes	0.25	0.65	0.36	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$1.52	\$3.97	\$2.19	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$13.67	\$16.36	\$14.40	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$14	\$16	\$14	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,322	12,775	3,322	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,493	\$4,181	\$3,679	NA	NA	NA
Annual Non-Trip Related per Car	\$1,212	\$1,212	\$1,212	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$45,413	\$209,032	\$47,828	NA	NA	NA
Annual Non-Trip Related per Car Type	\$15,756	\$60,600	\$15,756	NA	NA	NA
Total OPRTNG COST per Car	\$4,705	\$5,393	\$4,891	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$61,169	\$269,632	\$63,584	NA	NA	NA
Total CAPITAL COST for all cars	\$364,208	\$1,400,800	\$364,208	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	7.2	18.7	10.3	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	9.0	23.4	12.9	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	72	28	50	NA	NA	NA
As a percentage of 72 hours	100%	38%	70%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	4.3	1.7	3.0	NA	NA	NA
As a percentage of 3 days	144.34%	55.33%	100.60%	NA	NA	NA
Consecutive Trips before pumpout	25.0	9.0	18.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$1,728	\$1,728	\$1,728	NA	NA	NA
Annual spare parts cost per yr	\$195	\$195	\$195	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,923	\$1,923	\$1,923	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.07	\$0.19	\$0.10	NA	NA	NA
- Pump out minutes	0.12	0.31	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$0.95	\$2.47	\$1.36	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$13.02	\$14.66	\$13.46	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$15	\$13	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,322	12,775	3,322	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,326	\$3,745	\$3,440	NA	NA	NA
Annual Non-Trip Related per Car	\$1,923	\$1,923	\$1,923	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$43,243	\$187,265	\$44,715	NA	NA	NA
Annual Non-Trip Related per Car Type	\$24,999	\$96,150	\$24,999	NA	NA	NA
Total OPRTNG COST per Car	\$5,249	\$5,668	\$5,363	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$68,242	\$283,415	\$69,714	NA	NA	NA
Total CAPITAL COST for all cars	\$91,988	\$353,800	\$91,988	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	30.5	79.5	43.7	NA	NA	NA
Capacity Req'd/day (gals)	28.3	74.0	40.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	35.4	92.4	50.8	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	203	78	142	NA	NA	NA
As a percentage of 72 hours	282%	108%	197%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	12.2	4.7	8.5	NA	NA	NA
As a percentage of 3 days	406.06%	155.65%	283.01%	NA	NA	NA
Consecutive Trips before pumpout	73.0	28.0	50.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Metroliner **Route Number:** #200
Origin/Destination: Washington DC-New York
Length in Miles: 225
Length in Hours: 2.78
Expected Trips per Day: 6
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 <u>Met-Svc Dinette</u>	21900 <u>Met-Svc Coach</u>	20970 <u>Met-Svc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$600</u>	<u>\$600</u>	<u>\$600</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,032	\$1,032	\$1,032	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.28	\$0.74	\$0.41	NA	NA	NA
- Pump out minutes	0.47	1.23	0.68	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$2.89</u>	<u>\$7.54</u>	<u>\$4.15</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$15.17	\$20.28	\$16.56	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$15	\$20	\$17	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,322	12,775	3,322	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,877	\$5,182	\$4,230	NA	NA	NA
Annual Non-Trip Related per Car	\$1,032	\$1,032	\$1,032	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$50,404	\$259,109	\$54,989	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$13,416</u>	<u>\$51,600</u>	<u>\$13,416</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,909	\$6,214	\$5,262	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$63,820	\$310,709	\$68,405	NA	NA	NA
Total CAPITAL COST for all cars	\$274,976	\$1,057,600	\$274,976	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	8.3	21.7	11.9	NA	NA	NA
Capacity Req'd/day (gals)	13.0	33.8	18.6	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	16.2	42.3	23.2	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	296	114	206	NA	NA	NA
As a percentage of 72 hours	411%	158%	287%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	17.8	6.8	12.4	NA	NA	NA
As a percentage of 3 days	592.02%	226.94%	412.62%	NA	NA	NA
Consecutive Trips before pumpout	106.0	40.0	74.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	NA	NA	NA
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$19,816</u>	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	\$534	\$534	\$534	NA	NA	NA
Total- Oprtng Non-Trip Related	\$966	\$966	\$966	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.34	\$0.19	NA	NA	NA
- Pump out minutes	0.22	0.56	0.31	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$1.32	\$3.45	\$1.90	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$13.45	\$15.79	\$14.08	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$16	\$14	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,322	12,775	3,322	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,437	\$4,034	\$3,598	NA	NA	NA
Annual Non-Trip Related per Car	\$966	\$966	\$966	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$44,680	\$201,682	\$46,777	NA	NA	NA
Annual Non-Trip Related per Car Type	\$12,558	\$48,300	\$12,558	NA	NA	NA
Total OPRTNG COST per Car	\$4,403	\$5,000	\$4,564	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$57,238	\$249,982	\$59,335	NA	NA	NA
Total CAPITAL COST for all cars	\$257,608	\$990,800	\$257,608	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	46.6	121.6	66.9	NA	NA	NA

Capacity Req'd/day (gals)	39.6	103.2	56.8	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	49.5	129.0	71.0	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA

Continuous Service Hours Supported	49	19	34	NA	NA	NA
As a percentage of 72 hours	67%	26%	47%	NA	NA	NA

Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
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Service Days Supported	2.9	1.1	2.0	NA	NA	NA
As a percentage of 3 days	96.97%	37.17%	67.59%	NA	NA	NA

Consecutive Trips before pumpout	17.0	6.0	12.0	NA	NA	NA
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CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Metroliner **Route Number:** #200
Origin/Destination: Washington, DC-New York
Length in Miles: 225
Length in Hours: 2.78
Expected Trips per Day: 6
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$420</u>	<u>\$420</u>	<u>\$420</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	<u>\$852</u>	<u>\$852</u>	<u>\$852</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.40	\$1.03	\$0.57	NA	NA	NA
- Pump out minutes	0.66	1.72	0.95	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$4.04</u>	<u>\$10.53</u>	<u>\$5.79</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$16.43	\$23.56	\$18.36	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	<u>\$16</u>	<u>\$24</u>	<u>\$18</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total # Cars in fleet						
	13	50	13	NA	NA	NA
Total Annual Car-days						
	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days						
	3,322	12,775	3,322	NA	NA	NA
Days per Trip (min. of 1)						
	1	1	1	1	1	1
Annual Oprtg Trip Related per Car						
	\$4,198	\$6,020	\$4,691	NA	NA	NA
Annual Non-Trip Related per Car						
	\$852	\$852	\$852	NA	NA	NA
Annual Oprtg Trip Related per Car Type						
	\$54,578	\$300,988	\$60,977	NA	NA	NA
Annual Non-Trip Related per Car Type						
	<u>\$11,076</u>	<u>\$42,600</u>	<u>\$11,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car						
	\$5,050	\$6,872	\$5,543	NA	NA	NA
Total CAPITAL COST per Car						
	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars						
	\$65,654	\$343,588	\$72,053	NA	NA	NA
Total CAPITAL COST for all cars						
	\$196,976	\$757,600	\$196,976	NA	NA	NA

C2.7 Hudson Highlander, Albany-New York

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	40.7	11.2	29.1	NA	NA	NA
Capacity Req'd/day (gals)	51.4	14.1	36.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	64.2	17.6	45.9	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	88	321	123	NA	NA	NA
As a percentage of 72 hours	122%	445%	171%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	5.6	20.4	7.8	NA	NA	NA
As a percentage of 3 days	186.16%	679.88%	260.62%	NA	NA	NA
Consecutive Trips before pumpout	33.0	122.0	46.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$780</u>	<u>\$780</u>	<u>\$780</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,212	\$1,212	\$1,212	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.51	\$0.14	\$0.37	NA	NA	NA
- Pump out minutes	0.86	0.23	0.61	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$5.24</u>	<u>\$1.44</u>	<u>\$3.74</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$17.76	\$13.58	\$16.11	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$18	\$14	\$16	NA	NA	NA
Total # Cars in fleet						
	266	25	31	NA	NA	NA
Total Annual Car-days						
	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days						
	67,963	6,388	7,920	NA	NA	NA
Days per Trip (min. of 1)						
	1	1	1	1	1	1
Annual Oprtng Trip Related per Car						
	\$4,537	\$3,469	\$4,116	NA	NA	NA
Annual Non-Trip Related per Car						
	\$1,212	\$1,212	\$1,212	NA	NA	NA
Annual Oprtng Trip Related per Car Type						
	\$1,206,761	\$86,717	\$127,611	NA	NA	NA
Annual Non-Trip Related per Car Type						
	<u>\$322,392</u>	<u>\$30,300</u>	<u>\$37,572</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car						
	\$5,749	\$4,681	\$5,328	NA	NA	NA
Total CAPITAL COST per Car						
	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars						
	\$1,529,153	\$117,017	\$165,183	NA	NA	NA
Total CAPITAL COST for all cars						
	\$7,452,256	\$700,400	\$868,496	NA	NA	NA

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	24.7	6.8	17.6	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	30.9	8.5	22.1	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	21	77	29	NA	NA	NA
As a percentage of 72 hours	29%	106%	41%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	1.3	4.9	1.9	NA	NA	NA
As a percentage of 3 days	44.50%	162.51%	62.29%	NA	NA	NA
Consecutive Trips before pumpout	8.0	29.0	11.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$1,728	\$1,728	\$1,728	NA	NA	NA
Annual spare parts cost per yr	<u>\$195</u>	<u>\$195</u>	<u>\$195</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,923	\$1,923	\$1,923	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.25	\$0.07	\$0.18	NA	NA	NA
- Pump out minutes	0.41	0.11	0.29	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$3.26</u>	<u>\$0.89</u>	<u>\$2.33</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$15.51	\$12.96	\$14.51	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$16	\$13	\$15	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	67,963	6,388	7,920	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,962	\$3,311	\$3,706	NA	NA	NA
Annual Non-Trip Related per Car	\$1,923	\$1,923	\$1,923	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,053,968	\$82,785	\$114,892	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$511,518</u>	<u>\$48,075</u>	<u>\$59,613</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,885	\$5,234	\$5,629	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$1,565,486	\$130,860	\$174,505	NA	NA	NA
Total CAPITAL COST for all cars	\$1,882,216	\$176,900	\$219,356	NA	NA	NA

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Microphor
Equipment: Gravity
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	111.2	30.5	79.5	NA	NA	NA

Capacity Req'd/day (gals)	97.6	26.7	69.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	122.0	33.4	87.1	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300

Continuous Service Hours Supported	59	216	83	NA	NA	NA
As a percentage of 72 hours	82%	299%	115%	NA	NA	NA

Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
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Service Days Supported	3.8	13.7	5.3	NA	NA	NA
As a percentage of 3 days	125.18%	457.16%	175.25%	NA	NA	NA

Consecutive Trips before pumpout	22.0	82.0	31.0	NA	NA	NA
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CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$10,000	\$10,000	\$10,000	NA	NA	NA
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$21,152	\$21,152	\$21,152	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$600</u>	<u>\$600</u>	<u>\$600</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprng Non-Trip Related	\$1,032	\$1,032	\$1,032	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.98	\$0.27	\$0.70	NA	NA	NA
- Pump out minutes	1.63	0.45	1.16	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$9.95</u>	<u>\$2.73</u>	<u>\$7.11</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$22.93	\$14.99	\$19.81	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprng Trip Related	\$23	\$15	\$20	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	67,963	6,388	7,920	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprng Trip Related per Car	\$5,858	\$3,831	\$5,060	NA	NA	NA
Annual Non-Trip Related per Car	\$1,032	\$1,032	\$1,032	NA	NA	NA
Annual Oprng Trip Related per Car Type	\$1,558,264	\$95,763	\$156,872	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$274,512</u>	<u>\$25,800</u>	<u>\$31,992</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$6,890	\$4,863	\$6,092	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$1,832,776	\$121,563	\$188,864	NA	NA	NA
Total CAPITAL COST for all cars	\$5,626,432	\$528,800	\$655,712	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	30.4	8.3	21.7	NA	NA	NA
Capacity Req'd/day (gals)	44.6	12.2	31.9	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	55.8	15.3	39.8	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	86	314	120	NA	NA	NA
As a percentage of 72 hours	120%	437%	167%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	5.5	20.0	7.7	NA	NA	NA
As a percentage of 3 days	182.50%	666.53%	255.50%	NA	NA	NA
Consecutive Trips before pumpout	32.0	119.0	45.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$534</u>	<u>\$534</u>	<u>\$534</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$966	\$966	\$966	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.45	\$0.12	\$0.32	NA	NA	NA
- Pump out minutes	0.74	0.20	0.53	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$4.55</u>	<u>\$1.25</u>	<u>\$3.25</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$17.00	\$13.37	\$15.57	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$17	\$13	\$16	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	67,963	6,388	7,920	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,343	\$3,416	\$3,978	NA	NA	NA
Annual Non-Trip Related per Car	\$966	\$966	\$966	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,155,164	\$85,389	\$123,316	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$256,956</u>	<u>\$24,150</u>	<u>\$29,946</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,309	\$4,382	\$4,944	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$1,412,120	\$109,539	\$153,262	NA	NA	NA
Total CAPITAL COST for all cars	\$5,271,056	\$495,400	\$614,296	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	170.2	46.6	121.6	NA	NA	NA
Capacity Req'd/day (gals)	136.2	37.3	97.3	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	170.2	46.6	121.6	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	14	51	20	NA	NA	NA
As a percentage of 72 hours	20%	72%	27%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	0.9	3.3	1.3	NA	NA	NA
As a percentage of 3 days	29.89%	109.18%	41.85%	NA	NA	NA
Consecutive Trips before pumpout	5.0	19.0	7.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$432	\$432	\$432	NA	NA	NA
Annual spare parts cost per yr	<u>\$420</u>	<u>\$420</u>	<u>\$420</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$852	\$852	\$852	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.36	\$0.37	\$0.97	NA	NA	NA
- Pump out minutes	2.27	0.62	1.62	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$13.89</u>	<u>\$3.80</u>	<u>\$9.92</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$27.25	\$16.18	\$22.90	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$27	\$16	\$23	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	67,963	6,388	7,920	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$6,963	\$4,133	\$5,850	NA	NA	NA
Annual Non-Trip Related per Car	\$852	\$852	\$852	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$1,852,229	\$103,328	\$181,343	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$226,632</u>	<u>\$21,300</u>	<u>\$26,412</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$7,815	\$4,985	\$6,702	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$2,078,861	\$124,628	\$207,755	NA	NA	NA
Total CAPITAL COST for all cars	\$4,030,432	\$378,800	\$469,712	NA	NA	NA

C2.8 Electric City Express, Schenectady-New York

Amtrak Route: Electric City Express **Route Number:** #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	151-Odd <u>Turbo Power Club</u>	170 <u>Turbo Coach</u>	170 <u>Turbo Cafe</u>	150-Even <u>Turbo Power Coac</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	13.1	34.9	25.2	19.4	NA	NA
Capacity Req'd/day (gals)	12.7	34.0	24.5	18.9	NA	NA
Adj. Capacity Req'd w/ Buffer	15.9	42.5	30.7	23.6	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	354	133	184	239	NA	NA
As a percentage of 72 hours	492%	185%	255%	332%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	29.2	11.0	15.2	19.7	NA	NA
As a percentage of 3 days	974.31%	365.37%	505.89%	657.66%	NA	NA
Consecutive Trips before pumpout	116.0	43.0	60.0	78.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$2,500</u>	<u>\$5,000</u>	<u>\$2,500</u>	<u>\$2,500</u>	NA	NA
- Total Equip Cost	\$23,500	\$26,000	\$23,500	\$23,500	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	\$25,228	\$28,016	\$25,228	\$25,228	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$216	\$432	\$216	\$216	NA	NA
Annual spare parts cost per yr	<u>\$705</u>	<u>\$780</u>	<u>\$705</u>	<u>\$705</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$921	\$1,212	\$921	\$921	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.34	\$0.25	\$0.19	NA	NA
- Pump out minutes	0.21	0.57	0.41	0.31	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.87</u>	<u>\$2.31</u>	<u>\$1.67</u>	<u>\$1.28</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$6.99	\$14.65	\$7.91	\$7.47	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$15	\$8	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,533	5,366	767	3,577	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,787	\$3,743	\$2,022	\$1,909	NA	NA
Annual Non-Trip Related per Car	\$921	\$1,212	\$921	\$921	NA	NA
Annual Oprtng Trip Related per Car Type	\$10,721	\$78,600	\$6,066	\$26,727	NA	NA
Annual Non-Trip Related per Car Type	<u>\$5,526</u>	<u>\$25,452</u>	<u>\$2,763</u>	<u>\$12,894</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,708	\$4,955	\$2,943	\$2,830	NA	NA
Total CAPITAL COST per Car	\$25,228	\$28,016	\$25,228	\$25,228	NA	NA
Total OPRTNG COST for all cars	\$16,247	\$104,052	\$8,829	\$39,621	NA	NA
Total CAPITAL COST for all cars	\$151,368	\$588,336	\$75,684	\$353,192	NA	NA

Amtrak Route: Electric City Express **Route Number:** #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	6.1	16.3	11.8	9.1	NA	NA
Adj. Capacity Req'd w/ Buffer	7.7	20.4	14.7	11.3	NA	NA
Tank Capacity per Car (gals)	13.5	27	13.5	13.5	NA	NA
Continuous Service Hours Supported	42	32	22	29	NA	NA
As a percentage of 72 hours	59%	44%	31%	40%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	3.5	2.6	1.8	2.4	NA	NA
As a percentage of 3 days	116.44%	87.33%	60.46%	78.60%	NA	NA
Consecutive Trips before pumpout	13.0	10.0	7.0	9.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$3,250</u>	<u>\$6,500</u>	<u>\$3,250</u>	<u>\$3,250</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$3,250	\$6,500	\$3,250	\$3,250	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$288	\$576	\$288	\$288	NA	NA
Total Capital Cost	<u>\$3,538</u>	<u>\$7,076</u>	<u>\$3,538</u>	<u>\$3,538</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$576	\$288	\$288	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$864	\$1,728	\$864	\$864	NA	NA
Annual spare parts cost per yr	<u>\$98</u>	<u>\$195</u>	<u>\$98</u>	<u>\$98</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$962	\$1,923	\$962	\$962	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.06	\$0.16	\$0.12	\$0.09	NA	NA
- Pump out minutes	0.10	0.27	0.20	0.15	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.54</u>	<u>\$1.44</u>	<u>\$1.04</u>	<u>\$0.80</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$6.60	\$13.60	\$7.16	\$6.89	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$14	\$7	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,533	5,366	767	3,577	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,686	\$3,475	\$1,828	\$1,760	NA	NA
Annual Non-Trip Related per Car	\$962	\$1,923	\$962	\$962	NA	NA
Annual Oprtng Trip Related per Car Type	\$10,118	\$72,970	\$5,485	\$24,641	NA	NA
Annual Non-Trip Related per Car Type	<u>\$5,769</u>	<u>\$40,383</u>	<u>\$2,885</u>	<u>\$13,461</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,648	\$5,398	\$2,790	\$2,722	NA	NA
Total CAPITAL COST per Car	\$3,538	\$7,076	\$3,538	\$3,538	NA	NA
Total OPRTNG COST for all cars	\$15,887	\$113,353	\$8,369	\$38,102	NA	NA
Total CAPITAL COST for all cars	\$21,228	\$148,596	\$10,614	\$49,532	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	35.8	95.4	68.9	53.0	NA	NA
Capacity Req'd/day (gals)	24.2	64.5	46.6	35.8	NA	NA
Adj. Capacity Req'd w/ Buffer	30.2	80.6	58.2	44.8	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	238	89	124	161	NA	NA
As a percentage of 72 hours	331%	124%	172%	223%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	19.7	7.4	10.2	13.3	NA	NA
As a percentage of 3 days	655.14%	245.68%	340.17%	442.22%	NA	NA
Consecutive Trips before pumpout	78.0	29.0	40.0	53.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$5,000	\$10,000	\$5,000	\$5,000	NA	NA
- Total Equip Cost	\$15,000	\$20,000	\$15,000	\$15,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$288	\$576	\$288	\$288	NA	NA
- Total Installation Cost	\$864	\$1,152	\$864	\$864	NA	NA
Total Capital Cost	\$15,864	\$21,152	\$15,864	\$15,864	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$216	\$432	\$216	\$216	NA	NA
Annual spare parts cost per yr	<u>\$450</u>	<u>\$600</u>	<u>\$450</u>	<u>\$450</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$666	\$1,032	\$666	\$666	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.24	\$0.64	\$0.47	\$0.36	NA	NA
- Pump out minutes	0.40	1.07	0.78	0.60	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.64</u>	<u>\$4.38</u>	<u>\$3.17</u>	<u>\$2.44</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$7.89	\$17.03	\$9.63	\$8.79	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	\$8	\$17	\$10	\$9	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,533	5,366	767	3,577	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,015	\$4,351	\$2,461	\$2,247	NA	NA
Annual Non-Trip Related per Car	\$666	\$1,032	\$666	\$666	NA	NA
Annual Oprtg Trip Related per Car Type	\$12,089	\$91,372	\$7,383	\$31,457	NA	NA
Annual Non-Trip Related per Car Type	<u>\$3,996</u>	<u>\$21,672</u>	<u>\$1,998</u>	<u>\$9,324</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,681	\$5,383	\$3,127	\$2,913	NA	NA
Total CAPITAL COST per Car	\$15,864	\$21,152	\$15,864	\$15,864	NA	NA
Total OPRTNG COST for all cars	\$16,085	\$113,044	\$9,381	\$40,781	NA	NA
Total CAPITAL COST for all cars	\$95,184	\$444,192	\$47,592	\$222,096	NA	NA

Amtrak Route: Electric City Express **Route Number:** #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Evac
Equipment: Ultimate
Scenario: Expected
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	9.8	26.1	18.8	14.5	NA	NA
Capacity Req'd/day (gals)	11.1	29.5	21.3	16.4	NA	NA
Adj. Capacity Req'd w/ Buffer	13.8	36.9	26.6	20.5	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	347	130	180	234	NA	NA
As a percentage of 72 hours	482%	181%	250%	326%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	28.7	10.7	14.9	19.3	NA	NA
As a percentage of 3 days	955.18%	358.19%	495.96%	644.75%	NA	NA
Consecutive Trips before pumpout	114.0	42.0	59.0	77.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$2,900</u>	<u>\$5,800</u>	<u>\$2,900</u>	<u>\$2,900</u>	NA	NA
- Total Equip Cost	\$14,900	\$17,800	\$14,900	\$14,900	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	<u>\$16,628</u>	<u>\$19,816</u>	<u>\$16,628</u>	<u>\$16,628</u>	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Evac
Equipment: Ultimate
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Servicing Cost/Year	\$216	\$432	\$216	\$216	NA	NA
Annual spare parts cost per yr	<u>\$447</u>	<u>\$534</u>	<u>\$447</u>	<u>\$447</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$663	\$966	\$663	\$663	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.11	\$0.29	\$0.21	\$0.16	NA	NA
- Pump out minutes	0.18	0.49	0.35	0.27	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.75</u>	<u>\$2.00</u>	<u>\$1.45</u>	<u>\$1.11</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$6.86	\$14.30	\$7.66	\$7.28	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$14	\$8	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,533	5,366	767	3,577	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,753	\$3,654	\$1,957	\$1,859	NA	NA
Annual Non-Trip Related per Car	\$663	\$966	\$663	\$663	NA	NA
Annual Oprtng Trip Related per Car Type	\$10,520	\$76,725	\$5,872	\$26,032	NA	NA
Annual Non-Trip Related per Car Type	<u>\$3,978</u>	<u>\$20,286</u>	<u>\$1,989</u>	<u>\$9,282</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,416	\$4,620	\$2,620	\$2,522	NA	NA
Total CAPITAL COST per Car	\$16,628	\$19,816	\$16,628	\$16,628	NA	NA
Total OPRTNG COST for all cars	\$14,498	\$97,011	\$7,861	\$35,314	NA	NA
Total CAPITAL COST for all cars	\$99,768	\$416,136	\$49,884	\$232,792	NA	NA

Amtrak Route: Electric City Express **Route Number:** #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	7.00	7.00	7.00	7.00	7.00	7.00
Flush efficiency adjustment	1.10	1.10	1.10	1.10	1.10	1.10
Adj. # Flushes/Person-day	7.7	7.7	7.7	7.7	7.7	7.7
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	54.7	145.9	105.4	81.1	NA	NA
Capacity Req'd/day (gals)	33.8	90.0	65.0	50.0	NA	NA
Adj. Capacity Req'd w/ Buffer	42.2	112.5	81.3	62.5	NA	NA
Tank Capacity per Car (gals)	50	100	50	50	NA	NA
Continuous Service Hours Supported	28	21	15	19	NA	NA
As a percentage of 72 hours	40%	30%	21%	27%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	2.3	1.8	1.2	1.6	NA	NA
As a percentage of 3 days	78.23%	58.67%	40.62%	52.80%	NA	NA
Consecutive Trips before pumpout	9.0	7.0	4.0	6.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$4,000	\$8,000	\$4,000	\$4,000	NA	NA
Toilet Cost per Car	<u>\$3,000</u>	<u>\$6,000</u>	<u>\$3,000</u>	<u>\$3,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$7,000	\$14,000	\$7,000	\$7,000	NA	NA
Equipment Installation						
Collection System per Car	\$288	\$576	\$288	\$288	NA	NA
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$1,152	\$576	\$576	NA	NA
Total Capital Cost	<u>\$7,576</u>	<u>\$15,152</u>	<u>\$7,576</u>	<u>\$7,576</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Expected

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	3	3	3	3	3	3
Servicing Cost/Year	\$216	\$432	\$216	\$216	NA	NA
Annual spare parts cost per yr	\$210	\$420	\$210	\$210	NA	NA
Total- Oprtng Non-Trip Related	\$426	\$852	\$426	\$426	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.34	\$0.90	\$0.65	\$0.50	NA	NA
- Pump out minutes	0.56	1.50	1.08	0.83	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$2.30	\$6.12	\$4.42	\$3.40	NA	NA
Subtotal- End of Day/Trip Srvc	\$8.63	\$19.02	\$11.07	\$9.90	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$9	\$19	\$11	\$10	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,533	5,366	767	3,577	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,206	\$4,860	\$2,828	\$2,529	NA	NA
Annual Non-Trip Related per Car	\$426	\$852	\$426	\$426	NA	NA
Annual Oprtng Trip Related per Car Type	\$13,234	\$102,053	\$8,485	\$35,413	NA	NA
Annual Non-Trip Related per Car Type	\$2,556	\$17,892	\$1,278	\$5,964	NA	NA
Total OPRTNG COST per Car	\$2,632	\$5,712	\$3,254	\$2,955	NA	NA
Total CAPITAL COST per Car	\$7,576	\$15,152	\$7,576	\$7,576	NA	NA
Total OPRTNG COST for all cars	\$15,790	\$119,945	\$9,763	\$41,377	NA	NA
Total CAPITAL COST for all cars	\$45,456	\$318,192	\$22,728	\$106,064	NA	NA

C3 Cost Details, Favorable Scenario, Each Toilet System

C3.1 Sunset Limited, New Orleans-Los Angeles

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	28.4	27.2	16.6	32.5	NA	NA
Capacity Req'd/day (gals)	62.0	59.5	36.4	71.1	NA	NA
Adj. Capacity Req'd w/ Buffer	77.5	74.4	45.5	88.9	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	73	76	124	63	NA	NA
As a percentage of 72 hours	101%	105%	172%	88%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	3.0	3.2	5.2	2.6	NA	NA
As a percentage of 3 days	101.03%	105.24%	172.22%	88.11%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$15,000</u>	<u>\$10,000</u>	<u>\$30,000</u>	<u>\$5,000</u>	NA	NA
- Total Equip Cost	\$36,000	\$31,000	\$51,000	\$26,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	\$39,168	\$33,592	\$55,896	\$28,016	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$864	\$576	\$1,728	\$288	NA	NA
Annual spare parts cost per yr	<u>\$360</u>	<u>\$310</u>	<u>\$510</u>	<u>\$260</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,224	\$886	\$2,238	\$548	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.62	\$0.60	\$0.36	\$0.71	NA	NA
- Pump out minutes	1.03	0.99	0.61	1.19	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.89</u>	<u>\$1.81</u>	<u>\$1.11</u>	<u>\$2.17</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$38.51	\$26.41	\$73.47	\$14.88	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$39	\$26	\$73	\$15	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	19,929	4,599	14,892	1,314	NA	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtng Trip Related per Car	\$4,217	\$2,892	\$8,045	\$1,629	NA	NA
Annual Non-Trip Related per Car	\$1,224	\$886	\$2,238	\$548	NA	NA
Annual Oprtng Trip Related per Car Type	\$383,727	\$60,728	\$547,074	\$9,775	NA	NA
Annual Non-Trip Related per Car Type	<u>\$111,384</u>	<u>\$18,606</u>	<u>\$152,184</u>	<u>\$3,288</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,441	\$3,778	\$10,283	\$2,177	NA	NA
Total CAPITAL COST per Car	\$39,168	\$33,592	\$55,896	\$28,016	NA	NA
Total OPRTNG COST for all cars	\$495,111	\$79,334	\$699,258	\$13,063	NA	NA
Total CAPITAL COST for all cars	\$3,564,288	\$705,432	\$3,800,928	\$168,096	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	33.7	32.3	19.8	38.6	NA	NA
Adj. Capacity Req'd w/ Buffer	42.1	40.4	24.7	48.3	NA	NA
Tank Capacity per Car (gals)	81	54	162	27	NA	NA
Continuous Service Hours Supported	46	32	157	13	NA	NA
As a percentage of 72 hours	64%	45%	219%	19%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.9	1.3	6.6	0.6	NA	NA
As a percentage of 3 days	64.14%	44.54%	218.67%	18.65%	NA	NA
Consecutive Trips before pumpout	1.0	0.0	3.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$19,500</u>	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$6,500</u>	NA	NA
- Total Equip Cost	\$19,500	\$13,000	\$39,000	\$6,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Total Capital Cost	<u>\$21,228</u>	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$7,076</u>	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$3,456	\$2,304	\$6,912	\$1,152	NA	NA
Annual spare parts cost per yr	<u>\$195</u>	<u>\$130</u>	<u>\$390</u>	<u>\$65</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$3,651	\$2,434	\$7,302	\$1,217	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.34	\$8.40	\$0.20	\$4.32	NA	NA
- Pump out minutes	0.56	0.00	0.33	0.19	NA	NA
- Connect/Disc. minutes	0.0	14.0	0.0	7.0	NA	NA
- Waste Disposal	<u>\$1.33</u>	<u>\$1.27</u>	<u>\$0.78</u>	<u>\$1.52</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$37.66	\$33.67	\$72.98	\$17.84	NA	NA
Train Delay:						
- Pump out volume req'd	0	54	0	27	NA	NA
- # of stops req'd	0	1	0	1	NA	NA
- Pump out minutes	0.0	0.9	0.0	0.5	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>14.0</u>	<u>0.0</u>	<u>7.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	15	0	7	NA	NA
Average Cost Per Delay	\$0	\$9	\$0	\$4	NA	NA
Subtotal- Oprtng Trip Related	\$38	\$43	\$73	\$22	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	19,929	4,599	14,892	1,314	NA	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtng Trip Related per Car	\$4,124	\$4,666	\$7,991	\$2,443	NA	NA
Annual Non-Trip Related per Car	\$3,651	\$2,434	\$7,302	\$1,217	NA	NA
Annual Oprtng Trip Related per Car Type	\$375,304	\$97,991	\$543,381	\$14,656	NA	NA
Annual Non-Trip Related per Car Type	<u>\$332,241</u>	<u>\$51,114</u>	<u>\$496,536</u>	<u>\$7,302</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$7,775	\$7,100	\$15,293	\$3,660	NA	NA
Total CAPITAL COST per Car	\$21,228	\$14,152	\$42,456	\$7,076	NA	NA
Total OPRTNG COST for all cars	\$707,545	\$149,105	\$1,039,917	\$21,958	NA	NA
Total CAPITAL COST for all cars	\$1,931,748	\$297,192	\$2,887,008	\$42,456	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	77.4	74.3	45.4	88.8	NA	NA
Capacity Req'd/day (gals)	111.1	106.6	65.2	127.4	NA	NA
Adj. Capacity Req'd w/ Buffer	138.8	133.3	81.5	159.2	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	52	54	88	45	NA	NA
As a percentage of 72 hours	72%	75%	123%	63%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.2	2.3	3.7	1.9	NA	NA
As a percentage of 3 days	72.02%	75.02%	122.77%	62.81%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$30,000</u>	<u>\$20,000</u>	<u>\$60,000</u>	<u>\$10,000</u>	NA	NA
- Total Equip Cost	\$40,000	\$30,000	\$70,000	\$20,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$2,304	\$1,728	\$4,032	\$1,152	NA	NA
Total Capital Cost	<u>\$42,304</u>	<u>\$31,728</u>	<u>\$74,032</u>	<u>\$21,152</u>	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise).

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$864	\$576	\$1,728	\$288	NA	NA
Annual spare parts cost per yr	\$400	\$300	\$700	\$200	NA	NA
Total- Oprtg Non-Trip Related	\$1,264	\$876	\$2,428	\$488	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.11	\$1.07	\$0.65	\$1.27	NA	NA
- Pump out minutes	1.85	1.78	1.09	2.12	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$3.38	\$3.25	\$1.98	\$3.88	NA	NA
Subtotal- End of Day/Trip Srvc	\$40.49	\$28.31	\$74.64	\$17.15	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	\$40	\$28	\$75	\$17	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	19,929	4,599	14,892	1,314	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$4,434	\$3,100	\$8,173	\$1,878	NA	NA
Annual Non-Trip Related per Car	\$1,264	\$876	\$2,428	\$488	NA	NA
Annual Oprtg Trip Related per Car Type	\$403,502	\$65,108	\$555,743	\$11,270	NA	NA
Annual Non-Trip Related per Car Type	\$115,024	\$18,396	\$165,104	\$2,928	NA	NA
Total OPRTNG COST per Car	\$5,698	\$3,976	\$10,601	\$2,366	NA	NA
Total CAPITAL COST per Car	\$42,304	\$31,728	\$74,032	\$21,152	NA	NA
Total OPRTNG COST for all cars	\$518,526	\$83,504	\$720,847	\$14,198	NA	NA
Total CAPITAL COST for all cars	\$3,849,664	\$666,288	\$5,034,176	\$126,912	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	21.2	20.3	12.4	24.3	NA	NA
Capacity Req'd/day (gals)	54.8	52.6	32.2	62.9	NA	NA
Adj. Capacity Req'd w/ Buffer	68.5	65.8	40.2	78.6	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	70	73	119	61	NA	NA
As a percentage of 72 hours	97%	101%	166%	85%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.9	3.0	5.0	2.5	NA	NA
As a percentage of 3 days	97.28%	101.33%	165.82%	84.84%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$17,400</u>	<u>\$11,600</u>	<u>\$34,800</u>	<u>\$5,800</u>	NA	NA
- Total Equip Cost	\$29,400	\$23,600	\$46,800	\$17,800	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	<u>\$32,568</u>	<u>\$26,192</u>	<u>\$51,696</u>	<u>\$19,816</u>	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$864	\$576	\$1,728	\$288	NA	NA
Annual spare parts cost per yr	<u>\$294</u>	<u>\$236</u>	<u>\$468</u>	<u>\$178</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,158	\$812	\$2,196	\$466	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.55	\$0.53	\$0.32	\$0.63	NA	NA
- Pump out minutes	0.91	0.88	0.54	1.05	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.67</u>	<u>\$1.60</u>	<u>\$0.98</u>	<u>\$1.91</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$38.22	\$26.13	\$73.30	\$14.54	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$38	\$26	\$73	\$15	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	19,929	4,599	14,892	1,314	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$4,185	\$2,861	\$8,026	\$1,593	NA	NA
Annual Non-Trip Related per Car	\$1,158	\$812	\$2,196	\$466	NA	NA
Annual Oprtng Trip Related per Car Type	\$380,825	\$60,085	\$545,801	\$9,555	NA	NA
Annual Non-Trip Related per Car Type	<u>\$105,378</u>	<u>\$17,052</u>	<u>\$149,328</u>	<u>\$2,796</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,343	\$3,673	\$10,222	\$2,059	NA	NA
Total CAPITAL COST per Car	\$32,568	\$26,192	\$51,696	\$19,816	NA	NA
Total OPRTNG COST for all cars	\$486,203	\$77,137	\$695,129	\$12,351	NA	NA
Total CAPITAL COST for all cars	\$2,963,688	\$550,032	\$3,515,328	\$118,896	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	34000	39940	32000	39970	NA	NA
	Coach Super	Coach-HEP-HLV	Sleeper Super	Lounge-HEP-HLV	NA	NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA
Car Waste Data (per car)						
Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	118.4	113.7	69.5	135.8	NA	NA
Capacity Req'd/day (gals)	152.1	146.0	89.2	174.4	NA	NA
Adj. Capacity Req'd w/ Buffer	190.1	182.5	111.5	218.0	NA	NA
Tank Capacity per Car (gals)	150	100	300	100	NA	NA
Continuous Service Hours Supported	19	13	65	11	NA	NA
As a percentage of 72 hours	26%	18%	90%	15%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	0.8	0.5	2.7	0.5	NA	NA
As a percentage of 3 days	26.30%	18.26%	89.66%	15.29%	NA	NA
Consecutive Trips before pumpout	0.0	0.0	1.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$8,000	\$24,000	\$8,000	NA	NA
Toilet Cost per Car	\$18,000	\$12,000	\$36,000	\$6,000	NA	NA
- Total Equip Cost	\$30,000	\$20,000	\$60,000	\$14,000	NA	NA
Equipment Installation						
Collection System per Car	\$864	\$576	\$1,728	\$576	NA	NA
Toilet Cost per Car	\$1,728	\$1,152	\$3,456	\$576	NA	NA
- Total Installation Cost	\$2,592	\$1,728	\$5,184	\$1,152	NA	NA
Total Capital Cost	\$32,592	\$21,728	\$65,184	\$15,152	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$864	\$576	\$1,728	\$288	NA	NA
Annual spare parts cost per yr	\$300	\$200	\$600	\$140	NA	NA
Total- Oprtng Non-Trip Related	\$1,164	\$776	\$2,328	\$428	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$6.32	\$4.66	\$0.89	\$4.94	NA	NA
- Pump out minutes	0.03	0.77	1.49	1.24	NA	NA
- Connect/Disc. minutes	10.5	7.0	0.0	7.0	NA	NA
- Waste Disposal	\$4.63	\$4.45	\$2.72	\$5.31	NA	NA
Subtotal- End of Day/Trip Srvc	\$46.95	\$33.11	\$75.61	\$22.26	NA	NA
Train Delay:						
- Pump out volume req'd	150	100	0	100	NA	NA
- # of stops req'd	1	1	0	1	NA	NA
- Pump out minutes	2.5	1.7	0.0	1.7	NA	NA
- Connect/Disc. minutes	10.5	7.0	0.0	7.0	NA	NA
- Total Time Delay(mins/car)	13	9	0	9	NA	NA
Average Cost Per Delay	\$8	\$5	\$0	\$5	NA	NA
Subtotal- Oprtng Trip Related	\$55	\$38	\$76	\$27	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	19,929	4,599	14,892	1,314	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$5,996	\$4,195	\$8,279	\$3,006	NA	NA
Annual Non-Trip Related per Car	\$1,164	\$776	\$2,328	\$428	NA	NA
Annual Oprtng Trip Related per Car Type	\$545,592	\$88,088	\$562,993	\$18,039	NA	NA
Annual Non-Trip Related per Car Type	\$105,924	\$16,296	\$158,304	\$2,568	NA	NA
Total OPRTNG COST per Car	\$7,160	\$4,971	\$10,607	\$3,434	NA	NA
Total CAPITAL COST per Car	\$32,592	\$21,728	\$65,184	\$15,152	NA	NA
Total OPRTNG COST for all cars	\$651,516	\$104,384	\$721,297	\$20,607	NA	NA
Total CAPITAL COST for all cars	\$2,965,872	\$456,288	\$4,432,512	\$90,912	NA	NA

C3.2 California Zephyr, Chicago-Oakland

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	Trans Dorm Coach	Sleeper Super	Bag Coach Super	Coach Super	NA	NA
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	15.1	16.6	29.5	28.4	NA	NA
Capacity Req'd/day (gals)	33.1	36.4	64.5	62.0	NA	NA
Adj. Capacity Req'd w/ Buffer	41.4	45.5	80.6	77.5	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	136	124	70	73	NA	NA
As a percentage of 72 hours	189%	172%	97%	101%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	5.7	5.2	2.9	3.0	NA	NA
As a percentage of 3 days	189.44%	172.22%	97.15%	101.03%	NA	NA
Consecutive Trips before pumpout	2.0	2.0	1.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$30,000</u>	<u>\$12,500</u>	<u>\$15,000</u>	NA	NA
- Total Equip Cost	\$31,000	\$51,000	\$33,500	\$36,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	NA	NA
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	<u>\$33,592</u>	<u>\$55,896</u>	<u>\$36,380</u>	<u>\$39,168</u>	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$576	\$1,728	\$720	\$864	NA	NA
Annual spare parts cost per yr	<u>\$310</u>	<u>\$510</u>	<u>\$335</u>	<u>\$360</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$886	\$2,238	\$1,055	\$1,224	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.33	\$0.36	\$0.65	\$0.62	NA	NA
- Pump out minutes	0.55	0.61	1.08	1.03	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.20</u>	<u>\$1.32</u>	<u>\$2.34</u>	<u>\$2.25</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$25.53	\$73.68	\$32.98	\$38.87	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$26	\$74	\$33	\$39	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	7,884	14,892	10,512	19,929	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$1,864	\$5,379	\$2,408	\$2,837	NA	NA
Annual Non-Trip Related per Car	\$886	\$2,238	\$1,055	\$1,224	NA	NA
Annual Oprtng Trip Related per Car Type	\$67,092	\$365,761	\$115,573	\$258,203	NA	NA
Annual Non-Trip Related per Car Type	<u>\$31,896</u>	<u>\$152,184</u>	<u>\$50,640</u>	<u>\$111,384</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,750	\$7,617	\$3,463	\$4,061	NA	NA
Total CAPITAL COST per Car	\$33,592	\$55,896	\$36,380	\$39,168	NA	NA
Total OPRTNG COST for all cars	\$98,988	\$517,945	\$166,213	\$369,587	NA	NA
Total CAPITAL COST for all cars	\$1,209,312	\$3,800,928	\$1,746,240	\$3,564,288	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	Trans Dorm Coach	Sleeper Super	Bag Coach Super	Coach Super	NA	NA
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	18.0	19.8	35.0	33.7	NA	NA
Adj. Capacity Req'd w/ Buffer	22.5	24.7	43.8	42.1	NA	NA
Tank Capacity per Car (gals)	54	162	67.5	81	NA	NA
Continuous Service Hours Supported	58	157	37	46	NA	NA
As a percentage of 72 hours	80%	219%	51%	64%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.4	6.6	1.5	1.9	NA	NA
As a percentage of 3 days	80.18%	218.67%	51.40%	64.14%	NA	NA
Consecutive Trips before pumpout	1.0	3.0	0.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$16,250</u>	<u>\$19,500</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$13,000	\$39,000	\$16,250	\$19,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Total Capital Cost	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$17,690</u>	<u>\$21,228</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$2,304	\$6,912	\$2,880	\$3,456	NA	NA
Annual spare parts cost per yr	<u>\$130</u>	<u>\$390</u>	<u>\$163</u>	<u>\$195</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,434	\$7,302	\$3,043	\$3,651	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.18	\$0.20	\$10.50	\$12.60	NA	NA
- Pump out minutes	0.30	0.33	0.00	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	17.5	21.0	NA	NA
- Waste Disposal	<u>\$0.84</u>	<u>\$0.93</u>	<u>\$1.64</u>	<u>\$1.58</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$25.02	\$73.12	\$42.14	\$50.18	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	68	81	NA	NA
- # of stops req'd	0	0	1	1	NA	NA
- Pump out minutes	0.0	0.0	1.1	1.4	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>17.5</u>	<u>21.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	19	22	NA	NA
Average Cost Per Delay	\$0	\$0	\$11	\$13	NA	NA
Subtotal- Oprtng Trip Related	\$25	\$73	\$53	\$64	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	7,884	14,892	10,512	19,929	NA	NA
Days per Trip (min. of 1)	3	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$1,827	\$5,338	\$3,892	\$4,642	NA	NA
Annual Non-Trip Related per Car	\$2,434	\$7,302	\$3,043	\$3,651	NA	NA
Annual Oprtng Trip Related per Car Type	\$65,758	\$362,989	\$186,825	\$422,425	NA	NA
Annual Non-Trip Related per Car Type	<u>\$87,624</u>	<u>\$496,536</u>	<u>\$146,040</u>	<u>\$332,241</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,261	\$12,640	\$6,935	\$8,293	NA	NA
Total CAPITAL COST per Car	\$14,152	\$42,456	\$17,690	\$21,228	NA	NA
Total OPRTNG COST for all cars	\$153,382	\$859,525	\$332,865	\$754,666	NA	NA
Total CAPITAL COST for all cars	\$509,472	\$2,887,008	\$849,120	\$1,931,748	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	41.3	45.4	80.5	77.4	NA	NA
Capacity Req'd/day (gals)	59.2	65.2	115.5	111.1	NA	NA
Adj. Capacity Req'd w/ Buffer	74.1	81.5	144.4	138.8	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	97	88	50	52	NA	NA
As a percentage of 72 hours	135%	123%	69%	72%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	4.1	3.7	2.1	2.2	NA	NA
As a percentage of 3 days	135.04%	122.77%	69.25%	72.02%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	0.0	1.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$20,000</u>	<u>\$60,000</u>	<u>\$25,000</u>	<u>\$30,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$30,000	\$70,000	\$35,000	\$40,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,728	\$4,032	\$2,016	\$2,304	NA	NA
Total Capital Cost	<u>\$31,728</u>	<u>\$74,032</u>	<u>\$37,016</u>	<u>\$42,304</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$576	\$1,728	\$720	\$864	NA	NA
Annual spare parts cost per yr	<u>\$300</u>	<u>\$700</u>	<u>\$350</u>	<u>\$400</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$876	\$2,428	\$1,070	\$1,264	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.59	\$0.65	\$0.00	\$1.11	NA	NA
- Pump out minutes	0.99	1.09	0.00	1.85	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$2.15</u>	<u>\$2.36</u>	<u>\$4.19</u>	<u>\$4.03</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$26.74	\$75.01	\$34.19	\$41.14	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	300	0	NA	NA
- # of stops req'd	0	0	1	0	NA	NA
- Pump out minutes	0.0	0.0	5.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	5	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$3	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$27	\$75	\$37	\$41	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	7,884	14,892	10,512	19,929	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$1,952	\$5,476	\$2,715	\$3,003	NA	NA
Annual Non-Trip Related per Car	\$876	\$2,428	\$1,070	\$1,264	NA	NA
Annual Oprtng Trip Related per Car Type	\$70,272	\$372,367	\$130,303	\$273,271	NA	NA
Annual Non-Trip Related per Car Type	<u>\$31,536</u>	<u>\$165,104</u>	<u>\$51,360</u>	<u>\$115,024</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,828	\$7,904	\$3,785	\$4,267	NA	NA
Total CAPITAL COST per Car	\$31,728	\$74,032	\$37,016	\$42,304	NA	NA
Total OPRTNG COST for all cars	\$101,808	\$537,471	\$181,663	\$388,295	NA	NA
Total CAPITAL COST for all cars	\$1,142,208	\$5,034,176	\$1,776,768	\$3,849,664	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
Origin/Destination: Chicago-Oakland
Length in Miles: 2,422
Length in Hours: 51.17
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	11.3	12.4	22.0	21.2	NA	NA
Capacity Req'd/day (gals)	29.2	32.2	57.0	54.8	NA	NA
Adj. Capacity Req'd w/ Buffer	36.6	40.2	71.3	68.5	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	131	119	67	70	NA	NA
As a percentage of 72 hours	182%	166%	94%	97%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	5.5	5.0	2.8	2.9	NA	NA
As a percentage of 3 days	182.40%	165.82%	93.54%	97.28%	NA	NA
Consecutive Trips before pumpout	2.0	2.0	1.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$11,600</u>	<u>\$34,800</u>	<u>\$14,500</u>	<u>\$17,400</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$23,600	\$46,800	\$26,500	\$29,400	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	\$26,192	\$51,696	\$29,380	\$32,568	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$576	\$1,728	\$720	\$864	NA	NA
Annual spare parts cost per yr	<u>\$236</u>	<u>\$468</u>	<u>\$265</u>	<u>\$294</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$812	\$2,196	\$985	\$1,158	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.29	\$0.32	\$0.57	\$0.55	NA	NA
- Pump out minutes	0.49	0.54	0.95	0.91	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.06</u>	<u>\$1.17</u>	<u>\$2.07</u>	<u>\$1.99</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$25.35	\$73.49	\$32.64	\$38.54	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$25	\$73	\$33	\$39	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	7,884	14,892	10,512	19,929	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$1,851	\$5,365	\$2,382	\$2,813	NA	NA
Annual Non-Trip Related per Car	\$812	\$2,196	\$985	\$1,158	NA	NA
Annual Oprtng Trip Related per Car Type	\$66,626	\$364,792	\$114,359	\$255,991	NA	NA
Annual Non-Trip Related per Car Type	<u>\$29,232</u>	<u>\$149,328</u>	<u>\$47,280</u>	<u>\$105,378</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,663	\$7,561	\$3,367	\$3,971	NA	NA
Total CAPITAL COST per Car	\$26,192	\$51,696	\$29,380	\$32,568	NA	NA
Total OPRTNG COST for all cars	\$95,858	\$514,120	\$161,639	\$361,369	NA	NA
Total CAPITAL COST for all cars	\$942,912	\$3,515,328	\$1,410,240	\$2,963,688	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	63.2	69.5	123.2	118.4	NA	NA
Capacity Req'd/day (gals)	81.1	89.2	158.2	152.1	NA	NA
Adj. Capacity Req'd w/ Buffer	101.4	111.5	197.7	190.1	NA	NA
Tank Capacity per Car (gals)	100	300	150	150	NA	NA
Continuous Service Hours Supported	24	65	18	19	NA	NA
As a percentage of 72 hours	33%	90%	25%	26%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.0	2.7	0.8	0.8	NA	NA
As a percentage of 3 days	32.87%	89.66%	25.29%	26.30%	NA	NA
Consecutive Trips before pumpout	0.0	1.0	0.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$8,000	\$24,000	\$12,000	\$12,000	NA	NA
Toilet Cost per Car	<u>\$12,000</u>	<u>\$36,000</u>	<u>\$15,000</u>	<u>\$18,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$60,000	\$27,000	\$30,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$1,728	\$864	\$864	NA	NA
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,728	\$5,184	\$2,304	\$2,592	NA	NA
Total Capital Cost	<u>\$21,728</u>	<u>\$65,184</u>	<u>\$29,304</u>	<u>\$32,592</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$576	\$1,728	\$720	\$864	NA	NA
Annual spare parts cost per yr	\$200	\$600	\$270	\$300	NA	NA
Total- Oprtg Non-Trip Related	\$776	\$2,328	\$990	\$1,164	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.20	\$0.89	\$6.38	\$6.32	NA	NA
- Pump out minutes	0.00	1.49	0.14	0.03	NA	NA
- Connect/Disc. minutes	7.0	0.0	10.5	10.5	NA	NA
- Waste Disposal	<u>\$2.94</u>	<u>\$3.23</u>	<u>\$5.73</u>	<u>\$5.51</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$31.14	\$76.13	\$42.12	\$47.83	NA	NA
Train Delay:						
- Pump out volume req'd	100	0	150	150	NA	NA
- # of stops req'd	1	0	1	1	NA	NA
- Pump out minutes	1.7	0.0	2.5	2.5	NA	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>10.5</u>	<u>10.5</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	0	13	13	NA	NA
Average Cost Per Delay	\$5	\$0	\$8	\$8	NA	NA
Subtotal- Oprtg Trip Related	\$36	\$76	\$50	\$56	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	7,884	14,892	10,512	19,929	NA	NA
Days per Trip (min. of 1)	3	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtg Trip Related per Car	\$2,653	\$5,557	\$3,644	\$4,061	NA	NA
Annual Non-Trip Related per Car	\$776	\$2,328	\$990	\$1,164	NA	NA
Annual Oprtg Trip Related per Car Type	\$95,502	\$377,892	\$174,902	\$369,575	NA	NA
Annual Non-Trip Related per Car Type	<u>\$27,936</u>	<u>\$158,304</u>	<u>\$47,520</u>	<u>\$105,924</u>	<u>NA</u>	<u>NA</u>
Total OPRNG COST per Car	\$3,429	\$7,885	\$4,634	\$5,225	NA	NA
Total CAPITAL COST per Car	\$21,728	\$65,184	\$29,304	\$32,592	NA	NA
Total OPRNG COST for all cars	\$123,438	\$536,196	\$222,422	\$475,499	NA	NA
Total CAPITAL COST for all cars	\$782,208	\$4,432,512	\$1,406,592	\$2,965,872	NA	NA

C3.3 City of New Orleans, New Orleans-Chicago

Amtrak Route: City of New Orleans **Route Number:** #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	<u>54000</u> <u>Horizon</u>	<u>4600</u> <u>Coach</u>	<u>4000</u> <u>Coach (HDCP)</u>	<u>9400</u> <u>Dome Coach</u>	<u>28000</u> <u>Am lounge II</u>	<u>2400(30)</u> <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	31.0	18.1	16.6	17.4	18.5	8.3
Capacity Req'd/day (gals)	51.8	30.3	27.8	29.1	30.9	13.9
Adj. Capacity Req'd w/ Buffer	64.7	37.9	34.7	36.3	38.7	17.4
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	87	149	162	155	146	325
As a percentage of 72 hours	121%	207%	225%	216%	202%	451%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	4.8	8.1	8.9	8.5	8.0	17.7
As a percentage of 3 days	158.42%	270.64%	295.24%	282.40%	265.11%	590.48%
Consecutive Trips before pumpout	4.0	8.0	8.0	8.0	7.0	17.0
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$7,500</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$42,500</u>
- Total Equip Cost	\$26,000	\$26,000	\$28,500	\$26,000	\$26,000	\$63,500
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$30,804</u>	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$69,836</u>

Amtrak Route: City of New Orleans **Route Number:** #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$432	\$288	\$288	\$2,448
Annual spare parts cost per yr	<u>\$260</u>	<u>\$260</u>	<u>\$285</u>	<u>\$260</u>	<u>\$260</u>	<u>\$635</u>
Total- Oprtng Non-Trip Related	\$548	\$548	\$717	\$548	\$548	\$3,083
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.52	\$0.30	\$0.28	\$0.29	\$0.31	\$0.14
- Pump out minutes	0.86	0.51	0.46	0.48	0.52	0.23
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.88</u>	<u>\$0.52</u>	<u>\$0.47</u>	<u>\$0.49</u>	<u>\$0.53</u>	<u>\$0.24</u>
Subtotal- End of Day/Trip Srvc	\$13.40	\$12.82	\$18.75	\$12.78	\$12.84	\$102.38
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$13	\$13	\$19	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	22,557	17,082	4,599	2,628	5,475	17,958
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,934	\$2,807	\$4,106	\$2,800	\$2,811	\$22,420
Annual Non-Trip Related per Car	\$548	\$548	\$717	\$548	\$548	\$3,083
Annual Oprtng Trip Related per Car Type	\$302,228	\$218,967	\$86,233	\$33,598	\$70,275	\$1,838,454
Annual Non-Trip Related per Car Type	<u>\$56,444</u>	<u>\$42,744</u>	<u>\$15,057</u>	<u>\$6,576</u>	<u>\$13,700</u>	<u>\$252,806</u>
Total OPRPNG COST per Car	\$3,482	\$3,355	\$4,823	\$3,348	\$3,359	\$25,503
Total CAPITAL COST per Car	\$28,016	\$28,016	\$30,804	\$28,016	\$28,016	\$69,836
Total OPRPNG COST for all cars	\$358,672	\$261,711	\$101,290	\$40,174	\$83,975	\$2,091,260
Total CAPITAL COST for all cars	\$2,885,648	\$2,185,248	\$646,884	\$336,192	\$700,400	\$5,726,552

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	0.0
Capacity Req'd/day (gals)						
Capacity Req'd/day (gals)	28.1	16.5	15.1	15.8	16.8	7.5
Adj. Capacity Req'd w/ Buffer	35.1	20.6	18.9	19.7	21.0	9.4
Tank Capacity per Car (gals)	27	27	40.5	27	27	229.5
Continuous Service Hours Supported						
As a percentage of 72 hours	18 26%	31 44%	52 72%	33 46%	31 43%	584 811%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported						
As a percentage of 3 days	1.0 33.53%	1.7 57.27%	2.8 93.72%	1.8 59.76%	1.7 56.10%	31.9 1062.14%
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	1.0	31.0
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$6,500	\$6,500	\$9,750	\$6,500	\$6,500	\$55,250
- Total Equip Cost	\$6,500	\$6,500	\$9,750	\$6,500	\$6,500	\$55,250
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$576	\$576	\$864	\$576	\$576	\$4,896
- Total Installation Cost	\$576	\$576	\$864	\$576	\$576	\$4,896
Total Capital Cost	\$7,076	\$7,076	\$10,614	\$7,076	\$7,076	\$60,146

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$864	\$576	\$576	\$4,896
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$1,152	\$1,152	\$1,728	\$1,152	\$1,152	\$9,792
Annual spare parts cost per yr	\$65	\$65	\$98	\$65	\$65	\$553
Total- Oprtg Non-Trip Related	\$1,217	\$1,217	\$1,826	\$1,217	\$1,217	\$10,345
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.28	\$0.16	\$0.15	\$0.16	\$0.17	\$0.08
- Pump out minutes	0.47	0.27	0.25	0.26	0.28	0.13
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.62</u>	<u>\$0.36</u>	<u>\$0.33</u>	<u>\$0.35</u>	<u>\$0.37</u>	<u>\$0.17</u>
Subtotal- End of Day/Trip Srvc	\$12.90	\$12.53	\$18.48	\$12.50	\$12.54	\$102.24
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtg Trip Related	\$13	\$13	\$18	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	22,557	17,082	4,599	2,628	5,475	17,958
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,825	\$2,743	\$4,048	\$2,739	\$2,746	\$22,391
Annual Non-Trip Related per Car	\$1,217	\$1,217	\$1,826	\$1,217	\$1,217	\$10,345
Annual Oprtg Trip Related per Car Type	\$290,982	\$213,982	\$85,003	\$32,863	\$68,644	\$1,836,051
Annual Non-Trip Related per Car Type	<u>\$125,351</u>	<u>\$94,926</u>	<u>\$38,336</u>	<u>\$14,604</u>	<u>\$30,425</u>	<u>\$848,249</u>
Total OPRTNG COST per Car	\$4,042	\$3,960	\$5,873	\$3,956	\$3,963	\$32,735
Total CAPITAL COST per Car	\$7,076	\$7,076	\$10,614	\$7,076	\$7,076	\$60,146
Total OPRTNG COST for all cars	\$416,333	\$308,908	\$123,338	\$47,467	\$99,069	\$2,684,300
Total CAPITAL COST for all cars	\$728,828	\$551,928	\$222,894	\$84,912	\$176,900	\$4,931,972

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	84.6	49.5	45.4	47.5	50.6	22.7
Capacity Req'd/day (gals)	92.8	54.3	49.8	52.0	55.4	24.9
Adj. Capacity Req'd w/ Buffer	115.9	67.9	62.2	65.0	69.3	31.1
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	62	106	116	111	104	231
As a percentage of 72 hours	86%	147%	161%	154%	144%	321%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	3.4	5.8	6.3	6.0	5.7	12.6
As a percentage of 3 days	112.93%	192.93%	210.46%	201.31%	188.99%	420.93%
Consecutive Trips before pumpout	3.0	5.0	6.0	6.0	5.0	12.0

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$15,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$85,000</u>
- Total Equip Cost	\$20,000	\$20,000	\$25,000	\$20,000	\$20,000	\$95,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$5,472
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$26,440</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$100,472</u>

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$432	\$288	\$288	\$2,448
Annual spare parts cost per yr	<u>\$200</u>	<u>\$200</u>	<u>\$250</u>	<u>\$200</u>	<u>\$200</u>	<u>\$950</u>
Total- Oprtng Non-Trip Related	\$488	\$488	\$682	\$488	\$488	\$3,398
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.93	\$0.54	\$0.50	\$0.52	\$0.55	\$0.25
- Pump out minutes	1.55	0.90	0.83	0.87	0.92	0.41
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$1.58</u>	<u>\$0.92</u>	<u>\$0.85</u>	<u>\$0.88</u>	<u>\$0.94</u>	<u>\$0.42</u>
Subtotal- End of Day/Trip Srvc	\$14.50	\$13.47	\$19.34	\$13.40	\$13.50	\$102.67
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$15	\$13	\$19	\$13	\$13	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	22,557	17,082	4,599	2,628	5,475	17,958
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,176	\$2,949	\$4,236	\$2,936	\$2,956	\$22,485
Annual Non-Trip Related per Car	\$488	\$488	\$682	\$488	\$488	\$3,398
Annual Oprtng Trip Related per Car Type	\$327,173	\$230,025	\$88,962	\$35,228	\$73,893	\$1,843,782
Annual Non-Trip Related per Car Type	<u>\$50,264</u>	<u>\$38,064</u>	<u>\$14,322</u>	<u>\$5,856</u>	<u>\$12,200</u>	<u>\$278,636</u>
Total OPRTNG COST per Car	\$3,664	\$3,437	\$4,918	\$3,424	\$3,444	\$25,883
Total CAPITAL COST per Car	\$21,152	\$21,152	\$26,440	\$21,152	\$21,152	\$100,472
Total OPRTNG COST for all cars	\$377,437	\$268,089	\$103,284	\$41,084	\$86,093	\$2,122,418
Total CAPITAL COST for all cars	\$2,178,656	\$1,649,856	\$555,240	\$253,824	\$528,800	\$8,238,704

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 *.All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	23.1	13.5	12.4	13.0	13.8	6.2
Capacity Req'd/day (gals)	45.8	26.8	24.6	25.7	27.4	12.3
Adj. Capacity Req'd w/ Buffer	57.2	33.5	30.7	32.1	34.2	15.4
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	84	143	156	150	140	313
As a percentage of 72 hours	116%	199%	217%	208%	195%	434%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	4.6	7.8	8.5	8.2	7.7	17.1
As a percentage of 3 days	152.53%	260.58%	284.27%	271.91%	255.26%	568.53%
Consecutive Trips before pumpout	4.0	7.0	8.0	8.0	7.0	17.0

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$8,700</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>
- Total Equip Cost	\$17,800	\$17,800	\$20,700	\$17,800	\$17,800	\$61,300
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	\$19,816	\$19,816	\$23,004	\$19,816	\$19,816	\$67,636

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$432	\$288	\$288	\$2,448
Annual spare parts cost per yr	\$178	\$178	\$207	\$178	\$178	\$613
Total- Oprtng Non-Trip Related	\$466	\$466	\$639	\$466	\$466	\$3,061
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.46	\$0.27	\$0.25	\$0.26	\$0.27	\$0.12
- Pump out minutes	0.76	0.45	0.41	0.43	0.46	0.20
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	\$0.78	\$0.46	\$0.42	\$0.44	\$0.47	\$0.21
Subtotal- End of Day/Trip Srv	\$13.24	\$12.72	\$18.66	\$12.69	\$12.74	\$102.33
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$13	\$13	\$19	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	22,557	17,082	4,599	2,628	5,475	17,958
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,899	\$2,786	\$4,087	\$2,780	\$2,790	\$22,411
Annual Non-Trip Related per Car	\$466	\$466	\$639	\$466	\$466	\$3,061
Annual Oprtng Trip Related per Car Type	\$298,566	\$217,344	\$85,832	\$33,358	\$69,744	\$1,837,671
Annual Non-Trip Related per Car Type	\$47,998	\$36,348	\$13,419	\$5,592	\$11,650	\$251,002
Total OPRTNG COST per Car	\$3,365	\$3,252	\$4,726	\$3,246	\$3,256	\$25,472
Total CAPITAL COST per Car	\$19,816	\$19,816	\$23,004	\$19,816	\$19,816	\$67,636
Total OPRTNG COST for all cars	\$346,564	\$253,692	\$99,251	\$38,950	\$81,394	\$2,088,673
Total CAPITAL COST for all cars	\$2,041,048	\$1,545,648	\$483,084	\$237,792	\$495,400	\$5,546,152

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	129.5	75.8	69.5	72.6	77.4	34.7
Capacity Req'd/day (gals)	127.0	74.3	68.1	71.2	75.9	34.1
Adj. Capacity Req'd w/ Buffer	158.8	92.9	85.2	89.1	94.9	42.6
Tank Capacity per Car (gals)	100	100	100	100	100	450
Continuous Service Hours Supported	15	26	28	27	25	254
As a percentage of 72 hours	21%	36%	39%	37%	35%	352%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	0.8	1.4	1.5	1.5	1.4	13.8
As a percentage of 3 days	27.49%	46.96%	51.23%	49.01%	46.01%	461.10%
Consecutive Trips before pumpout	0.0	1.0	1.0	1.0	1.0	13.0
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$36,000
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$9,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$51,000</u>
- Total Equip Cost	\$14,000	\$14,000	\$17,000	\$14,000	\$14,000	\$87,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$2,592
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$7,488
Total Capital Cost	<u>\$15,152</u>	<u>\$15,152</u>	<u>\$18,440</u>	<u>\$15,152</u>	<u>\$15,152</u>	<u>\$94,488</u>

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$432	\$288	\$288	\$2,448
Annual spare parts cost per yr	<u>\$140</u>	<u>\$140</u>	<u>\$170</u>	<u>\$140</u>	<u>\$140</u>	<u>\$870</u>
Total- Oprtng Non-Trip Related	\$428	\$428	\$602	\$428	\$428	\$3,318
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.47	\$0.74	\$0.68	\$0.71	\$0.76	\$0.34
- Pump out minutes	0.45	1.24	1.14	1.19	1.26	0.57
- Connect/Disc. minutes	7.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$2.16</u>	<u>\$1.26</u>	<u>\$1.16</u>	<u>\$1.21</u>	<u>\$1.29</u>	<u>\$0.58</u>
Subtotal- End of Day/Trip Srvc	\$18.63	\$14.01	\$19.84	\$13.92	\$14.05	\$102.92
Train Delay:						
- Pump out volume req'd	100	0	0	0	0	0
- # of stops req'd	1	0	0	0	0	0
- Pump out minutes	1.7	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	9	0	0	0	0	0
Average Cost Per Delay	\$5	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$24	\$14	\$20	\$14	\$14	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	22,557	17,082	4,599	2,628	5,475	17,958
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$5,219	\$3,068	\$4,345	\$3,049	\$3,077	\$22,539
Annual Non-Trip Related per Car	\$428	\$428	\$602	\$428	\$428	\$3,318
Annual Oprtng Trip Related per Car Type	\$537,514	\$239,273	\$91,244	\$36,591	\$76,919	\$1,848,238
Annual Non-Trip Related per Car Type	<u>\$44,084</u>	<u>\$33,384</u>	<u>\$12,642</u>	<u>\$5,136</u>	<u>\$10,700</u>	<u>\$272,076</u>
Total OPRTNG COST per Car	\$5,647	\$3,496	\$4,947	\$3,477	\$3,505	\$25,857
Total CAPITAL COST per Car	\$15,152	\$15,152	\$18,440	\$15,152	\$15,152	\$94,488
Total OPRTNG COST for all cars	\$581,598	\$272,657	\$103,886	\$41,727	\$87,619	\$2,120,314
Total CAPITAL COST for all cars	\$1,560,656	\$1,181,856	\$387,240	\$181,824	\$378,800	\$7,748,016

C3.4 Silver Meteor, New York-Tampa

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	22.3	18.5	8.3	15.1	12.9	NA
Capacity Req'd/day (gals)	47.3	39.3	17.6	32.1	27.3	NA
Adj. Capacity Req'd w/ Buffer	59.2	49.1	22.1	40.1	34.1	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	95	115	256	141	165	NA
As a percentage of 72 hours	132%	159%	355%	195%	230%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	4.1	4.9	11.0	6.0	7.1	NA
As a percentage of 3 days	136.50%	164.36%	366.07%	201.34%	236.87%	NA
Consecutive Trips before pumpout	4.0	4.0	10.0	6.0	7.0	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$42,500</u>	<u>\$80,000</u>	<u>\$42,500</u>	<u>NA</u>
- Total Equip Cost	\$26,000	\$26,000	\$63,500	\$101,000	\$63,500	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$69,836</u>	<u>\$111,656</u>	<u>\$69,836</u>	<u>NA</u>

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$2,448	\$4,608	\$2,448	NA
Annual spare parts cost per yr	<u>\$260</u>	<u>\$260</u>	<u>\$635</u>	<u>\$1,010</u>	<u>\$635</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$548	\$548	\$3,083	\$5,618	\$3,083	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.47	\$0.39	\$0.18	\$0.32	\$0.27	NA
- Pump out minutes	0.79	0.66	0.29	0.53	0.45	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.80</u>	<u>\$0.67</u>	<u>\$0.30</u>	<u>\$0.55</u>	<u>\$0.46</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$13.28	\$13.06	\$102.48	\$192.87	\$102.74	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$102	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	26,061	5,475	17,958	3,504	438	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtng Trip Related per Car	\$1,454	\$1,430	\$11,221	\$21,119	\$11,250	NA
Annual Non-Trip Related per Car	\$548	\$548	\$3,083	\$5,618	\$3,083	NA
Annual Oprtng Trip Related per Car Type	\$173,018	\$35,755	\$920,137	\$337,902	\$22,499	NA
Annual Non-Trip Related per Car Type	<u>\$65,212</u>	<u>\$13,700</u>	<u>\$252,806</u>	<u>\$89,888</u>	<u>\$6,166</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,002	\$1,978	\$14,304	\$26,737	\$14,333	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$69,836	\$111,656	\$69,836	NA
Total OPRTNG COST for all cars	\$238,230	\$49,455	\$1,172,943	\$427,790	\$28,665	NA
Total CAPITAL COST for all cars	\$3,333,904	\$700,400	\$5,726,552	\$1,786,496	\$139,672	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	NA
Capacity Req'd/day (gals)	25.7	21.3	9.6	17.4	14.8	NA
Adj. Capacity Req'd w/ Buffer	32.1	26.7	12.0	21.8	18.5	NA
Tank Capacity per Car (gals)	27	27	229.5	432	229.5	NA
Continuous Service Hours Supported	20	24	460	476	298	NA
As a percentage of 72 hours	28%	34%	639%	661%	413%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.9	1.0	19.8	20.5	12.8	NA
As a percentage of 3 days	28.89%	34.78%	658.47%	681.71%	426.07%	NA
Consecutive Trips before pumpout	0.0	1.0	19.0	20.0	12.0	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$55,250</u>	<u>\$104,000</u>	<u>\$55,250</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$55,250	\$104,000	\$55,250	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$60,146</u>	<u>\$113,216</u>	<u>\$60,146</u>	<u>NA</u>

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$1,152	\$1,152	\$9,792	\$18,432	\$9,792	NA
Annual spare parts cost per yr	\$65	\$65	\$553	\$1,040	\$553	NA
Total- Oprtg Non-Trip Related	\$1,217	\$1,217	\$10,345	\$19,472	\$10,345	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.20	\$0.21	\$0.10	\$0.17	\$0.15	NA
- Pump out minutes	0.00	0.36	0.16	0.29	0.25	NA
- Connect/Disc. minutes	7.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.47</u>	<u>\$0.21</u>	<u>\$0.38</u>	<u>\$0.33</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$16.77	\$12.68	\$102.31	\$192.56	\$102.47	NA
Train Delay:						
- Pump out volume req'd	27	0	0	0	0	NA
- # of stops req'd	1	0	0	0	0	NA
- Pump out minutes	0.5	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	7	0	0	0	0	NA
Average Cost Per Delay	\$4	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtg Trip Related	\$21	\$13	\$102	\$193	\$102	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	26,061	5,475	17,958	3,504	438	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtg Trip Related per Car	\$2,325	\$1,389	\$11,203	\$21,085	\$11,221	NA
Annual Non-Trip Related per Car	\$1,217	\$1,217	\$10,345	\$19,472	\$10,345	NA
Annual Oprtg Trip Related per Car Type	\$276,707	\$34,719	\$918,611	\$337,361	\$22,442	NA
Annual Non-Trip Related per Car Type	<u>\$144,823</u>	<u>\$30,425</u>	<u>\$848,249</u>	<u>\$311,552</u>	<u>\$20,689</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,542	\$2,606	\$21,547	\$40,557	\$21,565	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$60,146	\$113,216	\$60,146	NA
Total OPRTNG COST for all cars	\$421,530	\$65,144	\$1,766,860	\$648,913	\$43,131	NA
Total CAPITAL COST for all cars	\$842,044	\$176,900	\$4,931,972	\$1,811,456	\$120,292	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	60.9	50.6	22.7	41.3	35.1	NA
Capacity Req'd/day (gals)	84.8	70.4	31.6	57.5	48.8	NA
Adj. Capacity Req'd w/ Buffer	105.9	88.0	39.5	71.8	61.1	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	68	82	182	100	118	NA
As a percentage of 72 hours	94%	114%	253%	139%	164%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	2.9	3.5	7.8	4.3	5.1	NA
As a percentage of 3 days	97.31%	117.16%	260.96%	143.53%	168.85%	NA
Consecutive Trips before pumpout	2.0	3.0	7.0	4.0	5.0	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$85,000</u>	<u>\$160,000</u>	<u>\$85,000</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$95,000	\$170,000	\$95,000	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$5,472	\$9,792	\$5,472	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$100,472</u>	<u>\$179,792</u>	<u>\$100,472</u>	<u>NA</u>

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$2,448	\$4,608	\$2,448	NA
Annual spare parts cost per yr	<u>\$200</u>	<u>\$200</u>	<u>\$950</u>	<u>\$1,700</u>	<u>\$950</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$488	\$488	\$3,398	\$6,308	\$3,398	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.85	\$0.70	\$0.32	\$0.57	\$0.49	NA
- Pump out minutes	1.41	1.17	0.53	0.96	0.81	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$1.44</u>	<u>\$1.20</u>	<u>\$0.54</u>	<u>\$0.98</u>	<u>\$0.83</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$14.29	\$13.90	\$102.85	\$193.55	\$103.32	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$14	\$14	\$103	\$194	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	26,061	5,475	17,958	3,504	438	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtng Trip Related per Car	\$1,565	\$1,522	\$11,262	\$21,194	\$11,313	NA
Annual Non-Trip Related per Car	\$488	\$488	\$3,398	\$6,308	\$3,398	NA
Annual Oprtng Trip Related per Car Type	\$186,186	\$38,053	\$923,520	\$339,102	\$22,627	NA
Annual Non-Trip Related per Car Type	<u>\$58,072</u>	<u>\$12,200</u>	<u>\$278,636</u>	<u>\$100,928</u>	<u>\$6,796</u>	<u>NA</u>
Total OPRTRNG COST per Car	\$2,053	\$2,010	\$14,660	\$27,502	\$14,711	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$100,472	\$179,792	\$100,472	NA
Total OPRTRNG COST for all cars	\$244,258	\$50,253	\$1,202,156	\$440,030	\$29,423	NA
Total CAPITAL COST for all cars	\$2,517,088	\$528,800	\$8,238,704	\$2,876,672	\$200,944	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	16.6	13.8	6.2	11.3	9.6	NA
Capacity Req'd/day (gals)	41.8	34.7	15.6	28.4	24.1	NA
Adj. Capacity Req'd w/ Buffer	52.3	43.4	19.5	35.5	30.1	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	92	111	246	135	159	NA
As a percentage of 72 hours	127%	154%	342%	188%	221%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	3.9	4.7	10.6	5.8	6.8	NA
As a percentage of 3 days	131.43%	158.25%	352.46%	193.86%	228.07%	NA
Consecutive Trips before pumpout	3.0	4.0	10.0	5.0	6.0	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>	<u>\$92,800</u>	<u>\$49,300</u>	NA
- Total Equip Cost	\$17,800	\$17,800	\$61,300	\$104,800	\$61,300	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	NA
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$67,636</u>	<u>\$115,456</u>	<u>\$67,636</u>	NA

Amtrak Route: Silver Meteor Route Number: #87-88
Origin/Destination: New York-Tampa
Length in Miles: 1,270
Length in Hours: 23.28
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Favorable
* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$2,448	\$4,608	\$2,448	NA
Annual spare parts cost per yr	<u>\$178</u>	<u>\$178</u>	<u>\$613</u>	<u>\$1,048</u>	<u>\$613</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$466	\$466	\$3,061	\$5,656	\$3,061	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.42	\$0.35	\$0.16	\$0.28	\$0.24	NA
- Pump out minutes	0.70	0.58	0.26	0.47	0.40	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.71</u>	<u>\$0.59</u>	<u>\$0.27</u>	<u>\$0.48</u>	<u>\$0.41</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.13	\$12.94	\$102.42	\$192.77	\$102.65	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$102	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	26,061	5,475	17,958	3,504	438	NA
Days per Trip (min. of 1)	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Annual Oprtng Trip Related per Car	\$1,438	\$1,417	\$11,215	\$21,108	\$11,240	NA
Annual Non-Trip Related per Car	\$466	\$466	\$3,061	\$5,656	\$3,061	NA
Annual Oprtng Trip Related per Car Type	\$171,085	\$35,418	\$919,640	\$337,726	\$22,481	NA
Annual Non-Trip Related per Car Type	<u>\$55,454</u>	<u>\$11,650</u>	<u>\$251,002</u>	<u>\$90,496</u>	<u>\$6,122</u>	<u>NA</u>
Total OPRTNG COST per Car	\$1,904	\$1,883	\$14,276	\$26,764	\$14,301	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$67,636	\$115,456	\$67,636	NA
Total OPRTNG COST for all cars	\$226,539	\$47,068	\$1,170,642	\$428,222	\$28,603	NA
Total CAPITAL COST for all cars	\$2,358,104	\$495,400	\$5,546,152	\$1,847,296	\$135,272	NA

Route Number: #87-88

	25000	28000	2400(30)	2080	2300	NA
	<u>Amcoach II</u>	<u>Am lounge II</u>	<u>Sleeper 10-6</u>	<u>Slumbercoach 24-</u>	<u>Viewliner-Sleeper</u>	<u>NA</u>
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	93.2	77.4	34.7	63.2	53.7	NA
Capacity Req'd/day (gals)	116.1	96.4	43.3	78.7	66.9	NA
Adj. Capacity Req'd w/ Buffer	145.1	120.5	54.1	98.4	83.6	NA
Tank Capacity per Car (gals)	100	100	450	800	450	NA
Continuous Service Hours Supported	17	20	200	195	129	NA
As a percentage of 72 hours	23%	28%	277%	271%	179%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.7	0.9	8.6	8.4	5.5	NA
As a percentage of 3 days	23.69%	28.52%	285.86%	279.51%	184.97%	NA
Consecutive Trips before pumpout	0.0	0.0	8.0	8.0	5.0	NA

CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$36,000	\$64,000	\$36,000	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$51,000</u>	<u>\$96,000</u>	<u>\$51,000</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$87,000	\$160,000	\$87,000	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$2,592	\$4,608	\$2,592	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$7,488	\$13,824	\$7,488	NA
Total Capital Cost	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$2,448	\$4,608	\$2,448	NA
Annual spare parts cost per yr	<u>\$140</u>	<u>\$140</u>	<u>\$870</u>	<u>\$1,600</u>	<u>\$870</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$428	\$428	\$3,318	\$6,208	\$3,318	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.36	\$4.20	\$0.43	\$0.79	\$0.67	NA
- Pump out minutes	0.27	0.00	0.72	1.31	1.11	NA
- Connect/Disc. minutes	7.0	7.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$1.97</u>	<u>\$1.64</u>	<u>\$0.74</u>	<u>\$1.34</u>	<u>\$1.14</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$18.33	\$17.84	\$103.17	\$194.12	\$103.81	NA
Train Delay:						
- Pump out volume req'd	100	100	0	0	0	NA
- # of stops req'd	1	1	0	0	0	NA
- Pump out minutes	1.7	1.7	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	9	0	0	0	NA
Average Cost Per Delay	\$5	\$5	\$0	\$0	\$0	NA
Subtotal- Oprtg Trip Related	\$24	\$23	\$103	\$194	\$104	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	26,061	5,475	17,958	3,504	438	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$2,577	\$2,523	\$11,297	\$21,257	\$11,367	NA
Annual Non-Trip Related per Car	\$428	\$428	\$3,318	\$6,208	\$3,318	NA
Annual Oprtg Trip Related per Car Type	\$306,655	\$63,068	\$926,350	\$340,106	\$22,733	NA
Annual Non-Trip Related per Car Type	<u>\$50,932</u>	<u>\$10,700</u>	<u>\$272,076</u>	<u>\$99,328</u>	<u>\$6,636</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,005	\$2,951	\$14,615	\$27,465	\$14,685	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA
Total OPRTNG COST for all cars	\$357,587	\$73,768	\$1,198,426	\$439,434	\$29,369	NA
Total CAPITAL COST for all cars	\$1,803,088	\$378,800	\$7,748,016	\$2,781,184	\$188,976	NA

C3.5 Benjamin Franklin, Boston-Philadelphia

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcale</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	20.0	31.8	15.5	NA	NA	NA
Capacity Req'd/day (gals)	23.9	37.9	18.5	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	29.9	47.4	23.1	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	189	119	244	NA	NA	NA
As a percentage of 72 hours	262%	165%	339%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	14.4	9.1	18.6	NA	NA	NA
As a percentage of 3 days	479.88%	302.78%	620.34%	NA	NA	NA
Consecutive Trips before pumpout	28.0	18.0	37.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$260</u>	<u>\$260</u>	<u>\$260</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$548	\$548	\$548	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.24	\$0.38	\$0.19	NA	NA	NA
- Pump out minutes	0.40	0.63	0.31	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.81</u>	<u>\$1.29</u>	<u>\$0.63</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.05	\$13.67	\$12.81	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$14	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	9,855	58,254	5,256	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,859	\$2,993	\$2,806	NA	NA	NA
Annual Non-Trip Related per Car	\$548	\$548	\$548	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$128,634	\$796,238	\$67,352	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$24,660</u>	<u>\$145,768</u>	<u>\$13,152</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,407	\$3,541	\$3,354	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$153,294	\$942,006	\$80,504	NA	NA	NA
Total CAPITAL COST for all cars	\$1,260,720	\$7,452,256	\$672,384	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 Amcafe	21000 Amcoach	20100 Amclub	NA NA	NA NA	NA NA
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	13.0	20.6	10.0	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	16.2	25.7	12.6	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	40	25	52	NA	NA	NA
As a percentage of 72 hours	55%	35%	72%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	3.0	1.9	3.9	NA	NA	NA
As a percentage of 3 days	101.55%	64.07%	131.28%	NA	NA	NA
Consecutive Trips before pumpout	6.0	3.0	7.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$6,500	\$6,500	\$6,500	NA	NA	NA
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	\$7,076	\$7,076	\$7,076	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$1,152	\$1,152	\$1,152	NA	NA	NA
Annual spare parts cost per yr	<u>\$65</u>	<u>\$65</u>	<u>\$65</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,217	\$1,217	\$1,217	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.21	\$0.10	NA	NA	NA
- Pump out minutes	0.22	0.34	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.91</u>	<u>\$0.44</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$12.70	\$13.11	\$12.54	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	9,855	58,254	5,256	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,782	\$2,871	\$2,747	NA	NA	NA
Annual Non-Trip Related per Car	\$1,217	\$1,217	\$1,217	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$125,172	\$763,808	\$65,924	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$54,765</u>	<u>\$323,722</u>	<u>\$29,208</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,999	\$4,088	\$3,964	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$179,937	\$1,087,530	\$95,132	NA	NA	NA
Total CAPITAL COST for all cars	\$318,420	\$1,882,216	\$169,824	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 Amcafe	21000 Amcoach	20100 Amclub	NA	NA	NA
				NA	NA	NA
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	54.7	86.7	42.3	NA	NA	NA
Capacity Req'd/day (gals)	42.8	67.9	33.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	53.6	84.9	41.4	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	134	85	174	NA	NA	NA
As a percentage of 72 hours	187%	118%	241%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	10.3	6.5	13.3	NA	NA	NA
As a percentage of 3 days	342.09%	215.84%	442.21%	NA	NA	NA
Consecutive Trips before pumpout	20.0	12.0	26.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$10,000	\$10,000	\$10,000	NA	NA	NA
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$21,152	\$21,152	\$21,152	NA	NA	NA

Amtrak Route: Benjamin Franklin Route Number: #193
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$200</u>	<u>\$200</u>	<u>\$200</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$488	\$488	\$488	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.43	\$0.68	\$0.33	NA	NA	NA
- Pump out minutes	0.71	1.13	0.55	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.46</u>	<u>\$2.31</u>	<u>\$1.13</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.89	\$14.99	\$13.46	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$14	\$15	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	9,855	58,254	5,256	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,041	\$3,282	\$2,947	NA	NA	NA
Annual Non-Trip Related per Car	\$488	\$488	\$488	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$136,838	\$873,098	\$70,737	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$21,960</u>	<u>\$129,808</u>	<u>\$11,712</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,529	\$3,770	\$3,435	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$158,798	\$1,002,906	\$82,449	NA	NA	NA
Total CAPITAL COST for all cars	\$951,840	\$5,626,432	\$507,648	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	14.9	23.7	11.6	NA	NA	NA
Capacity Req'd/day (gals)	21.1	33.5	16.4	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	26.4	41.9	20.4	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	182	115	235	NA	NA	NA
As a percentage of 72 hours	252%	159%	326%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	13.9	8.7	17.9	NA	NA	NA
As a percentage of 3 days	462.05%	291.53%	597.28%	NA	NA	NA
Consecutive Trips before pumpout	27.0	17.0	35.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Evac
Equipment: Ultimate
Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$178</u>	<u>\$178</u>	<u>\$178</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$466	\$466	\$466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.21	\$0.34	\$0.16	NA	NA	NA
- Pump out minutes	0.35	0.56	0.27	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.72</u>	<u>\$1.14</u>	<u>\$0.56</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$12.93	\$13.47	\$12.72	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	9,855	58,254	5,256	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,832	\$2,951	\$2,786	NA	NA	NA
Annual Non-Trip Related per Car	\$466	\$466	\$466	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$127,430	\$784,956	\$66,855	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$20,970</u>	<u>\$123,956</u>	<u>\$11,184</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,298	\$3,417	\$3,252	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$148,400	\$908,912	\$78,039	NA	NA	NA
Total CAPITAL COST for all cars	\$891,720	\$5,271,056	\$475,584	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcade</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	83.7	132.6	64.7	NA	NA	NA
Capacity Req'd/day (gals)	58.7	93.0	45.4	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	73.3	116.2	56.7	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	33	21	42	NA	NA	NA
As a percentage of 72 hours	45%	29%	59%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	2.5	1.6	3.2	NA	NA	NA
As a percentage of 3 days	83.28%	52.54%	107.65%	NA	NA	NA
Consecutive Trips before pumpout	4.0	3.0	6.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$140</u>	<u>\$140</u>	<u>\$140</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$428	\$428	\$428	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.59	\$0.93	\$0.45	NA	NA	NA
- Pump out minutes	0.98	1.55	0.76	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.99</u>	<u>\$3.16</u>	<u>\$1.54</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$14.58	\$16.09	\$14.00	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$15	\$16	\$14	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	9,855	58,254	5,256	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,193	\$3,524	\$3,065	NA	NA	NA
Annual Non-Trip Related per Car	\$428	\$428	\$428	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$143,699	\$937,376	\$73,568	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$19,260</u>	<u>\$113,848</u>	<u>\$10,272</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,621	\$3,952	\$3,493	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$162,959	\$1,051,224	\$83,840	NA	NA	NA
Total CAPITAL COST for all cars	\$681,840	\$4,030,432	\$363,648	NA	NA	NA

C3.6 Metroliner, Washington DC-New York

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Svc Dinette	21900 Met-Svc Coach	20970 Met-Svc Club	NA NA	NA NA	NA NA
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	8.7	22.7	12.5	NA	NA	NA
Capacity Req'd/day (gals)	13.2	34.5	19.0	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	16.5	43.1	23.7	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	341	131	238	NA	NA	NA
As a percentage of 72 hours	474%	182%	330%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	20.5	7.8	14.3	NA	NA	NA
As a percentage of 3 days	682.08%	261.46%	475.39%	NA	NA	NA
Consecutive Trips before pumpout	122.0	47.0	85.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	NA	NA	NA
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$260</u>	<u>\$260</u>	<u>\$260</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$548	\$548	\$548	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.34	\$0.19	NA	NA	NA
- Pump out minutes	0.22	0.57	0.32	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.35</u>	<u>\$3.52</u>	<u>\$1.93</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.48	\$15.86	\$14.12	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$16	\$14	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	2,847	10,950	2,847	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,952	\$3,474	\$3,093	NA	NA	NA
Annual Non-Trip Related per Car	\$548	\$548	\$548	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$38,379	\$173,694	\$40,212	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$7,124</u>	<u>\$27,400</u>	<u>\$7,124</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,500	\$4,022	\$3,641	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$45,503	\$201,094	\$47,336	NA	NA	NA
Total CAPITAL COST for all cars	\$364,208	\$1,400,800	\$364,208	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
Origin/Destination: Washington DC-New York
Length in Miles: 225
Length in Hours: 2.78
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	7.2	18.7	10.3	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	9.0	23.4	12.9	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	72	28	50	NA	NA	NA
As a percentage of 72 hours	100%	38%	70%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	4.3	1.7	3.0	NA	NA	NA
As a percentage of 3 days	144.34%	55.33%	100.60%	NA	NA	NA
Consecutive Trips before pumpout	25.0	9.0	18.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$1,152	\$1,152	\$1,152	NA	NA	NA
Annual spare parts cost per yr	<u>\$65</u>	<u>\$65</u>	<u>\$65</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$1,217	\$1,217	\$1,217	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.07	\$0.19	\$0.10	NA	NA	NA
- Pump out minutes	0.12	0.31	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.95</u>	<u>\$2.47</u>	<u>\$1.36</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$13.02	\$14.66	\$13.46	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$15	\$13	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	2,847	10,950	2,847	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,851	\$3,210	\$2,948	NA	NA	NA
Annual Non-Trip Related per Car	\$1,217	\$1,217	\$1,217	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$37,066	\$160,513	\$38,327	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$15,821</u>	<u>\$60,850</u>	<u>\$15,821</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,068	\$4,427	\$4,165	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$52,887	\$221,363	\$54,148	NA	NA	NA
Total CAPITAL COST for all cars	\$91,988	\$353,800	\$91,988	NA	NA	NA

Amtrak Route: Metroliner **Route Number:** #200
Origin/Destination: Washington DC-New York
Length in Miles: 225
Length in Hours: 2.78
Expected Trips per Day: 6
Manufacturer: Microphor
Equipment: Gravity
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	23.7	61.9	34.1	NA	NA	NA
Capacity Req'd/day (gals)	23.7	61.8	34.0	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	29.6	77.2	42.5	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	243	93	170	NA	NA	NA
As a percentage of 72 hours	338%	130%	236%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	14.6	5.6	10.2	NA	NA	NA
As a percentage of 3 days	486.23%	186.39%	338.88%	NA	NA	NA
Consecutive Trips before pumpout	87.0	33.0	60.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	\$200	\$200	\$200	NA	NA	NA
Total- Oprtng Non-Trip Related	\$488	\$488	\$488	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.24	\$0.62	\$0.34	NA	NA	NA
- Pump out minutes	0.39	1.03	0.57	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$2.41	\$6.30	\$3.46	NA	NA	NA
Subtotal- End of Day/Trip Svc	\$14.65	\$18.92	\$15.80	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$15	\$19	\$16	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	2,847	10,950	2,847	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,209	\$4,143	\$3,461	NA	NA	NA
Annual Non-Trip Related per Car	\$488	\$488	\$488	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$41,713	\$207,140	\$44,995	NA	NA	NA
Annual Non-Trip Related per Car Type	\$6,344	\$24,400	\$6,344	NA	NA	NA
Total OPRTNG COST per Car	\$3,697	\$4,631	\$3,949	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$48,057	\$231,540	\$51,339	NA	NA	NA
Total CAPITAL COST for all cars	\$274,976	\$1,057,600	\$274,976	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	6.5	16.9	9.3	NA	NA	NA
Capacity Req'd/day (gals)	11.7	30.5	16.8	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	14.6	38.1	21.0	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	329	126	229	NA	NA	NA
As a percentage of 72 hours	456%	175%	318%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	19.7	7.6	13.7	NA	NA	NA
As a percentage of 3 days	656.73%	251.74%	457.72%	NA	NA	NA
Consecutive Trips before pumpout	118.0	45.0	82.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dnette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$178</u>	<u>\$178</u>	<u>\$178</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$466	\$466	\$466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.12	\$0.30	\$0.17	NA	NA	NA
- Pump out minutes	0.19	0.51	0.28	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.19</u>	<u>\$3.11</u>	<u>\$1.71</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.31	\$15.41	\$13.88	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$15	\$14	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	2,847	10,950	2,847	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,915	\$3,376	\$3,039	NA	NA	NA
Annual Non-Trip Related per Car	\$466	\$466	\$466	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$37,890	\$168,784	\$39,510	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$6,058</u>	<u>\$23,300</u>	<u>\$6,058</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,381	\$3,842	\$3,505	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$43,948	\$192,084	\$45,568	NA	NA	NA
Total CAPITAL COST for all cars	\$257,608	\$990,800	\$257,608	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	36.3	94.7	52.1	NA	NA	NA
Capacity Req'd/day (gals)	32.4	84.6	46.5	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	40.5	105.7	58.1	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	59	23	41	NA	NA	NA
As a percentage of 72 hours	82%	32%	57%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	3.6	1.4	2.5	NA	NA	NA
As a percentage of 3 days	118.36%	45.37%	82.50%	NA	NA	NA
Consecutive Trips before pumpout	21.0	8.0	14.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$140</u>	<u>\$140</u>	<u>\$140</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$428	\$428	\$428	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.32	\$0.85	\$0.47	NA	NA	NA
- Pump out minutes	0.54	1.41	0.78	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$3.31</u>	<u>\$8.63</u>	<u>\$4.74</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$15.63	\$21.47	\$17.21	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$16	\$21	\$17	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	2,847	10,950	2,847	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,423	\$4,702	\$3,769	NA	NA	NA
Annual Non-Trip Related per Car	\$428	\$428	\$428	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$44,501	\$235,111	\$48,995	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$5,564</u>	<u>\$21,400</u>	<u>\$5,564</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,851	\$5,130	\$4,197	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$50,065	\$256,511	\$54,559	NA	NA	NA
Total CAPITAL COST for all cars	\$196,976	\$757,600	\$196,976	NA	NA	NA

C3.7 Hudson Highlander, Albany-New York

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	31.8	8.7	22.7	NA	NA	NA
Capacity Req'd/day (gals)	45.5	12.5	32.5	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	56.9	15.6	40.6	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	99	362	139	NA	NA	NA
As a percentage of 72 hours	138%	503%	193%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	6.3	23.0	8.8	NA	NA	NA
As a percentage of 3 days	210.27%	767.93%	294.37%	NA	NA	NA
Consecutive Trips before pumpout	37.0	138.0	52.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$5,000	\$5,000	\$5,000	NA	NA	NA
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

* All data on per car basis (unless noted otherwise)

Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	58,254	5,475	6,789	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,744	\$2,934	\$3,425	NA	NA	NA
Annual Non-Trip Related per Car	\$548	\$548	\$548	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$995,920	\$73,340	\$106,181	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$145,768</u>	<u>\$13,700</u>	<u>\$16,988</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,292	\$3,482	\$3,973	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$1,141,688	\$87,040	\$123,169	NA	NA	NA
Total CAPITAL COST for all cars	\$7,452,256	\$700,400	\$868,496	NA	NA	NA

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	24.7	6.8	17.6	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	30.9	8.5	22.1	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	21	77	29	NA	NA	NA
As a percentage of 72 hours	29%	106%	41%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	1.3	4.9	1.9	NA	NA	NA
As a percentage of 3 days	44.50%	162.51%	62.29%	NA	NA	NA
Consecutive Trips before pumpout	8.0	29.0	11.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$6,500	\$6,500	\$6,500	NA	NA	NA
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	\$7,076	\$7,076	\$7,076	NA	NA	NA

* All data on per car basis (unless noted otherwise)

OPERATING COSTS

Trip Related Costs:

Total CAPITAL COST for all cars	\$1,882,216	\$176,900	\$219,356	NA	NA	NA
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Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	86.7	23.7	61.9	NA	NA	NA
Capacity Req'd/day (gals)	81.5	22.3	58.2	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	101.9	27.9	72.8	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	71	258	99	NA	NA	NA
As a percentage of 72 hours	98%	359%	137%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	4.5	16.4	6.3	NA	NA	NA
As a percentage of 3 days	149.89%	547.42%	209.85%	NA	NA	NA
Consecutive Trips before pumpout	26.0	98.0	37.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	NA	NA	NA
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	NA	NA	NA
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$21,152	\$21,152	\$21,152	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$200</u>	<u>\$200</u>	<u>\$200</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$488	\$488	\$488	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.81	\$0.22	\$0.58	NA	NA	NA
- Pump out minutes	1.36	0.37	0.97	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$8.31</u>	<u>\$2.28</u>	<u>\$5.94</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$21.13	\$14.50	\$18.52	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$21	\$14	\$19	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	58,254	5,475	6,789	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,627	\$3,175	\$4,056	NA	NA	NA
Annual Non-Trip Related per Car	\$488	\$488	\$488	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,230,690	\$79,381	\$125,724	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$129,808</u>	<u>\$12,200</u>	<u>\$15,128</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,115	\$3,663	\$4,544	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$1,360,498	\$91,581	\$140,852	NA	NA	NA
Total CAPITAL COST for all cars	\$5,626,432	\$528,800	\$655,712	NA	NA	NA

Amtrak Route:	Hudson Highlander	Route Number:	#242
Origin/Destination:	Albany-New York City		
Length in Miles:	142		
Length in Hours:	2.62		
Expected Trips per Day:	6		
Manufacturer:	Evac		
Equipment:	Ultimate		
Scenario:	Favorable		

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	23.7	6.5	16.9	NA	NA	NA
Capacity Req'd/day (gals)	40.2	11.0	28.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	50.3	13.8	35.9	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	95	349	134	NA	NA	NA
As a percentage of 72 hours	133%	484%	186%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	6.1	22.2	8.5	NA	NA	NA
As a percentage of 3 days	202.45%	739.39%	283.43%	NA	NA	NA
Consecutive Trips before pumpout	36.0	133.0	51.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$178</u>	<u>\$178</u>	<u>\$178</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$466	\$466	\$466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.40	\$0.11	\$0.29	NA	NA	NA
- Pump out minutes	0.67	0.18	0.48	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$4.10</u>	<u>\$1.12</u>	<u>\$2.93</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$16.50	\$13.23	\$15.22	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$17	\$13	\$15	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	58,254	5,475	6,789	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,615	\$2,898	\$3,333	NA	NA	NA
Annual Non-Trip Related per Car	\$466	\$466	\$466	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$961,459	\$72,453	\$103,312	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$123,956</u>	<u>\$11,650</u>	<u>\$14,446</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,081	\$3,364	\$3,799	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$1,085,415	\$84,103	\$117,758	NA	NA	NA
Total CAPITAL COST for all cars	\$5,271,056	\$495,400	\$614,296	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise).

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	132.6	36.3	94.7	NA	NA	NA
Capacity Req'd/day (gals)	111.6	30.6	79.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	139.5	38.2	99.6	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	17	63	24	NA	NA	NA
As a percentage of 72 hours	24%	87%	33%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	1.1	4.0	1.5	NA	NA	NA
As a percentage of 3 days	36.49%	133.26%	51.08%	NA	NA	NA
Consecutive Trips before pumpout	6.0	23.0	9.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Favorable
* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$288	\$288	\$288	NA	NA	NA
Annual spare parts cost per yr	<u>\$140</u>	<u>\$140</u>	<u>\$140</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total Oprtng Non-Trip Related	\$428	\$428	\$428	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.12	\$0.31	\$0.80	NA	NA	NA
- Pump out minutes	1.86	0.51	1.33	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$11.38</u>	<u>\$3.12</u>	<u>\$8.13</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$24.50	\$15.42	\$20.93	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$24	\$15	\$21	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	58,254	5,475	6,789	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$5,365	\$3,377	\$4,583	NA	NA	NA
Annual Non-Trip Related per Car	\$428	\$428	\$428	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,427,031	\$84,434	\$142,068	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$113,848</u>	<u>\$10,700</u>	<u>\$13,268</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,793	\$3,805	\$5,011	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$1,540,879	\$95,134	\$155,336	NA	NA	NA
Total CAPITAL COST for all cars	\$4,030,432	\$378,800	\$469,712	NA	NA	NA

C3.8 Electric City Express, Schenectady-New York

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	10.2	27.2	19.7	15.1	NA	NA
Capacity Req'd/day (gals)	11.3	30.1	21.7	16.7	NA	NA
Adj. Capacity Req'd w/ Buffer	14.1	37.6	27.1	20.9	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	400	150	208	270	NA	NA
As a percentage of 72 hours	556%	208%	289%	375%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	33.0	12.4	17.1	22.3	NA	NA
As a percentage of 3 days	1100.49%	412.68%	571.41%	742.83%	NA	NA
Consecutive Trips before pumpout	132.0	49.0	68.0	89.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$2,500</u>	<u>\$5,000</u>	<u>\$2,500</u>	<u>\$2,500</u>	NA	NA
- Total Equip Cost	\$23,500	\$26,000	\$23,500	\$23,500	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	\$25,228	\$28,016	\$25,228	\$25,228	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$144	\$288	\$144	\$144	NA	NA
Annual spare parts cost per yr	<u>\$235</u>	<u>\$260</u>	<u>\$235</u>	<u>\$235</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$379	\$548	\$379	\$379	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.11	\$0.30	\$0.22	\$0.17	NA	NA
- Pump out minutes	0.19	0.50	0.36	0.28	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.77</u>	<u>\$2.04</u>	<u>\$1.48</u>	<u>\$1.14</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$6.88	\$14.35	\$7.69	\$7.30	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$14	\$8	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,314	4,599	657	3,066	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,507	\$3,142	\$1,685	\$1,599	NA	NA
Annual Non-Trip Related per Car	\$379	\$548	\$379	\$379	NA	NA
Annual Oprtng Trip Related per Car Type	\$9,040	\$65,975	\$5,055	\$22,391	NA	NA
Annual Non-Trip Related per Car Type	<u>\$2,274</u>	<u>\$11,508</u>	<u>\$1,137</u>	<u>\$5,306</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$1,886	\$3,690	\$2,064	\$1,978	NA	NA
Total CAPITAL COST per Car	\$25,228	\$28,016	\$25,228	\$25,228	NA	NA
Total OPRTNG COST for all cars	\$11,314	\$77,483	\$6,192	\$27,697	NA	NA
Total CAPITAL COST for all cars	\$151,368	\$588,336	\$75,684	\$353,192	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	6.1	16.3	11.8	9.1	NA	NA
Adj. Capacity Req'd w/ Buffer	7.7	20.4	14.7	11.3	NA	NA
Tank Capacity per Car (gals)	13.5	27	13.5	13.5	NA	NA
Continuous Service Hours Supported	42	32	22	29	NA	NA
As a percentage of 72 hours	59%	44%	31%	40%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	3.5	2.6	1.8	2.4	NA	NA
As a percentage of 3 days	116.44%	87.33%	60.46%	78.60%	NA	NA
Consecutive Trips before pumpout	13.0	10.0	7.0	9.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$3,250	\$6,500	\$3,250	\$3,250	NA	NA
- Total Equip Cost	\$3,250	\$6,500	\$3,250	\$3,250	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	\$288	\$576	\$288	\$288	NA	NA
- Total Installation Cost	\$288	\$576	\$288	\$288	NA	NA
Total Capital Cost	\$3,538	\$7,076	\$3,538	\$3,538	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$576	\$288	\$288	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$576	\$1,152	\$576	\$576	NA	NA
Annual spare parts cost per yr	<u>\$33</u>	<u>\$65</u>	<u>\$33</u>	<u>\$33</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$609	\$1,217	\$609	\$609	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.06	\$0.16	\$0.12	\$0.09	NA	NA
- Pump out minutes	0.10	0.27	0.20	0.15	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.54</u>	<u>\$1.44</u>	<u>\$1.04</u>	<u>\$0.80</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$6.60	\$13.60	\$7.16	\$6.89	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	\$7	\$14	\$7	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,314	4,599	657	3,066	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$1,445	\$2,978	\$1,567	\$1,509	NA	NA
Annual Non-Trip Related per Car	\$609	\$1,217	\$609	\$609	NA	NA
Annual Oprtg Trip Related per Car Type	\$8,672	\$62,546	\$4,701	\$21,121	NA	NA
Annual Non-Trip Related per Car Type	<u>\$3,651</u>	<u>\$25,557</u>	<u>\$1,826</u>	<u>\$8,519</u>	<u>NA</u>	<u>NA</u>
Total OPRNG COST per Car	\$2,054	\$4,195	\$2,176	\$2,117	NA	NA
Total CAPITAL COST per Car	\$3,538	\$7,076	\$3,538	\$3,538	NA	NA
Total OPRNG COST for all cars	\$12,323	\$88,103	\$6,527	\$29,640	NA	NA
Total CAPITAL COST for all cars	\$21,228	\$148,596	\$10,614	\$49,532	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Microphor
Equipment: Gravity
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	27.9	74.3	53.7	41.3	NA	NA
Capacity Req'd/day (gals)	20.2	53.8	38.9	29.9	NA	NA
Adj. Capacity Req'd w/ Buffer	25.2	67.3	48.6	37.4	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	285	107	148	193	NA	NA
As a percentage of 72 hours	396%	149%	206%	267%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	23.5	8.8	12.2	15.9	NA	NA
As a percentage of 3 days	784.49%	294.18%	407.33%	529.53%	NA	NA
Consecutive Trips before pumpout	94.0	35.0	48.0	63.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$5,000	\$10,000	\$5,000	\$5,000	NA	NA
- Total Equip Cost	\$15,000	\$20,000	\$15,000	\$15,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$288	\$576	\$288	\$288	NA	NA
- Total Installation Cost	\$864	\$1,152	\$864	\$864	NA	NA
Total Capital Cost	\$15,864	\$21,152	\$15,864	\$15,864	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$144	\$288	\$144	\$144	NA	NA
Annual spare parts cost per yr	<u>\$150</u>	<u>\$200</u>	<u>\$150</u>	<u>\$150</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$294	\$488	\$294	\$294	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.20	\$0.54	\$0.39	\$0.30	NA	NA
- Pump out minutes	0.34	0.90	0.65	0.50	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.37</u>	<u>\$3.66</u>	<u>\$2.64</u>	<u>\$2.03</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$7.58	\$16.20	\$9.03	\$8.33	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$8	\$16	\$9	\$8	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,314	4,599	657	3,066	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,659	\$3,548	\$1,978	\$1,825	NA	NA
Annual Non-Trip Related per Car	\$294	\$488	\$294	\$294	NA	NA
Annual Oprtng Trip Related per Car Type	\$9,954	\$74,505	\$5,935	\$25,550	NA	NA
Annual Non-Trip Related per Car Type	<u>\$1,764</u>	<u>\$10,248</u>	<u>\$882</u>	<u>\$4,116</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$1,953	\$4,036	\$2,272	\$2,119	NA	NA
Total CAPITAL COST per Car	\$15,864	\$21,152	\$15,864	\$15,864	NA	NA
Total OPRTNG COST for all cars	\$11,718	\$84,753	\$6,817	\$29,666	NA	NA
Total CAPITAL COST for all cars	\$95,184	\$444,192	\$47,592	\$222,096	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	7.6	20.3	14.7	11.3	NA	NA
Capacity Req'd/day (gals)	10.0	26.6	19.2	14.8	NA	NA
Adj. Capacity Req'd w/ Buffer	12.5	33.2	24.0	18.5	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	385	144	200	260	NA	NA
As a percentage of 72 hours	535%	201%	278%	361%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	31.8	11.9	16.5	21.5	NA	NA
As a percentage of 3 days	1059.58%	397.34%	550.17%	715.22%	NA	NA
Consecutive Trips before pumpout	127.0	47.0	66.0	85.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$2,900</u>	<u>\$5,800</u>	<u>\$2,900</u>	<u>\$2,900</u>	NA	NA
- Total Equip Cost	\$14,900	\$17,800	\$14,900	\$14,900	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	<u>\$16,628</u>	<u>\$19,816</u>	<u>\$16,628</u>	<u>\$16,628</u>	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Favorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	2	2	2	2	2	2
Servicing Cost/Year	\$144	\$288	\$144	\$144	NA	NA
Annual spare parts cost per yr	\$149	\$178	\$149	\$149	NA	NA
Total- Oprng Non-Trip Related	\$293	\$466	\$293	\$293	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.10	\$0.27	\$0.19	\$0.15	NA	NA
- Pump out minutes	0.17	0.44	0.32	0.25	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$0.68	\$1.81	\$1.31	\$1.00	NA	NA
Subtotal- End of Day/Trip Srvc	\$6.78	\$14.07	\$7.50	\$7.15	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$14	\$7	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,314	4,599	657	3,066	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,484	\$3,082	\$1,642	\$1,566	NA	NA
Annual Non-Trip Related per Car	\$293	\$466	\$293	\$293	NA	NA
Annual Oprtng Trip Related per Car Type	\$8,906	\$64,723	\$4,926	\$21,927	NA	NA
Annual Non-Trip Related per Car Type	\$1,758	\$9,786	\$879	\$4,102	NA	NA
Total OPRTNG COST per Car	\$1,777	\$3,548	\$1,935	\$1,859	NA	NA
Total CAPITAL COST per Car	\$16,628	\$19,816	\$16,628	\$16,628	NA	NA
Total OPRTNG COST for all cars	\$10,664	\$74,509	\$5,805	\$26,029	NA	NA
Total CAPITAL COST for all cars	\$99,768	\$416,136	\$49,884	\$232,792	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	6.00	6.00	6.00	6.00	6.00	6.00
Flush efficiency adjustment	1.00	1.00	1.00	1.00	1.00	1.00
Adj. # Flushes/Person-day	6	6	6	6	6	6
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	42.6	113.7	82.1	63.2	NA	NA
Capacity Req'd/day (gals)	27.7	73.7	53.3	41.0	NA	NA
Adj. Capacity Req'd w/ Buffer	34.6	92.2	66.6	51.2	NA	NA
Tank Capacity per Car (gals)	50	100	50	50	NA	NA
Continuous Service Hours Supported	35	26	18	23	NA	NA
As a percentage of 72 hours	48%	36%	25%	33%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	2.9	2.1	1.5	1.9	NA	NA
As a percentage of 3 days	95.49%	71.61%	49.58%	64.45%	NA	NA
Consecutive Trips before pumpout	11.0	8.0	5.0	7.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$4,000	\$8,000	\$4,000	\$4,000	NA	NA
Toilet Cost per Car	<u>\$3,000</u>	<u>\$6,000</u>	<u>\$3,000</u>	<u>\$3,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$7,000	\$14,000	\$7,000	\$7,000	NA	NA
Equipment Installation						
Collection System per Car	\$288	\$576	\$288	\$288	NA	NA
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$1,152	\$576	\$576	NA	NA
Total Capital Cost	<u>\$7,576</u>	<u>\$15,152</u>	<u>\$7,576</u>	<u>\$7,576</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Favorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Servicing Cost/Year	\$144	\$288	\$144	\$144	NA	NA
Annual spare parts cost per yr	<u>\$70</u>	<u>\$140</u>	<u>\$70</u>	<u>\$70</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$214	\$428	\$214	\$214	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.28	\$0.74	\$0.53	\$0.41	NA	NA
- Pump out minutes	0.46	1.23	0.89	0.68	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.88</u>	<u>\$5.01</u>	<u>\$3.62</u>	<u>\$2.79</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$8.16	\$17.75	\$10.15	\$9.20	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$8	\$18	\$10	\$9	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,314	4,599	657	3,066	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,786	\$3,888	\$2,224	\$2,014	NA	NA
Annual Non-Trip Related per Car	\$214	\$428	\$214	\$214	NA	NA
Annual Oprtng Trip Related per Car Type	\$10,718	\$81,639	\$6,671	\$28,193	NA	NA
Annual Non-Trip Related per Car Type	<u>\$1,284</u>	<u>\$8,988</u>	<u>\$642</u>	<u>\$2,996</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$2,000	\$4,316	\$2,438	\$2,228	NA	NA
Total CAPITAL COST per Car	\$7,576	\$15,152	\$7,576	\$7,576	NA	NA
Total OPRTNG COST for all cars	\$12,002	\$90,627	\$7,313	\$31,189	NA	NA
Total CAPITAL COST for all cars	\$45,456	\$318,192	\$22,728	\$106,064	NA	NA

C4 Cost Details, Unfavorable Scenario, Each Toilet System

C4.1 Sunset Limited, New Orleans-Los Angeles

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA	NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	47.3	45.4	27.7	54.2	NA	NA
Capacity Req'd/day (gals)	80.9	77.7	47.5	92.8	NA	NA
Adj. Capacity Req'd w/ Buffer	101.2	97.1	59.3	116.0	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	56	58	95	49	NA	NA
As a percentage of 72 hours	77%	81%	132%	68%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.3	2.4	4.0	2.0	NA	NA
As a percentage of 3 days	77.44%	80.66%	132.00%	67.53%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$15,000	\$10,000	\$30,000	\$5,000	NA	NA
- Total Equip Cost	\$36,000	\$31,000	\$51,000	\$26,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$1,728	\$1,152	\$3,456	\$576	NA	NA
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	\$39,168	\$33,592	\$55,896	\$28,016	NA	NA

Amtrak Route: Sunset Limited
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

Route Number: #1-2

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Annual spare parts cost per yr	\$1,800	\$1,550	\$2,550	\$1,300	NA	NA
Total- Oprtg Non-Trip Related	\$3,528	\$2,702	\$6,006	\$1,876	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.81	\$0.78	\$0.47	\$0.93	NA	NA
- Pump out minutes	1.35	1.29	0.79	1.55	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$2.46	\$2.37	\$1.45	\$2.83	NA	NA
Subtotal- End of Day/Trip Srvc	\$39.27	\$27.14	\$73.92	\$15.75	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	\$39	\$27	\$74	\$16	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	26,572	6,132	19,856	1,752	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$5,734	\$3,963	\$10,792	\$2,300	NA	NA
Annual Non-Trip Related per Car	\$3,528	\$2,702	\$6,006	\$1,876	NA	NA
Annual Oprtg Trip Related per Car Type	\$521,796	\$83,221	\$733,886	\$13,801	NA	NA
Annual Non-Trip Related per Car Type	\$321,048	\$56,742	\$408,408	\$11,256	NA	NA
Total OPRTNG COST per Car	\$9,262	\$6,665	\$16,798	\$4,176	NA	NA
Total CAPITAL COST per Car	\$39,168	\$33,592	\$55,896	\$28,016	NA	NA
Total OPRTNG COST for all cars	\$842,844	\$139,963	\$1,142,294	\$25,057	NA	NA
Total CAPITAL COST for all cars	\$3,564,288	\$705,432	\$3,800,928	\$168,096	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	33.7	32.3	19.8	38.6	NA	NA
Adj. Capacity Req'd w/ Buffer	42.1	40.4	24.7	48.3	NA	NA
Tank Capacity per Car (gals)	81	54	162	27	NA	NA
Continuous Service Hours Supported	46	32	157	13	NA	NA
As a percentage of 72 hours	64%	45%	219%	19%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.9	1.3	6.6	0.6	NA	NA
As a percentage of 3 days	64.14%	44.54%	218.67%	18.65%	NA	NA
Consecutive Trips before pumpout	1.0	0.0	3.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$19,500</u>	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$19,500	\$13,000	\$39,000	\$6,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Total Capital Cost	<u>\$21,228</u>	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>

* All data on per car basis (unless noted otherwise)

Total OPRTRNG COST for all cars	\$1,218,122	\$241,073	\$1,797,140	\$35,316	NA	NA
Total CAPITAL COST for all cars	\$1,931,748	\$297,192	\$2,887,008	\$42,456	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Microphor
Equipment: Gravity
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	129.0	123.8	75.7	147.9	NA	NA
Capacity Req'd/day (gals)	162.7	156.2	95.4	186.5	NA	NA
Adj. Capacity Req'd w/ Buffer	203.3	195.2	119.3	233.2	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	35	37	60	31	NA	NA
As a percentage of 72 hours	49%	51%	84%	43%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	1.5	1.5	2.5	1.3	NA	NA
As a percentage of 3 days	49.18%	51.23%	83.83%	42.89%	NA	NA
Consecutive Trips before pumpout	0.0	0.0	1.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$30,000</u>	<u>\$20,000</u>	<u>\$60,000</u>	<u>\$10,000</u>	NA	NA
- Total Equip Cost	\$40,000	\$30,000	\$70,000	\$20,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	NA	NA
- Total Installation Cost	\$2,304	\$1,728	\$4,032	\$1,152	NA	NA
Total Capital Cost	<u>\$42,304</u>	<u>\$31,728</u>	<u>\$74,032</u>	<u>\$21,152</u>	NA	NA

Route Number: #1-2

3400

C-199

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	35.3	33.8	20.7	40.4	NA	NA
Capacity Req'd/day (gals)	68.9	66.2	40.4	79.0	NA	NA
Adj. Capacity Req'd w/ Buffer	86.2	82.7	50.5	98.8	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	56	58	95	49	NA	NA
As a percentage of 72 hours	77%	81%	132%	67%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.3	2.4	4.0	2.0	NA	NA
As a percentage of 3 days	77.38%	80.60%	131.90%	67.48%	NA	NA
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	\$17,400	\$11,600	\$34,800	\$5,800	NA	NA
- Total Equip Cost	\$29,400	\$23,600	\$46,800	\$17,800	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$1,728	\$1,152	\$3,456	\$576	NA	NA
- Total Installation Cost	\$3,168	\$2,592	\$4,896	\$2,016	NA	NA
Total Capital Cost	\$32,568	\$26,192	\$51,696	\$19,816	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
Origin/Destination: New Orleans-Los Angeles
Length in Miles: 2,033
Length in Hours: 43.00
Expected Trips per Day: 1
Manufacturer: Evac
Equipment: Ultimate
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Annual spare parts cost per yr	\$1,470	\$1,180	\$2,340	\$890	NA	NA
Total- Oprtng Non-Trip Related	\$3,198	\$2,332	\$5,796	\$1,466	NA	NA
Trip Related Costs:						
Trip maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.69	\$0.66	\$0.40	\$0.79	NA	NA
- Pump out minutes	1.15	1.10	0.67	1.32	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$2.10	\$2.02	\$1.23	\$2.41	NA	NA
Subtotal- End of Day/Trip Svc	\$38.79	\$26.68	\$73.64	\$15.20	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$39	\$27	\$74	\$15	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	26,572	6,132	19,856	1,752	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$5,663	\$3,895	\$10,751	\$2,219	NA	NA
Annual Non-Trip Related per Car	\$3,198	\$2,332	\$5,796	\$1,466	NA	NA
Annual Oprtng Trip Related per Car Type	\$515,345	\$81,792	\$731,058	\$13,313	NA	NA
Annual Non-Trip Related per Car Type	\$291,018	\$48,972	\$394,128	\$8,796	NA	NA
Total OPRTNG COST per Car	\$8,861	\$6,227	\$16,547	\$3,685	NA	NA
Total CAPITAL COST per Car	\$32,568	\$26,192	\$51,696	\$19,816	NA	NA
Total OPRTNG COST for all cars	\$806,363	\$130,764	\$1,125,186	\$22,109	NA	NA
Total CAPITAL COST for all cars	\$2,963,688	\$550,032	\$3,515,328	\$118,896	NA	NA

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000	39940	32000	39970	NA	NA
	Coach Super	Coach-HEP-HLV	Sleeper Super	Lounge-HEP-HLV	NA	NA
Quantity of cars	4	1	3	1	NA	NA
Capacity (# people) - seated	75	72	44	86	NA	NA
Toilets per car	6	4	12	2	NA	NA
Average persons/toilet on train	12.5	18.0	3.7	43.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	33.68	32.33	19.76	38.61	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	197.4	189.5	115.8	226.3	NA	NA
Capacity Req'd/day (gals)	231.0	221.8	135.5	264.9	NA	NA
Adj. Capacity Req'd w/ Buffer	288.8	277.3	169.4	331.2	NA	NA
Tank Capacity per Car (gals)	150	100	300	100	NA	NA
Continuous Service Hours Supported	12	9	42	7	NA	NA
As a percentage of 72 hours	17%	12%	59%	10%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	0.5	0.4	1.8	0.3	NA	NA
As a percentage of 3 days	17.31%	12.02%	59.02%	10.07%	NA	NA
Consecutive Trips before pumpout	0.0	0.0	0.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$8,000	\$24,000	\$8,000	NA	NA
Toilet Cost per Car	<u>\$18,000</u>	<u>\$12,000</u>	<u>\$36,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$30,000	\$20,000	\$60,000	\$14,000	NA	NA
Equipment Installation						
Collection System per Car	\$864	\$576	\$1,728	\$576	NA	NA
Toilet Cost per Car	<u>\$1,728</u>	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,592	\$1,728	\$5,184	\$1,152	NA	NA
Total Capital Cost	<u>\$32,592</u>	<u>\$21,728</u>	<u>\$65,184</u>	<u>\$15,152</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Sunset Limited Route Number: #1-2
 Origin/Destination: New Orleans-Los Angeles
 Length in Miles: 2,033
 Length in Hours: 43.00
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	34000 Coach Super	39940 Coach-HEP-HLV	32000 Sleeper Super	39970 Lounge-HEP-HLV	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$432	\$288	\$864	\$144	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,728	\$1,152	\$3,456	\$576	NA	NA
Annual spare parts cost per yr	<u>\$1,500</u>	<u>\$1,000</u>	<u>\$3,000</u>	<u>\$700</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$3,228	\$2,152	\$6,456	\$1,276	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$36	\$24	\$72	\$12	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$7.11	\$5.42	\$12.60	\$5.85	NA	NA
- Pump out minutes	1.35	2.03	0.00	2.75	NA	NA
- Connect/Disc. minutes	10.5	7.0	21.0	7.0	NA	NA
- Waste Disposal	<u>\$7.04</u>	<u>\$6.76</u>	<u>\$4.13</u>	<u>\$8.07</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$50.15	\$36.17	\$88.73	\$25.92	NA	NA
Train Delay:						
- Pump out volume req'd	150	100	300	100	NA	NA
- # of stops req'd	1	1	1	1	NA	NA
- Pump out minutes	2.5	1.7	5.0	1.7	NA	NA
- Connect/Disc. minutes	<u>10.5</u>	<u>7.0</u>	<u>21.0</u>	<u>7.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	13	9	26	9	NA	NA
Average Cost Per Delay	\$8	\$5	\$16	\$5	NA	NA
Subtotal- Oprtg Trip Related	\$58	\$41	\$104	\$31	NA	NA
Total # Cars in fleet	91	21	68	6	NA	NA
Total Annual Car-days	33,215	7,665	24,820	2,190	NA	NA
Adjusted Total Car-days	26,572	6,132	19,856	1,752	NA	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$8,460	\$6,041	\$15,232	\$4,543	NA	NA
Annual Non-Trip Related per Car	\$3,228	\$2,152	\$6,456	\$1,276	NA	NA
Annual Oprtg Trip Related per Car Type	\$769,892	\$126,852	\$1,035,773	\$27,260	NA	NA
Annual Non-Trip Related per Car Type	<u>\$293,748</u>	<u>\$45,192</u>	<u>\$439,008</u>	<u>\$7,656</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$11,688	\$8,193	\$21,688	\$5,819	NA	NA
Total CAPITAL COST per Car	\$32,592	\$21,728	\$65,184	\$15,152	NA	NA
Total OPRTNG COST for all cars	\$1,063,640	\$172,044	\$1,474,781	\$34,916	NA	NA
Total CAPITAL COST for all cars	\$2,965,872	\$456,288	\$4,432,512	\$90,912	NA	NA

C4.2 California Zephyr, Chicago-Oakland

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	25.2	27.7	49.1	47.3	NA	NA
Capacity Req'd/day (gals)	43.2	47.5	84.2	80.9	NA	NA
Adj. Capacity Req'd w/ Buffer	54.0	59.3	105.2	101.2	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	105	95	54	56	NA	NA
As a percentage of 72 hours	145%	132%	74%	77%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	4.4	4.0	2.2	2.3	NA	NA
As a percentage of 3 days	145.20%	132.00%	74.46%	77.44%	NA	NA
Consecutive Trips before pumpout	2.0	1.0	1.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$30,000</u>	<u>\$12,500</u>	<u>\$15,000</u>	NA	NA
- Total Equip Cost	\$31,000	\$51,000	\$33,500	\$36,000	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	NA	NA
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	<u>\$33,592</u>	<u>\$55,896</u>	<u>\$36,380</u>	<u>\$39,168</u>	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Annual spare parts cost per yr	<u>\$1,550</u>	<u>\$2,550</u>	<u>\$1,675</u>	<u>\$1,800</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	<u>\$2,702</u>	<u>\$6,006</u>	<u>\$3,115</u>	<u>\$3,528</u>	<u>NA</u>	<u>NA</u>
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.43	\$0.47	\$0.84	\$0.81	NA	NA
- Pump out minutes	0.72	0.79	1.40	1.35	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.56</u>	<u>\$1.72</u>	<u>\$3.05</u>	<u>\$2.93</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$26.00	\$74.20	\$33.89	\$39.74	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	<u>\$26</u>	<u>\$74</u>	<u>\$34</u>	<u>\$40</u>	<u>NA</u>	<u>NA</u>
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	10,512	19,856	14,016	26,572	NA	NA
Days per Trip (min. of 1)	3	3	3	3	3	3
Annual Oprtg Trip Related per Car	\$2,530	\$7,222	\$3,299	\$3,868	NA	NA
Annual Non-Trip Related per Car	\$2,702	\$6,006	\$3,115	\$3,528	NA	NA
Annual Oprtg Trip Related per Car Type	\$91,090	\$491,076	\$158,344	\$352,012	NA	NA
Annual Non-Trip Related per Car Type	<u>\$97,272</u>	<u>\$408,408</u>	<u>\$149,520</u>	<u>\$321,048</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,232	\$13,228	\$6,414	\$7,396	NA	NA
Total CAPITAL COST per Car	\$33,592	\$55,896	\$36,380	\$39,168	NA	NA
Total OPRTNG COST for all cars	\$188,362	\$899,484	\$307,864	\$673,060	NA	NA
Total CAPITAL COST for all cars	\$1,209,312	\$3,800,928	\$1,746,240	\$3,564,288	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	18.0	19.8	35.0	33.7	NA	NA
Adj. Capacity Req'd w/ Buffer	22.5	24.7	43.8	42.1	NA	NA
Tank Capacity per Car (gals)	54	162	67.5	81	NA	NA
Continuous Service Hours Supported	58	157	37	46	NA	NA
As a percentage of 72 hours	80%	219%	51%	64%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	2.4	6.6	1.5	1.9	NA	NA
As a percentage of 3 days	80.18%	218.67%	51.40%	64.14%	NA	NA
Consecutive Trips before pumpout	1.0	3.0	0.0	0.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$13,000</u>	<u>\$39,000</u>	<u>\$16,250</u>	<u>\$19,500</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$13,000	\$39,000	\$16,250	\$19,500	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Total Capital Cost	<u>\$14,152</u>	<u>\$42,456</u>	<u>\$17,690</u>	<u>\$21,228</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$4,608	\$13,824	\$5,760	\$6,912	NA	NA
Annual spare parts cost per yr	\$650	\$1,950	\$813	\$975	NA	NA
Total- Oprtng Non-Trip Related	\$5,258	\$15,774	\$6,573	\$7,887	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.18	\$0.20	\$10.50	\$12.60	NA	NA
- Pump out minutes	0.30	0.33	0.00	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	17.5	21.0	NA	NA
- Waste Disposal	\$0.84	\$0.93	\$1.64	\$1.58	NA	NA
Subtotal- End of Day/Trip Svc	\$25.02	\$73.12	\$42.14	\$50.18	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	68	81	NA	NA
- # of stops req'd	0	0	1	1	NA	NA
- Pump out minutes	0.0	0.0	1.1	1.4	NA	NA
- Connect/Disc. minutes	0.0	0.0	17.5	21.0	NA	NA
- Total Time Delay(mins/car)	0	0	19	22	NA	NA
Average Cost Per Delay	\$0	\$0	\$11	\$13	NA	NA
Subtotal- Oprtng Trip Related	\$25	\$73	\$53	\$64	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	10,512	19,856	14,016	26,572	NA	NA
Days per Trip (min. of 1)	3	3	3	3	3	3
Annual Oprtng Trip Related per Car	\$2,435	\$7,117	\$5,190	\$6,189	NA	NA
Annual Non-Trip Related per Car	\$5,258	\$15,774	\$6,573	\$7,887	NA	NA
Annual Oprtng Trip Related per Car Type	\$87,677	\$483,985	\$249,100	\$563,234	NA	NA
Annual Non-Trip Related per Car Type	\$189,288	\$1,072,632	\$315,480	\$717,717	NA	NA
Total OPRTNG COST per Car	\$7,693	\$22,891	\$11,762	\$14,076	NA	NA
Total CAPITAL COST per Car	\$14,152	\$42,456	\$17,690	\$21,228	NA	NA
Total OPRTNG COST for all cars	\$276,965	\$1,556,617	\$564,580	\$1,280,951	NA	NA
Total CAPITAL COST for all cars	\$509,472	\$2,887,008	\$849,120	\$1,931,748	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable

Route Number: #5-6

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	68.8	75.7	134.2	129.0	NA	NA

Capacity Req'd/day (gals)	86.8	95.4	169.2	162.7	NA	NA
Adj. Capacity Req'd w/ Buffer	108.5	119.3	211.5	203.3	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300

Continuous Service Hours Supported	66	60	34	35	NA	NA
As a percentage of 72 hours	92%	84%	47%	49%	NA	NA

Probable Service Hours per Day	24	24	24	24	24	24
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Service Days Supported	2.8	2.5	1.4	1.5	NA	NA
As a percentage of 3 days	92.21%	83.83%	47.29%	49.18%	NA	NA

Consecutive Trips before pumpout	1.0	1.0	0.0	0.0	NA	NA
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CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$20,000</u>	<u>\$60,000</u>	<u>\$25,000</u>	<u>\$30,000</u>	NA	NA
- Total Equip Cost	\$30,000	\$70,000	\$35,000	\$40,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	NA	NA
- Total Installation Cost	\$1,728	\$4,032	\$2,016	\$2,304	NA	NA
Total Capital Cost	\$31,728	\$74,032	\$37,016	\$42,304	NA	NA

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

Route Number: #5-6

	39900 Trans Dorm Coach	32000 Sleeper Super	31000 Bag Coach Super	34000 Coach Super	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Annual spare parts cost per yr	<u>\$1,500</u>	<u>\$3,500</u>	<u>\$1,750</u>	<u>\$2,000</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,652	\$6,956	\$3,190	\$3,728	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.87	\$0.95	\$0.00	\$0.00	NA	NA
- Pump out minutes	1.45	1.59	0.00	0.00	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$3.14</u>	<u>\$3.46</u>	<u>\$6.13</u>	<u>\$5.90</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$28.01	\$76.41	\$36.13	\$41.90	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	300	300	NA	NA
- # of stops req'd	0	0	1	1	NA	NA
- Pump out minutes	0.0	0.0	5.0	5.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	5	5	NA	NA
Average Cost Per Delay	\$0	\$0	\$3	\$3	NA	NA
Subtotal- Oprtng Trip Related	\$28	\$76	\$39	\$45	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	10,512	19,856	14,016	26,572	NA	NA
Days per Trip (min. of 1)	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,727	\$7,438	\$3,809	\$4,370	NA	NA
Annual Non-Trip Related per Car	\$2,652	\$6,956	\$3,190	\$3,728	NA	NA
Annual Oprtng Trip Related per Car Type	\$98,155	\$505,755	\$182,825	\$397,661	NA	NA
Annual Non-Trip Related per Car Type	<u>\$95,472</u>	<u>\$473,008</u>	<u>\$153,120</u>	<u>\$339,248</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,379	\$14,394	\$6,999	\$8,098	NA	NA
Total CAPITAL COST per Car	\$31,728	\$74,032	\$37,016	\$42,304	NA	NA
Total OPRTNG COST for all cars	\$193,627	\$978,763	\$335,945	\$736,909	NA	NA
Total CAPITAL COST for all cars	\$1,142,208	\$5,034,176	\$1,776,768	\$3,849,664	NA	NA

Amtrak Route: California Zephyr Route Number: #5-6
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	18.8	20.7	36.7	35.3	NA	NA
Capacity Req'd/day (gals)	36.8	40.4	71.7	68.9	NA	NA
Adj. Capacity Req'd w/ Buffer	46.0	50.5	89.6	86.2	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	104	95	54	56	NA	NA
As a percentage of 72 hours	145%	132%	74%	77%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	4.4	4.0	2.2	2.3	NA	NA
As a percentage of 3 days	145.09%	131.90%	74.40%	77.38%	NA	NA
Consecutive Trips before pumpout	2.0	1.0	1.0	1.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$11,600</u>	<u>\$34,800</u>	<u>\$14,500</u>	<u>\$17,400</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$23,600	\$46,800	\$26,500	\$29,400	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,592	\$4,896	\$2,880	\$3,168	NA	NA
Total Capital Cost	<u>\$26,192</u>	<u>\$51,696</u>	<u>\$29,380</u>	<u>\$32,568</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	39900 <u>Trans Dorm Coach</u>	32000 <u>Sleeper Super</u>	31000 <u>Bag Coach Super</u>	34000 <u>Coach Super</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Annual spare parts cost per yr	<u>\$1,180</u>	<u>\$2,340</u>	<u>\$1,325</u>	<u>\$1,470</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,332	\$5,796	\$2,765	\$3,198	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.37	\$0.40	\$0.72	\$0.69	NA	NA
- Pump out minutes	0.61	0.67	1.19	1.15	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$1.33</u>	<u>\$1.47</u>	<u>\$2.60</u>	<u>\$2.50</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$25.70	\$73.87	\$33.31	\$39.19	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$26	\$74	\$33	\$39	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	10,512	19,856	14,016	26,572	NA	NA
Days per Trip (min. of 1)	3	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
Annual Oprtng Trip Related per Car	\$2,501	\$7,190	\$3,243	\$3,814	NA	NA
Annual Non-Trip Related per Car	\$2,332	\$5,796	\$2,765	\$3,198	NA	NA
Annual Oprtng Trip Related per Car Type	\$90,053	\$488,921	\$155,648	\$347,096	NA	NA
Annual Non-Trip Related per Car Type	<u>\$83,952</u>	<u>\$394,128</u>	<u>\$132,720</u>	<u>\$291,018</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,833	\$12,986	\$6,008	\$7,012	NA	NA
Total CAPITAL COST per Car	\$26,192	\$51,696	\$29,380	\$32,568	NA	NA
Total OPRTNG COST for all cars	\$174,005	\$883,049	\$288,368	\$638,114	NA	NA
Total CAPITAL COST for all cars	\$942,912	\$3,515,328	\$1,410,240	\$2,963,688	NA	NA

Amtrak Route:	California Zephyr	Route Number:	#5-6
Origin/Destination:	Chicago-Oakland		
Length in Miles:	2,422		
Length in Hours:	51.17		
Expected Trips per Day:	1		
Manufacturer:	Railtech		
Equipment:	WTS 8300		
Scenario:	Unfavorable		

* All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	3	3	5	NA	NA
Capacity (# people) - seated	40	44	78	75	NA	NA
Toilets per car	4	12	5	6	NA	NA
Average persons/toilet on train	10.0	3.7	15.6	12.5	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	17.96	19.76	35.02	33.68	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	105.3	115.8	205.3	197.4	NA	NA
Capacity Req'd/day (gals)	123.2	135.5	240.3	231.0	NA	NA
Adj. Capacity Req'd w/ Buffer	154.0	169.4	300.4	288.8	NA	NA
Tank Capacity per Car (gals)	100	300	150	150	NA	NA
Continuous Service Hours Supported	16	42	12	12	NA	NA
As a percentage of 72 hours	22%	59%	17%	17%	NA	NA
Probable Service Hours per Day	24	24	24	24	24	24
Service Days Supported	0.6	1.8	0.5	0.5	NA	NA
As a percentage of 3 days	21.64%	59.02%	16.65%	17.31%	NA	NA
Consecutive Trips before pumpout	0.0	0.0	0.0	0.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$24,000	\$12,000	\$12,000	NA	NA
Toilet Cost per Car	<u>\$12,000</u>	<u>\$36,000</u>	<u>\$15,000</u>	<u>\$18,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$60,000	\$27,000	\$30,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$1,728	\$864	\$864	NA	NA
Toilet Cost per Car	<u>\$1,152</u>	<u>\$3,456</u>	<u>\$1,440</u>	<u>\$1,728</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,728	\$5,184	\$2,304	\$2,592	NA	NA
Total Capital Cost	<u>\$21,728</u>	<u>\$65,184</u>	<u>\$29,304</u>	<u>\$32,592</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: California Zephyr
 Origin/Destination: Chicago-Oakland
 Length in Miles: 2,422
 Length in Hours: 51.17
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	39900	32000	31000	34000	NA	NA
	<u>Trans Dorm Coach</u>	<u>Sleeper Super</u>	<u>Bag Coach Super</u>	<u>Coach Super</u>	<u>NA</u>	<u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$864	\$360	\$432	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,152	\$3,456	\$1,440	\$1,728	NA	NA
Annual spare parts cost per yr	<u>\$1,000</u>	<u>\$3,000</u>	<u>\$1,350</u>	<u>\$1,500</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,152	\$6,456	\$2,790	\$3,228	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$24	\$72	\$30	\$36	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.43	\$12.60	\$7.20	\$7.11	NA	NA
- Pump out minutes	0.39	0.00	1.50	1.35	NA	NA
- Connect/Disc. minutes	7.0	21.0	10.5	10.5	NA	NA
- Waste Disposal	<u>\$4.47</u>	<u>\$4.91</u>	<u>\$8.71</u>	<u>\$8.37</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$32.90	\$89.51	\$45.91	\$51.48	NA	NA
Train Delay:						
- Pump out volume req'd	100	300	150	150	NA	NA
- # of stops req'd	1	1	1	1	NA	NA
- Pump out minutes	1.7	5.0	2.5	2.5	NA	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>21.0</u>	<u>10.5</u>	<u>10.5</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	26	13	13	NA	NA
Average Cost Per Delay	\$5	\$16	\$8	\$8	NA	NA
Subtotal- Oprtng Trip Related	\$38	\$105	\$54	\$59	NA	NA
Total # Cars in fleet	36	68	48	91	NA	NA
Total Annual Car-days	13,140	24,820	17,520	33,215	NA	NA
Adjusted Total Car-days	10,512	19,856	14,016	26,572	NA	NA
Days per Trip (min. of 1)	3	3	3	3	3	3
Annual Oprtng Trip Related per Car	\$3,708	\$10,231	\$5,228	\$5,770	NA	NA
Annual Non-Trip Related per Car	\$2,152	\$6,456	\$2,790	\$3,228	NA	NA
Annual Oprtng Trip Related per Car Type	\$133,497	\$695,707	\$250,943	\$525,104	NA	NA
Annual Non-Trip Related per Car Type	<u>\$77,472</u>	<u>\$439,008</u>	<u>\$133,920</u>	<u>\$293,748</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,860	\$16,687	\$8,018	\$8,998	NA	NA
Total CAPITAL COST per Car	\$21,728	\$65,184	\$29,304	\$32,592	NA	NA
Total OPRTNG COST for all cars	\$210,969	\$1,134,715	\$384,863	\$818,852	NA	NA
Total CAPITAL COST for all cars	\$782,208	\$4,432,512	\$1,406,592	\$2,965,872	NA	NA

C4.3 City of New Orleans, New Orleans-Chicago

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	51.7	30.2	27.7	29.0	30.9	13.9
Capacity Req'd/day (gals)	67.6	39.6	36.3	37.9	40.4	18.1
Adj. Capacity Req'd w/ Buffer	84.5	49.4	45.3	47.4	50.5	22.7
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	67	114	124	119	112	249
As a percentage of 72 hours	93%	158%	173%	165%	155%	346%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	3.6	6.2	6.8	6.5	6.1	13.6
As a percentage of 3 days	121.42%	207.43%	226.29%	216.45%	203.20%	452.57%
Consecutive Trips before pumpout	3.0	6.0	6.0	6.0	6.0	13.0

CAPITAL COSTS

Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$7,500</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$42,500</u>
- Total Equip Cost	\$26,000	\$26,000	\$28,500	\$26,000	\$26,000	\$63,500
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$30,804</u>	<u>\$28,016</u>	<u>\$28,016</u>	<u>\$69,836</u>

Amtrak Route: City of New Orleans Route Number: #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Unfavorable
* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$864	\$576	\$576	\$4,896
Annual spare parts cost per yr	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$1,425</u>	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$3,175</u>
Total- Oprtng Non-Trip Related	\$1,876	\$1,876	\$2,289	\$1,876	\$1,876	\$8,071
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.68	\$0.40	\$0.36	\$0.38	\$0.40	\$0.18
- Pump out minutes	1.13	0.66	0.60	0.63	0.67	0.30
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$1.15</u>	<u>\$0.67</u>	<u>\$0.62</u>	<u>\$0.64</u>	<u>\$0.69</u>	<u>\$0.31</u>
Subtotal- End of Day/Trip Svc	\$13.82	\$13.07	\$18.98	\$13.02	\$13.09	\$102.49
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$14	\$13	\$19	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	30,076	22,776	6,132	3,504	7,300	23,944
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,037	\$3,816	\$5,542	\$3,803	\$3,822	\$29,927
Annual Non-Trip Related per Car	\$1,876	\$1,876	\$2,289	\$1,876	\$1,876	\$8,071
Annual Oprtng Trip Related per Car Type	\$415,786	\$297,637	\$116,379	\$45,634	\$95,559	\$2,454,009
Annual Non-Trip Related per Car Type	<u>\$193,228</u>	<u>\$146,328</u>	<u>\$48,069</u>	<u>\$22,512</u>	<u>\$46,900</u>	<u>\$661,822</u>
Total OPRTNG COST per Car	\$5,913	\$5,692	\$7,831	\$5,679	\$5,698	\$37,998
Total CAPITAL COST per Car	\$28,016	\$28,016	\$30,804	\$28,016	\$28,016	\$69,836
Total OPRTNG COST for all cars	\$609,014	\$443,965	\$164,448	\$68,146	\$142,459	\$3,115,831
Total CAPITAL COST for all cars	\$2,885,648	\$2,185,248	\$646,884	\$336,192	\$700,400	\$5,726,552

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	0.0
Capacity Req'd/day (gals)	28.1	16.5	15.1	15.8	16.8	7.5
Adj. Capacity Req'd w/ Buffer	35.1	20.6	18.9	19.7	21.0	9.4
Tank Capacity per Car (gals)	27	27	40.5	27	27	229.5
Continuous Service Hours Supported	18	31	52	33	31	584
As a percentage of 72 hours	26%	44%	72%	46%	43%	811%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	1.0	1.7	2.8	1.8	1.7	31.9
As a percentage of 3 days	33.53%	57.27%	93.72%	59.76%	56.10%	1062.14%
Consecutive Trips before pumpout	1.0	1.0	2.0	1.0	1.0	31.0
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$9,750</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$55,250</u>
- Total Equip Cost	\$6,500	\$6,500	\$9,750	\$6,500	\$6,500	\$55,250
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$576	\$576	\$864	\$576	\$576	\$4,896
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$10,614</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$60,146</u>

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$864	\$576	\$576	\$4,896
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$2,304	\$2,304	\$3,456	\$2,304	\$2,304	\$19,584
Annual spare parts cost per yr	\$325	\$325	\$488	\$325	\$325	\$2,763
Total- Oprtng Non-Trip Related	\$2,629	\$2,629	\$3,944	\$2,629	\$2,629	\$22,347
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.28	\$0.16	\$0.15	\$0.16	\$0.17	\$0.08
- Pump out minutes	0.47	0.27	0.25	0.26	0.28	0.13
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	\$0.62	\$0.36	\$0.33	\$0.35	\$0.37	\$0.17
Subtotal- End of Day/Trip Srvc	\$12.90	\$12.53	\$18.48	\$12.50	\$12.54	\$102.24
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$13	\$13	\$18	\$13	\$13	\$102
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	30,076	22,776	6,132	3,504	7,300	23,944
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,767	\$3,658	\$5,397	\$3,651	\$3,661	\$29,854
Annual Non-Trip Related per Car	\$2,629	\$2,629	\$3,944	\$2,629	\$2,629	\$22,347
Annual Oprtng Trip Related per Car Type	\$387,975	\$285,309	\$113,337	\$43,817	\$91,525	\$2,448,069
Annual Non-Trip Related per Car Type	\$270,787	\$205,062	\$82,814	\$31,548	\$65,725	\$1,832,413
Total OPRTNG COST per Car	\$6,396	\$6,287	\$9,340	\$6,280	\$6,290	\$52,201
Total CAPITAL COST per Car	\$7,076	\$7,076	\$10,614	\$7,076	\$7,076	\$60,146
Total OPRTNG COST for all cars	\$658,762	\$490,371	\$196,150	\$75,365	\$157,250	\$4,280,482
Total CAPITAL COST for all cars	\$728,828	\$551,928	\$222,894	\$84,912	\$176,900	\$4,931,972

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	141.0	82.6	75.7	79.1	84.3	37.8
Capacity Req'd/day (gals)	135.8	79.5	72.9	76.2	81.2	36.4
Adj. Capacity Req'd w/ Buffer	169.8	99.4	91.1	95.3	101.5	45.6
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	42	72	79	76	71	158
As a percentage of 72 hours	59%	101%	110%	105%	99%	220%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	2.3	4.0	4.3	4.1	3.9	8.6
As a percentage of 3 days	77.11%	131.73%	143.71%	137.46%	129.04%	287.41%
Consecutive Trips before pumpout	2.0	3.0	4.0	4.0	3.0	8.0

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$15,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$85,000</u>
- Total Equip Cost	\$20,000	\$20,000	\$25,000	\$20,000	\$20,000	\$95,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$5,472
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$26,440</u>	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$100,472</u>

Amtrak Route: City of New Orleans Route Number: #58
Origin/Destination: New Orleans-Chicago
Length in Miles: 924
Length in Hours: 18.33
Expected Trips per Day: 1
Manufacturer: Microphor
Equipment: Gravity
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$864	\$576	\$576	\$4,896
Annual spare parts cost per yr	<u>\$1,000</u>	<u>\$1,000</u>	<u>\$1,250</u>	<u>\$1,000</u>	<u>\$1,000</u>	<u>\$4,750</u>
Total- Oprtng Non-Trip Related	\$1,576	\$1,576	\$2,114	\$1,576	\$1,576	\$9,646
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.36	\$0.80	\$0.73	\$0.76	\$0.81	\$0.36
- Pump out minutes	2.26	1.33	1.21	1.27	1.35	0.61
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$2.31</u>	<u>\$1.35</u>	<u>\$1.24</u>	<u>\$1.30</u>	<u>\$1.38</u>	<u>\$0.62</u>
Subtotal- End of Day/Trip Svc	\$15.67	\$14.15	\$19.97	\$14.06	\$14.19	\$102.98
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	\$16	\$14	\$20	\$14	\$14	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	30,076	22,776	6,132	3,504	7,300	23,944
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,575	\$4,131	\$5,831	\$4,105	\$4,144	\$30,071
Annual Non-Trip Related per Car	\$1,576	\$1,576	\$2,114	\$1,576	\$1,576	\$9,646
Annual Oprtng Trip Related per Car Type	\$471,220	\$322,210	\$122,444	\$49,257	\$103,599	\$2,465,849
Annual Non-Trip Related per Car Type	<u>\$162,328</u>	<u>\$122,928</u>	<u>\$44,394</u>	<u>\$18,912</u>	<u>\$39,400</u>	<u>\$790,972</u>
Total OPRTRNG COST per Car	\$6,151	\$5,707	\$7,945	\$5,681	\$5,720	\$39,717
Total CAPITAL COST per Car	\$21,152	\$21,152	\$26,440	\$21,152	\$21,152	\$100,472
Total OPRTRNG COST for all cars	\$633,548	\$445,138	\$166,838	\$68,169	\$142,999	\$3,256,821
Total CAPITAL COST for all cars	\$2,178,656	\$1,649,856	\$555,240	\$253,824	\$528,800	\$8,238,704

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	38.5	22.6	20.7	21.6	23.0	10.3
Capacity Req'd/day (gals)	57.6	33.7	30.9	32.3	34.4	15.4
Adj. Capacity Req'd w/ Buffer	71.9	42.1	38.6	40.4	43.0	19.3
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	67	114	124	119	112	249
As a percentage of 72 hours	93%	158%	173%	165%	155%	345%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	3.6	6.2	6.8	6.5	6.1	13.6
As a percentage of 3 days	121.33%	207.27%	226.11%	216.28%	203.04%	452.23%
Consecutive Trips before pumpout	3.0	6.0	6.0	6.0	6.0	13.0

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$8,700</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>
- Total Equip Cost	\$17,800	\$17,800	\$20,700	\$17,800	\$17,800	\$61,300
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$864</u>	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,304	\$2,016	\$2,016	\$6,336
Total Capital Cost	\$19,816	\$19,816	\$23,004	\$19,816	\$19,816	\$67,636

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$864	\$576	\$576	\$4,896
Annual spare parts cost per yr	<u>\$890</u>	<u>\$890</u>	<u>\$1,035</u>	<u>\$890</u>	<u>\$890</u>	<u>\$3,065</u>
Total- Oprtng Non-Trip Related	<u>\$1,466</u>	<u>\$1,466</u>	<u>\$1,899</u>	<u>\$1,466</u>	<u>\$1,466</u>	<u>\$7,961</u>
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.58	\$0.34	\$0.31	\$0.32	\$0.34	\$0.15
- Pump out minutes	0.96	0.56	0.51	0.54	0.57	0.26
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Waste Disposal	<u>\$0.98</u>	<u>\$0.57</u>	<u>\$0.53</u>	<u>\$0.55</u>	<u>\$0.58</u>	<u>\$0.26</u>
Subtotal- End of Day/Trip Srvc	<u>\$13.55</u>	<u>\$12.91</u>	<u>\$18.83</u>	<u>\$12.87</u>	<u>\$12.93</u>	<u>\$102.42</u>
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	0
- # of stops req'd	0	0	0	0	0	0
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	0.0
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
- Total Time Delay(mins/car)	0	0	0	0	0	0
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal- Oprtng Trip Related	<u>\$14</u>	<u>\$13</u>	<u>\$19</u>	<u>\$13</u>	<u>\$13</u>	<u>\$102</u>
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	30,076	22,776	6,132	3,504	7,300	23,944
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,958	\$3,770	\$5,499	\$3,759	\$3,775	\$29,906
Annual Non-Trip Related per Car	\$1,466	\$1,466	\$1,899	\$1,466	\$1,466	\$7,961
Annual Oprtng Trip Related per Car Type	\$407,649	\$294,030	\$115,489	\$45,103	\$94,379	\$2,452,271
Annual Non-Trip Related per Car Type	<u>\$150,998</u>	<u>\$114,348</u>	<u>\$39,879</u>	<u>\$17,592</u>	<u>\$36,650</u>	<u>\$652,802</u>
Total OPRTNG COST per Car	\$5,424	\$5,236	\$7,398	\$5,225	\$5,241	\$37,867
Total CAPITAL COST per Car	\$19,816	\$19,816	\$23,004	\$19,816	\$19,816	\$67,636
Total OPRTNG COST for all cars	\$558,647	\$408,378	\$155,368	\$62,695	\$131,029	\$3,105,073
Total CAPITAL COST for all cars	\$2,041,048	\$1,545,648	\$483,084	\$237,792	\$495,400	\$5,546,152

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	54000 Horizon	4600 Coach	4000 Coach (HDCP)	9400 Dome Coach	28000 Amlounge II	2400(30) Sleeper 10-6
Quantity of cars	1	4	1	1	1	1
Capacity (# people) - seated	82	48	44	46	49	22
Toilets per car	2	2	3	2	2	17
Average persons/toilet on train	41.0	24.0	14.7	23.0	24.5	1.3

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	36.82	21.55	19.76	20.65	22.00	9.88
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	215.8	126.3	115.8	121.1	128.9	57.9
Capacity Req'd/day (gals)	192.9	112.9	103.5	108.2	115.3	51.8
Adj. Capacity Req'd w/ Buffer	241.2	141.2	129.4	135.3	144.1	64.7
Tank Capacity per Car (gals)	100	100	100	100	100	450
Continuous Service Hours Supported	10	17	19	18	17	167
As a percentage of 72 hours	14%	24%	26%	25%	23%	232%
Probable Service Hours per Day	18.33	18.33	18.33	18.33	18.33	18.33
Service Days Supported	0.5	0.9	1.0	1.0	0.9	9.1
As a percentage of 3 days	18.10%	30.92%	33.73%	32.26%	30.29%	303.55%
Consecutive Trips before pumpout	0.0	0.0	1.0	0.0	0.0	9.0

CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$36,000
Toilet Cost per Car	\$6,000	\$6,000	\$9,000	\$6,000	\$6,000	\$51,000
- Total Equip Cost	\$14,000	\$14,000	\$17,000	\$14,000	\$14,000	\$87,000
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$2,592
Toilet Cost per Car	\$576	\$576	\$864	\$576	\$576	\$4,896
- Total Installation Cost	\$1,152	\$1,152	\$1,440	\$1,152	\$1,152	\$7,488
Total Capital Cost	\$15,152	\$15,152	\$18,440	\$15,152	\$15,152	\$94,488

Amtrak Route: City of New Orleans Route Number: #58
 Origin/Destination: New Orleans-Chicago
 Length in Miles: 924
 Length in Hours: 18.33
 Expected Trips per Day: 1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	54000 <u>Horizon</u>	4600 <u>Coach</u>	4000 <u>Coach (HDCP)</u>	9400 <u>Dome Coach</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$216	\$144	\$144	\$1,224
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$864	\$576	\$576	\$4,896
Annual spare parts cost per yr	\$700	\$700	\$850	\$700	\$700	\$4,350
Total- Oprtg Non-Trip Related	\$1,276	\$1,276	\$1,714	\$1,276	\$1,276	\$9,246
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$18	\$12	\$12	\$102
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$5.13	\$4.33	\$1.04	\$4.28	\$4.35	\$0.52
- Pump out minutes	1.55	0.22	1.73	0.14	0.25	0.86
- Connect/Disc. minutes	7.0	7.0	0.0	7.0	7.0	0.0
- Waste Disposal	\$3.28	\$1.92	\$1.76	\$1.84	\$1.96	\$0.88
Subtotal- End of Day/Trip Srvc	\$20.41	\$18.25	\$20.80	\$18.12	\$18.31	\$103.40
Train Delay:						
- Pump out volume req'd	100	100	0	100	100	0
- # of stops req'd	1	1	0	1	1	0
- Pump out minutes	1.7	1.7	0.0	1.7	1.7	0.0
- Connect/Disc. minutes	7.0	7.0	0.0	7.0	7.0	0.0
- Total Time Delay(mins/car)	9	9	0	9	9	0
Average Cost Per Delay	\$5	\$5	\$0	\$5	\$5	\$0
Subtotal- Oprtg Trip Related	\$26	\$23	\$21	\$23	\$24	\$103
Total # Cars in fleet	103	78	21	12	25	82
Total Annual Car-days	37,595	28,470	7,665	4,380	9,125	29,930
Adjusted Total Car-days	30,076	22,776	6,132	3,504	7,300	23,944
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$7,478	\$6,847	\$6,072	\$6,810	\$6,866	\$30,192
Annual Non-Trip Related per Car	\$1,276	\$1,276	\$1,714	\$1,276	\$1,276	\$9,246
Annual Oprtg Trip Related per Car Type	\$770,219	\$534,079	\$127,516	\$81,721	\$171,643	\$2,475,751
Annual Non-Trip Related per Car Type	\$131,428	\$99,528	\$35,994	\$15,312	\$31,900	\$758,172
Total OPRTNG COST per Car	\$8,754	\$8,123	\$7,786	\$8,086	\$8,142	\$39,438
Total CAPITAL COST per Car	\$15,152	\$15,152	\$18,440	\$15,152	\$15,152	\$94,488
Total OPRTNG COST for all cars	\$901,647	\$633,607	\$163,510	\$97,033	\$203,543	\$3,233,923
Total CAPITAL COST for all cars	\$1,560,656	\$1,181,856	\$387,240	\$181,824	\$378,800	\$7,748,016

C4.4 Silver Meteor, New York-Tampa

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	37.2	30.9	13.9	25.2	21.4	NA
Capacity Req'd/day (gals)	61.8	51.3	23.0	41.9	35.6	NA
Adj. Capacity Req'd w/ Buffer	77.2	64.1	28.8	52.3	44.5	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	73	88	196	108	127	NA
As a percentage of 72 hours	101%	122%	272%	150%	176%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	3.1	3.8	8.4	4.6	5.4	NA
As a percentage of 3 days	104.62%	125.97%	280.58%	154.32%	181.55%	NA
Consecutive Trips before pumpout	3.0	3.0	8.0	4.0	5.0	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$42,500</u>	<u>\$80,000</u>	<u>\$42,500</u>	NA
- Total Equip Cost	\$26,000	\$26,000	\$63,500	\$101,000	\$63,500	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	NA
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	\$28,016	\$28,016	\$69,836	\$111,656	\$69,836	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Annual spare parts cost per yr	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$3,175</u>	<u>\$5,050</u>	<u>\$3,175</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,876	\$1,876	\$8,071	\$14,266	\$8,071	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.62	\$0.51	\$0.23	\$0.42	\$0.36	NA
- Pump out minutes	1.03	0.85	0.38	0.70	0.59	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$1.05</u>	<u>\$0.87</u>	<u>\$0.39</u>	<u>\$0.71</u>	<u>\$0.60</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$13.67	\$13.38	\$102.62	\$193.13	\$102.96	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$14	\$13	\$103	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	34,748	7,300	23,944	4,672	584	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$1,995	\$1,954	\$14,983	\$28,197	\$15,032	NA
Annual Non-Trip Related per Car	\$1,876	\$1,876	\$8,071	\$14,266	\$8,071	NA
Annual Oprtng Trip Related per Car Type	\$237,455	\$48,854	\$1,228,587	\$451,153	\$30,065	NA
Annual Non-Trip Related per Car Type	<u>\$223,244</u>	<u>\$46,900</u>	<u>\$661,822</u>	<u>\$228,256</u>	<u>\$16,142</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,871	\$3,830	\$23,054	\$42,463	\$23,103	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$69,836	\$111,656	\$69,836	NA
Total OPRTNG COST for all cars	\$460,699	\$95,754	\$1,890,409	\$679,409	\$46,207	NA
Total CAPITAL COST for all cars	\$3,333,904	\$700,400	\$5,726,552	\$1,786,496	\$139,672	NA

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	0.0	NA
Capacity Req'd/day (gals)	25.7	21.3	9.6	17.4	14.8	NA
Adj. Capacity Req'd w/ Buffer	32.1	26.7	12.0	21.8	18.5	NA
Tank Capacity per Car (gals)	27	27	229.5	432	229.5	NA
Continuous Service Hours Supported	20	24	460	476	298	NA
As a percentage of 72 hours	28%	34%	639%	661%	413%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.9	1.0	19.8	20.5	12.8	NA
As a percentage of 3 days	28.89%	34.78%	658.47%	681.71%	426.07%	NA
Consecutive Trips before pumpout	0.0	1.0	19.0	20.0	12.0	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$55,250</u>	<u>\$104,000</u>	<u>\$55,250</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$55,250	\$104,000	\$55,250	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$60,146</u>	<u>\$113,216</u>	<u>\$60,146</u>	<u>NA</u>

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$2,304	\$2,304	\$19,584	\$36,864	\$19,584	NA
Annual spare parts cost per yr	<u>\$325</u>	<u>\$325</u>	<u>\$2,763</u>	<u>\$5,200</u>	<u>\$2,763</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$2,629	\$2,629	\$22,347	\$42,064	\$22,347	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.20	\$0.21	\$0.10	\$0.17	\$0.15	NA
- Pump out minutes	0.00	0.36	0.16	0.29	0.25	NA
- Connect/Disc. minutes	7.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.47</u>	<u>\$0.21</u>	<u>\$0.38</u>	<u>\$0.33</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$16.77	\$12.68	\$102.31	\$192.56	\$102.47	NA
Train Delay:						
- Pump out volume req'd	27	0	0	0	0	NA
- # of stops req'd	1	0	0	0	0	NA
- Pump out minutes	0.5	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	7	0	0	0	0	NA
Average Cost Per Delay	\$4	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$21	\$13	\$102	\$193	\$102	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	34,748	7,300	23,944	4,672	584	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$3,100	\$1,852	\$14,937	\$28,113	\$14,961	NA
Annual Non-Trip Related per Car	\$2,629	\$2,629	\$22,347	\$42,064	\$22,347	NA
Annual Oprtng Trip Related per Car Type	\$368,942	\$46,293	\$1,224,815	\$449,814	\$29,922	NA
Annual Non-Trip Related per Car Type	<u>\$312,851</u>	<u>\$65,725</u>	<u>\$1,832,413</u>	<u>\$673,024</u>	<u>\$44,693</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,729	\$4,481	\$37,283	\$70,177	\$37,308	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$60,146	\$113,216	\$60,146	NA
Total OPRTNG COST for all cars	\$681,793	\$112,018	\$3,057,228	\$1,122,838	\$74,615	NA
Total CAPITAL COST for all cars	\$842,044	\$176,900	\$4,931,972	\$1,811,456	\$120,292	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable

Route Number: #87-88

* All data on per car basis (unless noted otherwise)

	25000 Amcoach II	28000 Amlounge II	2400(30) Sleeper 10-6	2080 Slumbercoach 24-	2300 Viewliner-Sleeper	NA NA
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	101.5	84.3	37.8	68.8	58.5	NA
Capacity Req'd/day (gals)	124.1	103.1	46.3	84.2	71.5	NA
Adj. Capacity Req'd w/ Buffer	155.2	128.9	57.9	105.2	89.4	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	46	56	124	68	81	NA
As a percentage of 72 hours	64%	78%	173%	95%	112%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	2.0	2.4	5.3	2.9	3.5	NA
As a percentage of 3 days	66.44%	80.00%	178.18%	98.00%	115.29%	NA
Consecutive Trips before pumpout	1.0	2.0	5.0	2.0	3.0	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	\$10,000	\$10,000	\$85,000	\$160,000	\$85,000	NA
- Total Equip Cost	\$20,000	\$20,000	\$95,000	\$170,000	\$95,000	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
- Total Installation Cost	\$1,152	\$1,152	\$5,472	\$9,792	\$5,472	NA
Total Capital Cost	\$21,152	\$21,152	\$100,472	\$179,792	\$100,472	NA

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Annual spare parts cost per yr	<u>\$1,000</u>	<u>\$1,000</u>	<u>\$4,750</u>	<u>\$8,500</u>	<u>\$4,750</u>	NA
Total- Oprtg Non-Trip Related	\$1,576	\$1,576	\$9,646	\$17,716	\$9,646	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.24	\$1.03	\$0.46	\$0.84	\$0.72	NA
- Pump out minutes	2.07	1.72	0.77	1.40	1.19	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$2.11</u>	<u>\$1.75</u>	<u>\$0.79</u>	<u>\$1.43</u>	<u>\$1.22</u>	NA
Subtotal- End of Day/Trip Srvc	\$15.35	\$14.78	\$103.25	\$194.27	\$103.93	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	NA
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtg Trip Related	\$15	\$15	\$103	\$194	\$104	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	34,748	7,300	23,944	4,672	584	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtg Trip Related per Car	\$2,241	\$2,158	\$15,074	\$28,364	\$15,174	NA
Annual Non-Trip Related per Car	\$1,576	\$1,576	\$9,646	\$17,716	\$9,646	NA
Annual Oprtg Trip Related per Car Type	\$266,718	\$53,960	\$1,236,106	\$453,820	\$30,348	NA
Annual Non-Trip Related per Car Type	<u>\$187,544</u>	<u>\$39,400</u>	<u>\$790,972</u>	<u>\$283,456</u>	<u>\$19,292</u>	NA
Total OPRTNG COST per Car	\$3,817	\$3,734	\$24,720	\$46,080	\$24,820	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$100,472	\$179,792	\$100,472	NA
Total OPRTNG COST for all cars	\$454,262	\$93,360	\$2,027,078	\$737,276	\$49,640	NA
Total CAPITAL COST for all cars	\$2,517,088	\$528,800	\$8,238,704	\$2,876,672	\$200,944	NA

Amtrak Route: Silver Meteor
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	27.7	23.0	10.3	18.8	16.0	NA
Capacity Req'd/day (gals)	52.6	43.7	19.6	35.7	30.3	NA
Adj. Capacity Req'd w/ Buffer	65.7	54.6	24.5	44.6	37.9	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	73	88	196	108	127	NA
As a percentage of 72 hours	101%	122%	272%	150%	176%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	3.1	3.8	8.4	4.6	5.4	NA
As a percentage of 3 days	104.54%	125.88%	280.36%	154.20%	181.41%	NA
Consecutive Trips before pumpout	3.0	3.0	8.0	4.0	5.0	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$49,300</u>	<u>\$92,800</u>	<u>\$49,300</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$61,300	\$104,800	\$61,300	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$6,336	\$10,656	\$6,336	NA
Total Capital Cost	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$67,636</u>	<u>\$115,456</u>	<u>\$67,636</u>	<u>NA</u>

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: 1
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Annual spare parts cost per yr	<u>\$890</u>	<u>\$890</u>	<u>\$3,065</u>	<u>\$5,240</u>	<u>\$3,065</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,466	\$1,466	\$7,961	\$14,456	\$7,961	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.53	\$0.44	\$0.20	\$0.36	\$0.30	NA
- Pump out minutes	0.88	0.73	0.33	0.59	0.51	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$0.89</u>	<u>\$0.74</u>	<u>\$0.33</u>	<u>\$0.61</u>	<u>\$0.52</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$13.42	\$13.18	\$102.53	\$192.96	\$102.82	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	0	NA
- # of stops req'd	0	0	0	0	0	NA
- Pump out minutes	0.0	0.0	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	0	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$13	\$13	\$103	\$193	\$103	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	34,748	7,300	23,944	4,672	584	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$1,959	\$1,924	\$14,969	\$28,173	\$15,011	NA
Annual Non-Trip Related per Car	\$1,466	\$1,466	\$7,961	\$14,456	\$7,961	NA
Annual Oprtng Trip Related per Car Type	\$233,160	\$48,105	\$1,227,483	\$450,761	\$30,023	NA
Annual Non-Trip Related per Car Type	<u>\$174,454</u>	<u>\$36,650</u>	<u>\$652,802</u>	<u>\$231,296</u>	<u>\$15,922</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,425	\$3,390	\$22,930	\$42,629	\$22,972	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$67,636	\$115,456	\$67,636	NA
Total OPRTNG COST for all cars	\$407,614	\$84,755	\$1,880,285	\$682,057	\$45,945	NA
Total CAPITAL COST for all cars	\$2,358,104	\$495,400	\$5,546,152	\$1,847,296	\$135,272	NA

* All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Amlounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
Quantity of cars	7	1	2	1	1	NA
Capacity (# people) - seated	59	49	22	40	34	NA
Toilets per car	2	2	17	32	17	NA
Average persons/toilet on train	29.5	24.5	1.3	1.3	2.0	NA

Car Waste Data (per car)

Black Water:

Human Waste/day (gals)	26.49	22.00	9.88	17.96	15.27	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	155.3	128.9	57.9	105.3	89.5	NA
Capacity Req'd/day (gals)	176.3	146.4	65.7	119.5	101.6	NA
Adj. Capacity Req'd w/ Buffer	220.4	183.0	82.2	149.4	127.0	NA
Tank Capacity per Car (gals)	100	100	450	800	450	NA
Continuous Service Hours Supported	11	13	131	129	85	NA
As a percentage of 72 hours	15%	18%	183%	178%	118%	NA
Probable Service Hours per Day	23.28	23.28	23.28	23.28	23.28	23.28
Service Days Supported	0.5	0.6	5.6	5.5	3.7	NA
As a percentage of 3 days	15.59%	18.78%	188.18%	184.00%	121.77%	NA
Consecutive Trips before pumpout	0.0	0.0	5.0	5.0	3.0	NA

CAPITAL COSTS

Collection System per Car	\$8,000	\$8,000	\$36,000	\$64,000	\$36,000	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$51,000</u>	<u>\$96,000</u>	<u>\$51,000</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$87,000	\$160,000	\$87,000	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$2,592	\$4,608	\$2,592	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$4,896</u>	<u>\$9,216</u>	<u>\$4,896</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$7,488	\$13,824	\$7,488	NA
Total Capital Cost	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA

Amtrak Route: Silver Meteor Route Number: #87-88
 Origin/Destination: New York-Tampa
 Length in Miles: 1,270
 Length in Hours: 23.28
 Expected Trips per Day: .1
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	25000 <u>Amcoach II</u>	28000 <u>Am lounge II</u>	2400(30) <u>Sleeper 10-6</u>	2080 <u>Slumbercoach 24-</u>	2300 <u>Viewliner-Sleeper</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$1,224	\$2,304	\$1,224	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$4,896	\$9,216	\$4,896	NA
Annual spare parts cost per yr	<u>\$700</u>	<u>\$700</u>	<u>\$4,350</u>	<u>\$8,000</u>	<u>\$4,350</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,276	\$1,276	\$9,246	\$17,216	\$9,246	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$102	\$192	\$102	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$4.96	\$4.66	\$0.66	\$1.20	\$1.02	NA
- Pump out minutes	1.27	0.77	1.10	1.99	1.69	NA
- Connect/Disc. minutes	7.0	7.0	0.0	0.0	0.0	NA
- Waste Disposal	<u>\$3.00</u>	<u>\$2.49</u>	<u>\$1.12</u>	<u>\$2.03</u>	<u>\$1.73</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$19.96	\$19.15	\$103.77	\$195.23	\$104.74	NA
Train Delay:						
- Pump out volume req'd	100	100	0	0	0	NA
- # of stops req'd	1	1	0	0	0	NA
- Pump out minutes	1.7	1.7	0.0	0.0	0.0	NA
- Connect/Disc. minutes	<u>7.0</u>	<u>7.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>
- Total Time Delay(mins/car)	9	9	0	0	0	NA
Average Cost Per Delay	\$5	\$5	\$0	\$0	\$0	NA
Subtotal- Oprtng Trip Related	\$25	\$24	\$104	\$195	\$105	NA
Total # Cars in fleet	119	25	82	16	2	NA
Total Annual Car-days	43,435	9,125	29,930	5,840	730	NA
Adjusted Total Car-days	34,748	7,300	23,944	4,672	584	NA
Days per Trip (min. of 1)	2	2	2	2	2	2
Annual Oprtng Trip Related per Car	\$3,673	\$3,556	\$15,151	\$28,503	\$15,292	NA
Annual Non-Trip Related per Car	\$1,276	\$1,276	\$9,246	\$17,216	\$9,246	NA
Annual Oprtng Trip Related per Car Type	\$437,132	\$88,890	\$1,242,394	\$456,051	\$30,585	NA
Annual Non-Trip Related per Car Type	<u>\$151,844</u>	<u>\$31,900</u>	<u>\$758,172</u>	<u>\$275,456</u>	<u>\$18,492</u>	<u>NA</u>
Total OPRTNG COST per Car	\$4,949	\$4,832	\$24,397	\$45,719	\$23,538	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$94,488	\$173,824	\$94,488	NA
Total OPRTNG COST for all cars	\$588,976	\$120,790	\$2,000,566	\$731,507	\$49,077	NA
Total CAPITAL COST for all cars	\$1,803,088	\$378,800	\$7,748,016	\$2,781,184	\$188,976	NA

C4.5 Benjamin Franklin, Boston-Philadelphia

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	33.4	52.9	25.8	NA	NA	NA
Capacity Req'd/day (gals)	31.2	49.5	24.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	39.0	61.8	30.2	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	145	91	187	NA	NA	NA
As a percentage of 72 hours	201%	127%	260%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	11.0	7.0	14.3	NA	NA	NA
As a percentage of 3 days	367.81%	232.07%	475.46%	NA	NA	NA
Consecutive Trips before pumpout	22.0	13.0	28.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$1,300</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,876	\$1,876	\$1,876	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.31	\$0.49	\$0.24	NA	NA	NA
- Pump out minutes	0.52	0.82	0.40	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.06</u>	<u>\$1.68</u>	<u>\$0.82</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.37	\$14.18	\$13.06	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$14	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	13,140	77,672	7,008	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,905	\$4,140	\$3,814	NA	NA	NA
Annual Non-Trip Related per Car	\$1,876	\$1,876	\$1,876	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$175,727	\$1,101,138	\$91,542	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$84,420</u>	<u>\$499,016</u>	<u>\$45,024</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,781	\$6,016	\$5,690	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$260,147	\$1,600,154	\$136,566	NA	NA	NA
Total CAPITAL COST for all cars	\$1,260,720	\$7,452,256	\$672,384	NA	NA	NA

Amtrak Route: Benjamin Franklin Route Number: #193
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	13.0	20.6	10.0	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	16.2	25.7	12.6	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	40	25	52	NA	NA	NA
As a percentage of 72 hours	55%	35%	72%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	3.0	1.9	3.9	NA	NA	NA
As a percentage of 3 days	101.55%	64.07%	131.28%	NA	NA	NA
Consecutive Trips before pumpout	6.0	3.0	7.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcate</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$2,304	\$2,304	\$2,304	NA	NA	NA
Annual spare parts cost per yr	<u>\$325</u>	<u>\$325</u>	<u>\$325</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$2,629	\$2,629	\$2,629	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.21	\$0.10	NA	NA	NA
- Pump out minutes	0.22	0.34	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.57</u>	<u>\$0.91</u>	<u>\$0.44</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$12.70	\$13.11	\$12.54	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$13	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	13,140	77,672	7,008	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,709	\$3,829	\$3,662	NA	NA	NA
Annual Non-Trip Related per Car	\$2,629	\$2,629	\$2,629	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$166,897	\$1,018,410	\$87,899	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$118,305</u>	<u>\$699,314</u>	<u>\$63,096</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$6,338	\$6,458	\$6,291	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$285,202	\$1,717,724	\$150,995	NA	NA	NA
Total CAPITAL COST for all cars	\$318,420	\$1,882,216	\$169,824	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	91.2	144.5	70.5	NA	NA	NA
Capacity Req'd/day (gals)	62.7	99.4	48.5	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	78.4	124.3	60.7	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	92	58	119	NA	NA	NA
As a percentage of 72 hours	127%	80%	165%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	7.0	4.4	9.1	NA	NA	NA
As a percentage of 3 days	233.58%	147.38%	301.94%	NA	NA	NA
Consecutive Trips before pumpout	14.0	8.0	18.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$21,152	\$21,152	\$21,152	NA	NA	NA

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Microphor
Equipment: Gravity
Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$1,000</u>	<u>\$1,000</u>	<u>\$1,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,576	\$1,576	\$1,576	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.63	\$0.99	\$0.49	NA	NA	NA
- Pump out minutes	1.05	1.66	0.81	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$2.13</u>	<u>\$3.38</u>	<u>\$1.65</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$14.76	\$16.38	\$14.14	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$15	\$16	\$14	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	13,140	77,672	7,008	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,310	\$4,782	\$4,128	NA	NA	NA
Annual Non-Trip Related per Car	\$1,576	\$1,576	\$1,576	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$193,958	\$1,271,937	\$99,064	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$70,920</u>	<u>\$419,216</u>	<u>\$37,824</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,886	\$6,358	\$5,704	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$264,878	\$1,691,153	\$136,888	NA	NA	NA
Total CAPITAL COST for all cars	\$951,840	\$5,626,432	\$507,648	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

Route Number: #193

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	24.9	39.5	19.3	NA	NA	NA
Capacity Req'd/day (gals)	26.6	42.1	20.6	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	33.2	52.7	25.7	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	144	91	187	NA	NA	NA
As a percentage of 72 hours	201%	127%	259%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	11.0	7.0	14.3	NA	NA	NA
As a percentage of 3 days	367.53%	231.89%	475.09%	NA	NA	NA
Consecutive Trips before pumpout	22.0	13.0	28.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	<u>\$19,816</u>	<u>\$19,816</u>	<u>\$19,816</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Benjamin Franklin
Origin/Destination: Boston-Philadelphia
Length in Miles: 322
Length in Hours: 6.55
Expected Trips per Day: 2
Manufacturer: Evac
Equipment: Ultimate
Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$890</u>	<u>\$890</u>	<u>\$890</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtg Non-Trip Related	\$1,466	\$1,466	\$1,466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.27	\$0.42	\$0.21	NA	NA	NA
- Pump out minutes	0.44	0.70	0.34	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.90</u>	<u>\$1.43</u>	<u>\$0.70</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srv	\$13.17	\$13.85	\$12.90	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtg Trip Related	\$13	\$14	\$13	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	13,140	77,672	7,008	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$3,846	\$4,045	\$3,768	NA	NA	NA
Annual Non-Trip Related per Car	\$1,466	\$1,466	\$1,466	NA	NA	NA
Annual Oprtg Trip Related per Car Type	\$173,051	\$1,076,067	\$90,438	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$65,970</u>	<u>\$389,956</u>	<u>\$35,184</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,312	\$5,511	\$5,234	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars	\$239,021	\$1,466,023	\$125,622	NA	NA	NA
Total CAPITAL COST for all cars	\$891,720	\$5,271,056	\$475,584	NA	NA	NA

Amtrak Route: Benjamin Franklin
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

Route Number: #193

* All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	1	3	NA	NA	NA
Capacity (# people) - seated	53	84	41	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	26.5	42.0	20.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	23.80	37.72	18.41	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	139.5	221.1	107.9	NA	NA	NA
Capacity Req'd/day (gals)	89.1	141.2	68.9	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	111.4	176.6	86.2	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	22	14	28	NA	NA	NA
As a percentage of 72 hours	30%	19%	39%	NA	NA	NA
Probable Service Hours per Day	13.1	13.1	13.1	13.1	13.1	13.1
Service Days Supported	1.6	1.0	2.1	NA	NA	NA
As a percentage of 3 days	54.82%	34.59%	70.87%	NA	NA	NA
Consecutive Trips before pumpout	3.0	2.0	4.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Benjamin Franklin Route Number: #193
 Origin/Destination: Boston-Philadelphia
 Length in Miles: 322
 Length in Hours: 6.55
 Expected Trips per Day: 2
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	20000 <u>Amcafe</u>	21000 <u>Amcoach</u>	20100 <u>Amclub</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$700</u>	<u>\$700</u>	<u>\$700</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,276	\$1,276	\$1,276	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.89	\$1.41	\$0.69	NA	NA	NA
- Pump out minutes	1.49	2.35	1.15	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$3.03</u>	<u>\$4.80</u>	<u>\$2.34</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$15.92	\$18.21	\$15.03	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$16	\$18	\$15	NA	NA	NA
Total # Cars in fleet	45	266	24	NA	NA	NA
Total Annual Car-days	16,425	97,090	8,760	NA	NA	NA
Adjusted Total Car-days	13,140	77,672	7,008	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,649	\$5,319	\$4,390	NA	NA	NA
Annual Non-Trip Related per Car	\$1,276	\$1,276	\$1,276	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$209,205	\$1,414,777	\$105,354	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$57,420</u>	<u>\$339,416</u>	<u>\$30,624</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,925	\$6,595	\$5,666	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$266,625	\$1,754,193	\$135,978	NA	NA	NA
Total CAPITAL COST for all cars	\$681,840	\$4,030,432	\$363,648	NA	NA	NA

C4.6 Metroliner, Washington DC-New York

Amtrak Route:	Metroliner	Route Number:	#200
Origin/Destination:	Washington DC-New York		
Length in Miles:	225		
Length in Hours:	2.78		
Expected Trips per Day:	6		
Manufacturer:	Monogram		
Equipment:	Modified Vacuum		
Scenario:	Unfavorable		

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	14.5	37.8	20.8	NA	NA	NA
Capacity Req'd/day (gals)	17.2	45.0	24.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	21.6	56.2	30.9	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	262	100	182	NA	NA	NA
As a percentage of 72 hours	363%	139%	253%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	15.7	6.0	10.9	NA	NA	NA
As a percentage of 3 days	522.78%	200.40%	364.36%	NA	NA	NA
Consecutive Trips before pumpout	94.0	36.0	65.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$5,000	\$5,000	\$5,000	NA	NA	NA
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
Origin/Destination: Washington DC-New York
Length in Miles: 225
Length in Hours: 2.78
Expected Trips per Day: 6
Manufacturer: Monogram
Equipment: Modified Vacuum
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20900 <u>Met-Svc Dinette</u>	21900 <u>Met-Svc Coach</u>	20970 <u>Met-Svc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$1,300</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	<u>\$1,876</u>	<u>\$1,876</u>	<u>\$1,876</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Trip Related Costs:						
Toilet maintenance enroute End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.17	\$0.45	\$0.25	NA	NA	NA
- Pump out minutes	0.29	0.75	0.41	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$1.76</u>	<u>\$4.59</u>	<u>\$2.52</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$13.93	\$17.04	\$14.77	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	<u>\$14</u>	<u>\$17</u>	<u>\$15</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,796	14,600	3,796	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,068	\$4,975	\$4,313	NA	NA	NA
Annual Non-Trip Related per Car	\$1,876	\$1,876	\$1,876	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$52,885	\$248,775	\$56,073	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$24,388</u>	<u>\$93,800</u>	<u>\$24,388</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$5,944	\$6,851	\$6,189	NA	NA	NA
Total CAPITAL COST per Car	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars	\$77,273	\$342,575	\$80,461	NA	NA	NA
Total CAPITAL COST for all cars	\$364,208	\$1,400,800	\$364,208	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	7.2	18.7	10.3	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	9.0	23.4	12.9	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	72	28	50	NA	NA	NA
As a percentage of 72 hours	100%	38%	70%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	4.3	1.7	3.0	NA	NA	NA
As a percentage of 3 days	144.34%	55.33%	100.60%	NA	NA	NA
Consecutive Trips before pumpout	25.0	9.0	18.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$2,304	\$2,304	\$2,304	NA	NA	NA
Annual spare parts cost per yr	\$325	\$325	\$325	NA	NA	NA
Total- Oprtng Non-Trip Related	\$2,629	\$2,629	\$2,629	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.07	\$0.19	\$0.10	NA	NA	NA
- Pump out minutes	0.12	0.31	0.17	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$0.95</u>	<u>\$2.47</u>	<u>\$1.36</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$13.02	\$14.66	\$13.46	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$13	\$15	\$13	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,796	14,600	3,796	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$3,802	\$4,280	\$3,931	NA	NA	NA
Annual Non-Trip Related per Car	\$2,629	\$2,629	\$2,629	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$49,421	\$214,017	\$51,103	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$34,177</u>	<u>\$131,450</u>	<u>\$34,177</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$6,431	\$6,909	\$6,560	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$83,598	\$345,467	\$85,280	NA	NA	NA
Total CAPITAL COST for all cars	\$91,988	\$353,800	\$91,988	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	39.6	103.2	56.8	NA	NA	NA
Capacity Req'd/day (gals)	34.7	90.4	49.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	43.3	113.1	62.2	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	166	64	116	NA	NA	NA
As a percentage of 72 hours	231%	88%	161%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	10.0	3.8	6.9	NA	NA	NA
As a percentage of 3 days	332.00%	127.27%	231.39%	NA	NA	NA
Consecutive Trips before pumpout	59.0	22.0	41.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	NA	NA	NA
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	NA	NA	NA
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$21,152</u>	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dnette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	\$1,000	\$1,000	\$1,000	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,576	\$1,576	\$1,576	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.35	\$0.90	\$0.50	NA	NA	NA
- Pump out minutes	0.58	1.51	0.83	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$3.54	\$9.23	\$5.07	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$15.88	\$22.13	\$17.57	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$16	\$22	\$18	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,796	14,600	3,796	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$4,638	\$6,462	\$5,131	NA	NA	NA
Annual Non-Trip Related per Car	\$1,576	\$1,576	\$1,576	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$60,293	\$323,099	\$66,702	NA	NA	NA
Annual Non-Trip Related per Car Type	\$20,488	\$78,800	\$20,488	NA	NA	NA
Total OPRTNG COST per Car	\$6,214	\$8,038	\$6,707	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$80,781	\$401,899	\$87,190	NA	NA	NA
Total CAPITAL COST for all cars	\$274,976	\$1,057,600	\$274,976	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	20900	21900	20970	NA	NA	NA
	<u>Met-Srvc Dinette</u>	<u>Met-Srvc Coach</u>	<u>Met-Srvc Club</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	10.8	28.2	15.5	NA	NA	NA
Capacity Req'd/day (gals)	14.7	38.3	21.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	18.4	47.9	26.3	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	261	100	182	NA	NA	NA
As a percentage of 72 hours	363%	139%	253%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	15.7	6.0	10.9	NA	NA	NA
As a percentage of 3 days	522.38%	200.25%	364.08%	NA	NA	NA
Consecutive Trips before pumpout	94.0	36.0	65.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	\$890	\$890	\$890	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,466	\$1,466	\$1,466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.15	\$0.38	\$0.21	NA	NA	NA
- Pump out minutes	0.24	0.64	0.35	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$1.50	\$3.91	\$2.15	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$13.65	\$16.29	\$14.36	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$14	\$16	\$14	NA	NA	NA
Total # Cars in fleet						
	13	50	13	NA	NA	NA
Total Annual Car-days						
	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days						
	3,796	14,600	3,796	NA	NA	NA
Days per Trip (min. of 1)						
	1	1	1	1	1	1
Annual Oprtng Trip Related per Car						
	\$3,984	\$4,757	\$4,193	NA	NA	NA
Annual Non-Trip Related per Car						
	\$1,466	\$1,466	\$1,466	NA	NA	NA
Annual Oprtng Trip Related per Car Type						
	\$51,798	\$237,865	\$54,513	NA	NA	NA
Annual Non-Trip Related per Car Type						
	\$19,058	\$73,300	\$19,058	NA	NA	NA
Total OPRTNG COST per Car						
	\$5,450	\$6,223	\$5,659	NA	NA	NA
Total CAPITAL COST per Car						
	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRTNG COST for all cars						
	\$70,856	\$311,165	\$73,571	NA	NA	NA
Total CAPITAL COST for all cars						
	\$257,608	\$990,800	\$257,608	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20900 <u>Met-Srvc Dinette</u>	21900 <u>Met-Srvc Coach</u>	20970 <u>Met-Srvc Club</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	1	4	1	NA	NA	NA
Capacity (# people) - seated	23	60	33	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	11.5	30.0	16.5	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	10.33	26.94	14.82	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	60.5	157.9	86.8	NA	NA	NA
Capacity Req'd/day (gals)	49.2	128.5	70.7	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	61.6	160.6	88.3	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	39	15	27	NA	NA	NA
As a percentage of 72 hours	54%	21%	38%	NA	NA	NA
Probable Service Hours per Day	16.68	16.68	16.68	16.68	16.68	16.68
Service Days Supported	2.3	0.9	1.6	NA	NA	NA
As a percentage of 3 days	77.92%	29.87%	54.31%	NA	NA	NA
Consecutive Trips before pumpout	14.0	5.0	9.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Metroliner Route Number: #200
 Origin/Destination: Washington DC-New York
 Length in Miles: 225
 Length in Hours: 2.78
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	20900 Met-Srvc Dinette	21900 Met-Srvc Coach	20970 Met-Srvc Club	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	\$700	\$700	\$700	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,276	\$1,276	\$1,276	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.49	\$1.28	\$0.71	NA	NA	NA
- Pump out minutes	0.82	2.14	1.18	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	\$5.02	\$13.10	\$7.21	NA	NA	NA
Subtotal- End of Day/Trip Srvc	\$17.52	\$26.39	\$19.91	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$18	\$26	\$20	NA	NA	NA
Total # Cars in fleet	13	50	13	NA	NA	NA
Total Annual Car-days	4,745	18,250	4,745	NA	NA	NA
Adjusted Total Car-days	3,796	14,600	3,796	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$5,114	\$7,705	\$5,815	NA	NA	NA
Annual Non-Trip Related per Car	\$1,276	\$1,276	\$1,276	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$66,488	\$385,258	\$75,590	NA	NA	NA
Annual Non-Trip Related per Car Type	\$16,588	\$63,800	\$16,588	NA	NA	NA
Total OPRTRNG COST per Car	\$6,390	\$8,981	\$7,091	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTRNG COST for all cars	\$83,076	\$449,058	\$92,178	NA	NA	NA
Total CAPITAL COST for all cars	\$196,976	\$757,600	\$196,976	NA	NA	NA

C4.7 Hudson Highlander, Albany-New York

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	52.9	14.5	37.8	NA	NA	NA
Capacity Req'd/day (gals)	59.4	16.3	42.4	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	74.2	20.3	53.0	NA	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	76	278	106	NA	NA	NA
As a percentage of 72 hours	106%	386%	148%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	4.8	17.7	6.8	NA	NA	NA
As a percentage of 3 days	161.16%	588.58%	225.62%	NA	NA	NA
Consecutive Trips before pumpout	29.0	105.0	40.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	\$5,000	\$5,000	\$5,000	NA	NA	NA
- Total Equip Cost	\$26,000	\$26,000	\$26,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	\$576	\$576	\$576	NA	NA	NA
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$28,016	\$28,016	\$28,016	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$1,300</u>	<u>\$1,300</u>	<u>\$1,300</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	<u>\$1,876</u>	<u>\$1,876</u>	<u>\$1,876</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.59	\$0.16	\$0.42	NA	NA	NA
- Pump out minutes	0.99	0.27	0.71	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$6.06</u>	<u>\$1.66</u>	<u>\$4.33</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$18.65	\$13.82	\$16.75	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	<u>\$19</u>	<u>\$14</u>	<u>\$17</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total # Cars in fleet						
	266	25	31	NA	NA	NA
Total Annual Car-days						
	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days						
	77,672	7,300	9,052	NA	NA	NA
Days per Trip (min. of 1)						
	1	1	1	1	1	1
Annual Oprtng Trip Related per Car						
	\$5,446	\$4,036	\$4,891	NA	NA	NA
Annual Non-Trip Related per Car						
	\$1,876	\$1,876	\$1,876	NA	NA	NA
Annual Oprtng Trip Related per Car Type						
	\$1,448,510	\$100,890	\$151,615	NA	NA	NA
Annual Non-Trip Related per Car Type						
	<u>\$499,016</u>	<u>\$46,900</u>	<u>\$58,156</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car						
	\$7,322	\$5,912	\$6,767	NA	NA	NA
Total CAPITAL COST per Car						
	\$28,016	\$28,016	\$28,016	NA	NA	NA
Total OPRTNG COST for all cars						
	\$1,947,526	\$147,790	\$209,771	NA	NA	NA
Total CAPITAL COST for all cars						
	\$7,452,256	\$700,400	\$868,496	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	NA	NA	NA
Capacity Req'd/day (gals)	24.7	6.8	17.6	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	30.9	8.5	22.1	NA	NA	NA
Tank Capacity per Car (gals)	27	27	27	NA	NA	NA
Continuous Service Hours Supported	21	77	29	NA	NA	NA
As a percentage of 72 hours	29%	106%	41%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	1.3	4.9	1.9	NA	NA	NA
As a percentage of 3 days	44.50%	162.51%	62.29%	NA	NA	NA
Consecutive Trips before pumpout	8.0	29.0	11.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$6,500</u>	<u>\$6,500</u>	<u>\$6,500</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$6,500	\$6,500	\$6,500	NA	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$576	\$576	NA	NA	NA
Total Capital Cost	<u>\$7,076</u>	<u>\$7,076</u>	<u>\$7,076</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$576	\$576	\$576	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$2,304	\$2,304	\$2,304	NA	NA	NA
Annual spare parts cost per yr	<u>\$325</u>	<u>\$325</u>	<u>\$325</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	<u>\$2,629</u>	<u>\$2,629</u>	<u>\$2,629</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.25	\$0.07	\$0.18	NA	NA	NA
- Pump out minutes	0.41	0.11	0.29	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$3.26</u>	<u>\$0.89</u>	<u>\$2.33</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$15.51	\$12.96	\$14.51	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	<u>\$16</u>	<u>\$13</u>	<u>\$15</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	77,672	7,300	9,052	NA	NA	NA
Days per Trip (min. of 1)	1	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Annual Oprtng Trip Related per Car	\$4,528	\$3,784	\$4,236	NA	NA	NA
Annual Non-Trip Related per Car	\$2,629	\$2,629	\$2,629	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,204,535	\$94,612	\$131,306	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$699,314</u>	<u>\$65,725</u>	<u>\$81,499</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$7,157	\$6,413	\$6,865	NA	NA	NA
Total CAPITAL COST per Car	\$7,076	\$7,076	\$7,076	NA	NA	NA
Total OPRTNG COST for all cars	\$1,903,849	\$160,337	\$212,805	NA	NA	NA
Total CAPITAL COST for all cars	\$1,882,216	\$176,900	\$219,356	NA	NA	NA

C4.8 Electric City Express, Schenectady-New York

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Self-Cont'd Recirc
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.000	0.000	0.000	0.000	0.000	0.000
Flush Fluids/day (gals)	0.0	0.0	0.0	0.0	NA	NA
Capacity Req'd/day (gals)	6.1	16.3	11.8	9.1	NA	NA
Adj. Capacity Req'd w/ Buffer	7.7	20.4	14.7	11.3	NA	NA
Tank Capacity per Car (gals)	13.5	27	13.5	13.5	NA	NA
Continuous Service Hours Supported	42	32	22	29	NA	NA
As a percentage of 72 hours	59%	44%	31%	40%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	3.5	2.6	1.8	2.4	NA	NA
As a percentage of 3 days	116.44%	87.33%	60.46%	78.60%	NA	NA
Consecutive Trips before pumpout	13.0	10.0	7.0	9.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$3,250</u>	<u>\$6,500</u>	<u>\$3,250</u>	<u>\$3,250</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$3,250	\$6,500	\$3,250	\$3,250	NA	NA
Equipment Installation						
Collection System per Car	\$0	\$0	\$0	\$0	\$0	\$0
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$288	\$576	\$288	\$288	NA	NA
Total Capital Cost	<u>\$3,538</u>	<u>\$7,076</u>	<u>\$3,538</u>	<u>\$3,538</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Hudson Highlander **Route Number:** #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Microphor
Equipment: Gravity
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	144.5	39.6	103.2	NA	NA	NA
Capacity Req'd/day (gals)	119.3	32.7	85.2	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	149.2	40.8	106.6	NA	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	48	176	68	NA	NA	NA
As a percentage of 72 hours	67%	245%	94%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	3.1	11.2	4.3	NA	NA	NA
As a percentage of 3 days	102.35%	373.78%	143.28%	NA	NA	NA
Consecutive Trips before pumpout	18.0	67.0	25.0	NA	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$10,000</u>	<u>\$10,000</u>	<u>\$10,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$20,000	\$20,000	\$20,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	<u>\$21,152</u>	<u>\$21,152</u>	<u>\$21,152</u>	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$1,000</u>	<u>\$1,000</u>	<u>\$1,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,576	\$1,576	\$1,576	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.19	\$0.33	\$0.85	NA	NA	NA
- Pump out minutes	1.99	0.54	1.42	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$12.17</u>	<u>\$3.33</u>	<u>\$8.69</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$25.37	\$15.66	\$21.55	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$25	\$16	\$22	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	77,672	7,300	9,052	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$7,407	\$4,573	\$6,292	NA	NA	NA
Annual Non-Trip Related per Car	\$1,576	\$1,576	\$1,576	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,970,220	\$114,316	\$195,044	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$419,216</u>	<u>\$39,400</u>	<u>\$48,856</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$8,983	\$6,149	\$7,868	NA	NA	NA
Total CAPITAL COST per Car	\$21,152	\$21,152	\$21,152	NA	NA	NA
Total OPRTNG COST for all cars	\$2,389,436	\$153,716	\$243,900	NA	NA	NA
Total CAPITAL COST for all cars	\$5,626,432	\$528,800	\$655,712	NA	NA	NA

Amtrak Route: Hudson Highlander
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	21000 <u>Amcoach</u>	20200 <u>Amdinette</u>	21800 <u>Amcoach</u>	NA <u>NA</u>	NA <u>NA</u>	NA <u>NA</u>
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	39.5	10.8	28.2	NA	NA	NA
Capacity Req'd/day (gals)	50.6	13.8	36.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	63.2	17.3	45.1	NA	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	76	277	106	NA	NA	NA
As a percentage of 72 hours	105%	385%	148%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	4.8	17.6	6.8	NA	NA	NA
As a percentage of 3 days	161.04%	588.13%	225.45%	NA	NA	NA
Consecutive Trips before pumpout	28.0	105.0	40.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$5,800</u>	<u>\$5,800</u>	<u>\$5,800</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$17,800	\$17,800	\$17,800	NA	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$2,016	\$2,016	\$2,016	NA	NA	NA
Total Capital Cost	\$19,816	\$19,816	\$19,816	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	\$890	\$890	\$890	NA	NA	NA
Total- Oprtng Non-Trip Related	\$1,466	\$1,466	\$1,466	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.51	\$0.14	\$0.36	NA	NA	NA
- Pump out minutes	0.84	0.23	0.60	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$5.16</u>	<u>\$1.41</u>	<u>\$3.68</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$17.66	\$13.55	\$16.05	NA	NA	NA
Train Delay:						
- Pump out volume req'd	.0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$18	\$14	\$16	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	77,672	7,300	9,052	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$5,158	\$3,957	\$4,685	NA	NA	NA
Annual Non-Trip Related per Car	\$1,466	\$1,466	\$1,466	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$1,371,928	\$98,919	\$145,240	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$389,956</u>	<u>\$36,650</u>	<u>\$45,446</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRNG COST per Car	\$6,624	\$5,423	\$6,151	NA	NA	NA
Total CAPITAL COST per Car	\$19,816	\$19,816	\$19,816	NA	NA	NA
Total OPRNG COST for all cars	\$1,761,884	\$135,569	\$190,686	NA	NA	NA
Total CAPITAL COST for all cars	\$5,271,056	\$495,400	\$614,296	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
Origin/Destination: Albany-New York City
Length in Miles: 142
Length in Hours: 2.62
Expected Trips per Day: 6
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA	NA	NA
Quantity of cars	3	1	1	NA	NA	NA
Capacity (# people) - seated	84	23	60	NA	NA	NA
Toilets per car	2	2	2	NA	NA	NA
Average persons/toilet on train	42.0	11.5	30.0	NA	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	37.72	10.33	26.94	NA	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	221.1	60.5	157.9	NA	NA	NA
Capacity Req'd/day (gals)	169.5	46.4	121.1	NA	NA	NA
Adj. Capacity Req'd w/ Buffer	211.9	58.0	151.3	NA	NA	NA
Tank Capacity per Car (gals)	100	100	100	NA	NA	NA
Continuous Service Hours Supported	11	41	16	NA	NA	NA
As a percentage of 72 hours	16%	57%	22%	NA	NA	NA
Probable Service Hours per Day	15.72	15.72	15.72	15.72	15.72	15.72
Service Days Supported	0.7	2.6	1.0	NA	NA	NA
As a percentage of 3 days	24.02%	87.73%	33.63%	NA	NA	NA
Consecutive Trips before pumpout	4.0	15.0	6.0	NA	NA	NA
CAPITAL COSTS						
Collection System per Car	\$8,000	\$8,000	\$8,000	NA	NA	NA
Toilet Cost per Car	<u>\$6,000</u>	<u>\$6,000</u>	<u>\$6,000</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$14,000	\$14,000	\$14,000	NA	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	NA	NA	NA
Toilet Cost per Car	<u>\$576</u>	<u>\$576</u>	<u>\$576</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$1,152	\$1,152	\$1,152	NA	NA	NA
Total Capital Cost	\$15,152	\$15,152	\$15,152	NA	NA	NA

Amtrak Route: Hudson Highlander Route Number: #242
 Origin/Destination: Albany-New York City
 Length in Miles: 142
 Length in Hours: 2.62
 Expected Trips per Day: 6
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	21000 Amcoach	20200 Amdinette	21800 Amcoach	NA NA	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$144	\$144	\$144	NA	NA	NA
Frequency per Year	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Servicing Cost/Year	\$576	\$576	\$576	NA	NA	NA
Annual spare parts cost per yr	<u>\$700</u>	<u>\$700</u>	<u>\$700</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,276	\$1,276	\$1,276	NA	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$12	\$12	\$12	NA	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$1.69	\$0.46	\$1.21	NA	NA	NA
- Pump out minutes	2.82	0.77	2.02	NA	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	NA	NA	NA
- Waste Disposal	<u>\$17.29</u>	<u>\$4.73</u>	<u>\$12.35</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Svc	\$30.98	\$17.20	\$25.56	NA	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	NA	NA	NA
- # of stops req'd	0	0	0	NA	NA	NA
- Pump out minutes	0.0	0.0	0.0	NA	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	NA	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	NA	NA	NA
Subtotal- Oprtng Trip Related	\$31	\$17	\$26	NA	NA	NA
Total # Cars in fleet	266	25	31	NA	NA	NA
Total Annual Car-days	97,090	9,125	11,315	NA	NA	NA
Adjusted Total Car-days	77,672	7,300	9,052	NA	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$9,047	\$5,022	\$7,463	NA	NA	NA
Annual Non-Trip Related per Car	\$1,276	\$1,276	\$1,276	NA	NA	NA
Annual Oprtng Trip Related per Car Type	\$2,406,532	\$125,544	\$231,364	NA	NA	NA
Annual Non-Trip Related per Car Type	<u>\$339,416</u>	<u>\$31,900</u>	<u>\$39,556</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$10,323	\$6,298	\$8,739	NA	NA	NA
Total CAPITAL COST per Car	\$15,152	\$15,152	\$15,152	NA	NA	NA
Total OPRTNG COST for all cars	\$2,745,948	\$157,444	\$270,920	NA	NA	NA
Total CAPITAL COST for all cars	\$4,030,432	\$378,800	\$469,712	NA	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.063	0.063	0.063	0.063	0.063	0.063
Flush Fluids/day (gals)	17.0	45.4	32.8	25.2	NA	NA
Capacity Req'd/day (gals)	14.7	39.2	28.3	21.8	NA	NA
Adj. Capacity Req'd w/ Buffer	18.4	49.0	35.4	27.2	NA	NA
Tank Capacity per Car (gals)	235	235	235	235	235	235
Continuous Service Hours Supported	307	115	159	207	NA	NA
As a percentage of 72 hours	426%	160%	221%	288%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	25.3	9.5	13.1	17.1	NA	NA
As a percentage of 3 days	843.47%	316.30%	437.95%	569.34%	NA	NA
Consecutive Trips before pumpout	101.0	37.0	52.0	68.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000	\$21,000
Toilet Cost per Car	<u>\$2,500</u>	<u>\$5,000</u>	<u>\$2,500</u>	<u>\$2,500</u>	NA	NA
- Total Equip Cost	\$23,500	\$26,000	\$23,500	\$23,500	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	<u>\$25,228</u>	<u>\$28,016</u>	<u>\$25,228</u>	<u>\$25,228</u>	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Monogram
 Equipment: Modified Vacuum
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$288	\$576	\$288	\$288	NA	NA
Annual spare parts cost per yr	\$1,175	\$1,300	\$1,175	\$1,175	NA	NA
Total- Oprtng Non-Trip Related	\$1,463	\$1,876	\$1,463	\$1,463	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.15	\$0.39	\$0.28	\$0.22	NA	NA
- Pump out minutes	0.25	0.65	0.47	0.36	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$1.00	\$2.67	\$1.93	\$1.48	NA	NA
Subtotal- End of Day/Trip Srv	\$7.15	\$15.06	\$8.21	\$7.70	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$15	\$8	\$8	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,752	6,132	876	4,088	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,087	\$4,398	\$2,397	\$2,248	NA	NA
Annual Non-Trip Related per Car	\$1,463	\$1,876	\$1,463	\$1,463	NA	NA
Annual Oprtng Trip Related per Car Type	\$12,523	\$92,349	\$7,192	\$31,478	NA	NA
Annual Non-Trip Related per Car Type	\$8,778	\$39,396	\$4,389	\$20,482	NA	NA
Total OPRNG COST per Car	\$3,550	\$6,274	\$3,860	\$3,711	NA	NA
Total CAPITAL COST per Car	\$25,228	\$28,016	\$25,228	\$25,228	NA	NA
Total OPRNG COST for all cars	\$21,301	\$131,745	\$11,581	\$51,960	NA	NA
Total CAPITAL COST for all cars	\$151,368	\$588,336	\$75,684	\$353,192	NA	NA

Amtrak Route: Electric City Express **Route Number:** #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Monogram
Equipment: Self-Cont'd Recirc
Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	151-Odd <u>Turbo Power Club</u>	170 <u>Turbo Coach</u>	170 <u>Turbo Cafe</u>	150-Even <u>Turbo Power Coac</u>	NA <u>NA</u>	NA <u>NA</u>
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$288	\$576	\$288	\$288	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$1,152	\$2,304	\$1,152	\$1,152	NA	NA
Annual spare parts cost per yr	<u>\$163</u>	<u>\$325</u>	<u>\$163</u>	<u>\$163</u>	<u>NA</u>	<u>NA</u>
Total- Oprtng Non-Trip Related	\$1,315	\$2,629	\$1,315	\$1,315	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.06	\$0.16	\$0.12	\$0.09	NA	NA
- Pump out minutes	0.10	0.27	0.20	0.15	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	<u>\$0.54</u>	<u>\$1.44</u>	<u>\$1.04</u>	<u>\$0.80</u>	<u>NA</u>	<u>NA</u>
Subtotal- End of Day/Trip Srvc	\$6.60	\$13.60	\$7.16	\$6.89	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>NA</u>	<u>NA</u>
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$7	\$14	\$7	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,752	6,132	876	4,088	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$1,927	\$3,971	\$2,089	\$2,012	NA	NA
Annual Non-Trip Related per Car	\$1,315	\$2,629	\$1,315	\$1,315	NA	NA
Annual Oprtng Trip Related per Car Type	\$11,563	\$83,395	\$6,268	\$28,162	NA	NA
Annual Non-Trip Related per Car Type	<u>\$7,887</u>	<u>\$55,209</u>	<u>\$3,944</u>	<u>\$18,403</u>	<u>NA</u>	<u>NA</u>
Total OPRTNG COST per Car	\$3,242	\$6,600	\$3,404	\$3,326	NA	NA
Total CAPITAL COST per Car	\$3,538	\$7,076	\$3,538	\$3,538	NA	NA
Total OPRTNG COST for all cars	\$19,450	\$138,604	\$10,212	\$46,565	NA	NA
Total CAPITAL COST for all cars	\$21,228	\$148,596	\$10,614	\$49,532	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Microphor
Equipment: Gravity
Scenario: Unfavorable
* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.172	0.172	0.172	0.172	0.172	0.172
Flush Fluids/day (gals)	46.4	123.8	89.4	68.8	NA	NA
Capacity Req'd/day (gals)	29.6	78.9	57.0	43.8	NA	NA
Adj. Capacity Req'd w/ Buffer	37.0	98.6	71.2	54.8	NA	NA
Tank Capacity per Car (gals)	300	300	300	300	300	300
Continuous Service Hours Supported	195	73	101	131	NA	NA
As a percentage of 72 hours	271%	101%	140%	183%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	16.1	6.0	8.3	10.8	NA	NA
As a percentage of 3 days	535.65%	200.87%	278.13%	361.57%	NA	NA
Consecutive Trips before pumpout	64.0	24.0	33.0	43.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Toilet Cost per Car	<u>\$5,000</u>	<u>\$10,000</u>	<u>\$5,000</u>	<u>\$5,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$15,000	\$20,000	\$15,000	\$15,000	NA	NA
Equipment Installation						
Collection System per Car	\$576	\$576	\$576	\$576	\$576	\$576
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$864	\$1,152	\$864	\$864	NA	NA
Total Capital Cost	<u>\$15,864</u>	<u>\$21,152</u>	<u>\$15,864</u>	<u>\$15,864</u>	<u>NA</u>	<u>NA</u>

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Microphor
 Equipment: Gravity
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coach	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$288	\$576	\$288	\$288	NA	NA
Annual spare parts cost per yr	\$750	\$1,000	\$750	\$750	NA	NA
Total- Oprtng Non-Trip Related	\$1,038	\$1,576	\$1,038	\$1,038	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.30	\$0.79	\$0.57	\$0.44	NA	NA
- Pump out minutes	0.49	1.31	0.95	0.73	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$2.01	\$5.36	\$3.87	\$2.98	NA	NA
Subtotal- End of Day/Trip Svc	\$8.31	\$18.15	\$10.44	\$9.42	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$8	\$18	\$10	\$9	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,752	6,132	876	4,088	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,426	\$5,300	\$3,049	\$2,750	NA	NA
Annual Non-Trip Related per Car	\$1,038	\$1,576	\$1,038	\$1,038	NA	NA
Annual Oprtng Trip Related per Car Type	\$14,554	\$111,305	\$9,148	\$38,499	NA	NA
Annual Non-Trip Related per Car Type	\$6,228	\$33,096	\$3,114	\$14,532	NA	NA
Total OPRTNG COST per Car	\$3,464	\$6,876	\$4,087	\$3,788	NA	NA
Total CAPITAL COST per Car	\$15,864	\$21,152	\$15,864	\$15,864	NA	NA
Total OPRTNG COST for all cars	\$20,782	\$144,401	\$12,262	\$53,031	NA	NA
Total CAPITAL COST for all cars	\$95,184	\$444,192	\$47,592	\$222,096	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Evac
 Equipment: Ultimate
 Scenario: Unfavorable
 * All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.047	0.047	0.047	0.047	0.047	0.047
Flush Fluids/day (gals)	12.7	33.8	24.4	18.8	NA	NA
Capacity Req'd/day (gals)	12.5	33.4	24.1	18.6	NA	NA
Adj. Capacity Req'd w/ Buffer	15.7	41.8	30.2	23.2	NA	NA
Tank Capacity per Car (gals)	200	200	200	200	200	200
Continuous Service Hours Supported	306	115	159	207	NA	NA
As a percentage of 72 hours	426%	160%	221%	287%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	25.3	9.5	13.1	17.1	NA	NA
As a percentage of 3 days	842.82%	316.06%	437.62%	568.91%	NA	NA
Consecutive Trips before pumpout	101.0	37.0	52.0	68.0	NA	NA

CAPITAL COSTS

Collection System per Car	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Toilet Cost per Car	<u>\$2,900</u>	<u>\$5,800</u>	<u>\$2,900</u>	<u>\$2,900</u>	NA	NA
- Total Equip Cost	\$14,900	\$17,800	\$14,900	\$14,900	NA	NA
Equipment Installation						
Collection System per Car	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440	\$1,440
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	NA	NA
- Total Installation Cost	\$1,728	\$2,016	\$1,728	\$1,728	NA	NA
Total Capital Cost	\$16,628	\$19,816	\$16,628	\$16,628	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Evac
Equipment: Ultimate
Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$288	\$576	\$288	\$288	NA	NA
Annual spare parts cost per yr	\$745	\$890	\$745	\$745	NA	NA
Total- Oprtg Non-Trip Related	\$1,033	\$1,466	\$1,033	\$1,033	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.13	\$0.33	\$0.24	\$0.19	NA	NA
- Pump out minutes	0.21	0.56	0.40	0.31	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$0.85	\$2.27	\$1.64	\$1.26	NA	NA
Subtotal- End of Day/Trip Srvc	\$6.98	\$14.61	\$7.88	\$7.45	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtg Trip Related	\$7	\$15	\$8	\$7	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,752	6,132	876	4,088	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtg Trip Related per Car	\$2,037	\$4,265	\$2,302	\$2,175	NA	NA
Annual Non-Trip Related per Car	\$1,033	\$1,466	\$1,033	\$1,033	NA	NA
Annual Oprtg Trip Related per Car Type	\$12,224	\$89,566	\$6,905	\$30,447	NA	NA
Annual Non-Trip Related per Car Type	\$6,198	\$30,786	\$3,099	\$14,462	NA	NA
Total OPRTNG COST per Car	\$3,070	\$5,731	\$3,335	\$3,208	NA	NA
Total CAPITAL COST per Car	\$16,628	\$19,816	\$16,628	\$16,628	NA	NA
Total OPRTNG COST for all cars	\$18,422	\$120,352	\$10,004	\$44,909	NA	NA
Total CAPITAL COST for all cars	\$99,768	\$416,136	\$49,884	\$232,792	NA	NA

Amtrak Route: Electric City Express Route Number: #250
Origin/Destination: Schenectady-New York City
Length in Miles: 160
Length in Hours: 3.03
Expected Trips per Day: 4
Manufacturer: Railtech
Equipment: WTS 8300
Scenario: Unfavorable
* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA	NA
Quantity of cars	1	3	1	1	NA	NA
Capacity (# people) - seated	27	72	52	40	NA	NA
Toilets per car	1	2	1	1	NA	NA
Average persons/toilet on train	27.0	36.0	52.0	40.0	NA	NA

Car Waste Data (per car)

Black Water:						
Human Waste/day (gals)	12.12	32.33	23.35	17.96	NA	NA
# Flushes/Person-day	8.00	8.00	8.00	8.00	8.00	8.00
Flush efficiency adjustment	1.25	1.25	1.25	1.25	1.25	1.25
Adj. # Flushes/Person-day	10	10	10	10	10	10
Flush Fluids/flush (gals)	0.263	0.263	0.263	0.263	0.263	0.263
Flush Fluids/day (gals)	71.1	189.5	136.8	105.3	NA	NA
Capacity Req'd/day (gals)	42.0	112.0	80.9	62.2	NA	NA
Adj. Capacity Req'd w/ Buffer	52.5	140.0	101.1	77.8	NA	NA
Tank Capacity per Car (gals)	50	100	50	50	NA	NA
Continuous Service Hours Supported	23	17	12	15	NA	NA
As a percentage of 72 hours	32%	24%	16%	21%	NA	NA
Probable Service Hours per Day	12.12	12.12	12.12	12.12	12.12	12.12
Service Days Supported	1.9	1.4	1.0	1.3	NA	NA
As a percentage of 3 days	62.86%	47.14%	32.64%	42.43%	NA	NA
Consecutive Trips before pumpout	7.0	5.0	3.0	5.0	NA	NA
CAPITAL COSTS						
Collection System per Car	\$4,000	\$8,000	\$4,000	\$4,000	NA	NA
Toilet Cost per Car	<u>\$3,000</u>	<u>\$6,000</u>	<u>\$3,000</u>	<u>\$3,000</u>	<u>NA</u>	<u>NA</u>
- Total Equip Cost	\$7,000	\$14,000	\$7,000	\$7,000	NA	NA
Equipment Installation						
Collection System per Car	\$288	\$576	\$288	\$288	NA	NA
Toilet Cost per Car	<u>\$288</u>	<u>\$576</u>	<u>\$288</u>	<u>\$288</u>	<u>NA</u>	<u>NA</u>
- Total Installation Cost	\$576	\$1,152	\$576	\$576	NA	NA
Total Capital Cost	\$7,576	\$15,152	\$7,576	\$7,576	NA	NA

Amtrak Route: Electric City Express Route Number: #250
 Origin/Destination: Schenectady-New York City
 Length in Miles: 160
 Length in Hours: 3.03
 Expected Trips per Day: 4
 Manufacturer: Railtech
 Equipment: WTS 8300
 Scenario: Unfavorable

* All data on per car basis (unless noted otherwise)

	151-Odd Turbo Power Club	170 Turbo Coach	170 Turbo Cafe	150-Even Turbo Power Coac	NA NA	NA NA
OPERATING COSTS						
Non-Trip Related Costs:						
Labor cost/major servicing	\$72	\$144	\$72	\$72	NA	NA
Frequency per Year	4	4	4	4	4	4
Servicing Cost/Year	\$288	\$576	\$288	\$288	NA	NA
Annual spare parts cost per yr	\$350	\$700	\$350	\$350	NA	NA
Total- Oprtng Non-Trip Related	\$638	\$1,276	\$638	\$638	NA	NA
Trip Related Costs:						
Toilet maintenance enroute						
End of Day/Trip Servicing						
- Cleaning	\$6	\$12	\$6	\$6	NA	NA
- Light Repair	\$0	\$0	\$0	\$0	\$0	\$0
Pump out and Disposal						
- Pump out Cost	\$0.42	\$1.12	\$0.81	\$0.62	NA	NA
- Pump out minutes	0.70	1.87	1.35	1.04	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Waste Disposal	\$2.86	\$7.62	\$5.50	\$4.23	NA	NA
Subtotal- End of Day/Trip Srvc	\$9.28	\$20.74	\$12.31	\$10.85	NA	NA
Train Delay:						
- Pump out volume req'd	0	0	0	0	NA	NA
- # of stops req'd	0	0	0	0	NA	NA
- Pump out minutes	0.0	0.0	0.0	0.0	NA	NA
- Connect/Disc. minutes	0.0	0.0	0.0	0.0	NA	NA
- Total Time Delay(mins/car)	0	0	0	0	NA	NA
Average Cost Per Delay	\$0	\$0	\$0	\$0	NA	NA
Subtotal- Oprtng Trip Related	\$9	\$21	\$12	\$11	NA	NA
Total # Cars in fleet	6	21	3	14	NA	NA
Total Annual Car-days	2,190	7,665	1,095	5,110	NA	NA
Adjusted Total Car-days	1,752	6,132	876	4,088	NA	NA
Days per Trip (min. of 1)	1	1	1	1	1	1
Annual Oprtng Trip Related per Car	\$2,709	\$6,055	\$3,594	\$3,169	NA	NA
Annual Non-Trip Related per Car	\$638	\$1,276	\$638	\$638	NA	NA
Annual Oprtng Trip Related per Car Type	\$16,252	\$127,158	\$10,783	\$44,370	NA	NA
Annual Non-Trip Related per Car Type	\$3,828	\$26,796	\$1,914	\$8,932	NA	NA
Total OPRNG COST per Car	\$3,347	\$7,331	\$4,232	\$3,807	NA	NA
Total CAPITAL COST per Car	\$7,576	\$15,152	\$7,576	\$7,576	NA	NA
Total OPRNG COST for all cars	\$20,080	\$153,954	\$12,697	\$53,302	NA	NA
Total CAPITAL COST for all cars	\$45,456	\$318,192	\$22,728	\$106,064	NA	NA

APPENDIX D

**COST MODEL FOR AMTRAK RETENTION TOILET SYSTEMS—
COSTS BY CAR TYPE**

D1 Monogram Modified Vacuum

Car Type: Coach-HEP-HLV
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 72
 Number of Toilets: 4
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$33,592		
- Equipment:	\$31,000		
- Installation:	\$2,592		
Maintenance Cost:	\$1,794		
- Labor:	\$864		
- Spare Parts:	\$930		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
Waste Generated:	32.33	64.66	96.98
Flush Fluid Generated:	34.93	69.85	104.78
Capacity Adjustment:	16.81	33.63	50.44
Total Capacity Required per Day:	84.07	168.14	252.21
Pumpout Labor Cost:	\$0.3	\$0.7	\$1.0
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$4.2
Cleaning Labor Cost:	\$24.0	\$24.0	\$24.0
Total Pumpout/Cleaning Cost per Day:	\$26.4	\$26.8	\$29.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$146	\$195	\$219
Maximum Continuous Hours of Service:	67.1	67.1	67.1
Total Operating Cost per Service Hour:	\$1.73	\$1.04	\$0.84
- Trip Related:	\$1.15	\$0.61	\$0.45
- Non-Trip Related:	\$0.59	\$0.44	\$0.39
Total per-Car Operating Cost per Year:	\$5,319	\$4,271	\$3,881
Total Fleet Operating Cost per Year:	\$111,698	\$89,693	\$81,507
Total Fleet Capital Cost:	\$705,432		



Monogram

Favorable

Unfavorable

\$33,592		
\$31,000		
\$2,592		
\$886		
\$576		
\$310		
24	48	72
1	1	1
32.33	64.66	96.98
27.22	54.43	81.65
14.89	29.77	44.66
74.43	148.86	223.29
\$0.3	\$0.5	\$0.8
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.4	\$26.6	\$26.9
219	219	219
110	73	55
\$111	\$148	\$166
75.8	75.8	75.8
\$1.48	\$0.85	\$0.64
\$1.14	\$0.60	\$0.42
\$0.34	\$0.25	\$0.22
\$3,885	\$2,979	\$2,526
\$81,576	\$62,555	\$53,045
\$705,432		

\$33,592		
\$31,000		
\$2,592		
\$2,702		
\$1,152		
\$1,550		
24	48	72
1	1	1
32.33	64.66	96.98
45.36	90.72	136.08
19.42	38.84	58.27
97.11	194.22	291.33
\$0.5	\$0.9	\$1.4
\$2.1	\$2.1	\$4.2
\$24.0	\$24.0	\$24.0
\$26.6	\$27.0	\$29.6
292	292	292
146	97	73
\$193	\$257	\$289
58.1	58.1	58.1
\$1.93	\$1.20	\$0.98
\$1.16	\$0.62	\$0.47
\$0.77	\$0.58	\$0.51
\$6,772	\$5,588	\$5,149
\$142,205	\$117,344	\$108,133
\$705,432		

Car Type: Lounge-HEP-HLV

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 86

Number of Toilets: 2

Total Tank Capacity (gals): 235.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$28,016

\$26,000

\$2,016

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,212

\$432

\$780

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

Flush Fluid Generated:

Capacity Adjustment:

Total Capacity Required per Day:

38.61

41.72

20.08

100.42

77.23

83.44

40.17

200.83

115.84

125.16

60.25

301.25

Pumpout Labor Cost:

Connect/Disconnect Labor Cost:

Cleaning Labor Cost:

Total Pumpout/Cleaning Cost per Day:

\$0.4

\$2.1

\$12.0

\$14.5

\$0.8

\$2.1

\$12.0

\$14.9

\$1.3

\$4.2

\$12.0

\$17.5

Days Operated per Year:

Clean-out Cycles per Year:

255

128

255

85

255

64

Waste Disposal Cost per Year:

\$174

\$233

\$262

Maximum Continuous Hours of Service:

Total Operating Cost per Service Hour:

- Trip Related:

- Non-Trip Related:

56.2

\$1.06

\$0.66

\$0.40

56.2

\$0.66

\$0.37

\$0.30

56.2

\$0.56

\$0.30

\$0.26

Total per-Car Operating Cost per Year:

\$3,241

\$2,717

\$2,588

Total Fleet Operating Cost per Year:

\$19,446

\$16,299

\$15,530

Total Fleet Capital Cost:

\$168,096

Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
24	48	72
1	1	1
38.61	77.23	115.84
32.51	65.02	97.52
17.78	35.56	53.34
88.90	177.81	266.71
\$0.3	\$0.7	\$1.0
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.4	\$14.8	\$17.2
219	219	219
110	73	55
\$132	\$177	\$199
63.4	63.4	63.4
\$0.86	\$0.51	\$0.43
\$0.65	\$0.36	\$0.29
\$0.21	\$0.16	\$0.14
\$2,260	\$1,801	\$1,687
\$13,560	\$10,808	\$10,122
\$168,096		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
24	48	72
1	1	1
38.61	77.23	115.84
54.18	108.36	162.54
23.20	46.40	69.60
115.99	231.99	347.98
\$0.5	\$1.1	\$1.6
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.6	\$15.2	\$17.8
292	292	292
146	97	73
\$230	\$307	\$345
48.6	48.6	48.6
\$1.21	\$0.78	\$0.67
\$0.68	\$0.38	\$0.31
\$0.54	\$0.40	\$0.36
\$4,244	\$3,661	\$3,523
\$25,464	\$21,966	\$21,136
\$168,096		

Car Type: Trans Dorm Coach

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 40

Number of Toilets: 4

Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$33,592		
- Equipment:	\$31,000		
- Installation:	\$2,592		
Maintenance Cost:	\$1,794		
- Labor:	\$864		
- Spare Parts:	\$930		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	17.96	35.92	53.88
Flush Fluid Generated:	19.40	38.81	58.21
Capacity Adjustment:	9.34	18.68	28.02
Total Capacity Required per Day:	46.71	93.41	140.12
Pumpout Labor Cost:	\$0.2	\$0.4	\$0.6
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$24.0	\$24.0	\$24.0
Total Pumpout/Cleaning Cost per Day:	\$26.3	\$26.5	\$26.7
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$81	\$108	\$122
Maximum Continuous Hours of Service:	120.8	120.8	120.8
Total Operating Cost per Service Hour:	\$1.71	\$1.02	\$0.79
- Trip Related:	\$1.12	\$0.58	\$0.40
- Non-Trip Related:	\$0.59	\$0.44	\$0.39
Total per-Car Operating Cost per Year:	\$5,234	\$4,158	\$3,620
Total Fleet Operating Cost per Year:	\$188,432	\$149,691	\$130,321
Total Fleet Capital Cost:	\$1,209,312		

Monogram

Favorable

\$33,592		
\$31,000		
\$2,592		
\$886		
\$576		
\$310		
24	48	72
1	1	1
17.96	35.92	53.88
15.12	30.24	45.36
8.27	16.54	24.81
41.35	82.70	124.05
\$0.2	\$0.3	\$0.5
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.3	\$26.4	\$26.6
219	219	219
110	73	55
\$62	\$82	\$92
136.4	136.4	136.4
\$1.45	\$0.83	\$0.62
\$1.12	\$0.57	\$0.39
\$0.34	\$0.25	\$0.22
\$3,822	\$2,895	\$2,432
\$137,595	\$104,237	\$87,558
\$1,209,312		

Unfavorable

\$33,592		
\$31,000		
\$2,592		
\$2,702		
\$1,152		
\$1,550		
24	48	72
1	1	1
17.96	35.92	53.88
25.20	50.40	75.60
10.79	21.58	32.37
53.95	107.90	161.85
\$0.3	\$0.5	\$0.8
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.4	\$26.6	\$26.9
292	292	292
146	97	73
\$107	\$143	\$161
104.5	104.5	104.5
\$1.90	\$1.16	\$0.92
\$1.13	\$0.58	\$0.40
\$0.77	\$0.58	\$0.51
\$6,657	\$5,434	\$4,823
\$239,635	\$195,634	\$173,634
\$1,209,312		

Car Type: **Sleeper Super**
 Toilet Type: **Modified Vacuum**

Manufacturer:

Number of Passengers: **44**
 Number of Toilets: **12**
 Total Tank Capacity (gals): **235.0**

Scenario: Expected

D-5

Capital Cost	\$55,896		
- Equipment:	\$51,000		
- Installation:	\$4,896		
Maintenance Cost:	\$4,122		
- Labor:	\$2,592		
- Spare Parts:	\$1,530		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	19.76	39.51	59.27
Flush Fluid Generated:	21.34	42.69	64.03
Capacity Adjustment:	10.28	20.55	30.83
Total Capacity Required per Day:	51.38	102.75	154.13
Pumpout Labor Cost:	\$0.2	\$0.4	\$0.6
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$72.0	\$72.0	\$72.0
Total Pumpout/Cleaning Cost per Day:	\$74.3	\$74.5	\$74.7
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$89	\$119	\$134
Maximum Continuous Hours of Service:	109.8	109.8	109.8
Total Operating Cost per Service Hour:	\$4.47	\$2.59	\$1.96
- Trip Related:	\$3.13	\$1.58	\$1.07
- Non-Trip Related:	\$1.34	\$1.01	\$0.90
Total per-Car Operating Cost per Year:	\$13,705	\$10,588	\$9,030
Total Fleet Operating Cost per Year:	\$931,927	\$719,999	\$614,035
Total Fleet Capital Cost:	\$3,800,928		

Monogram

Favorable

Unfavorable

\$55,896		
\$51,000		
\$4,896		
\$2,238		
\$1,728		
\$510		
24	48	72
1	1	1
19.76	39.51	59.27
16.63	33.26	49.90
9.10	18.19	27.29
45.49	90.97	136.46
\$0.2	\$0.3	\$0.5
\$2.1	\$2.1	\$2.1
\$72.0	\$72.0	\$72.0
\$74.3	\$74.4	\$74.6
219	219	219
110	73	55
\$68	\$90	\$102
124.0	124.0	124.0
\$3.97	\$2.22	\$1.63
\$3.12	\$1.58	\$1.06
\$0.85	\$0.64	\$0.57
\$10,438	\$7,762	\$6,424
\$709,777	\$527,809	\$436,825
\$3,800,928		

\$55,896		
\$51,000		
\$4,896		
\$6,006		
\$3,456		
\$2,550		
24	48	72
1	1	1
19.76	39.51	59.27
27.72	55.44	83.16
11.87	23.74	35.61
59.35	118.69	178.04
\$0.3	\$0.6	\$0.8
\$2.1	\$2.1	\$2.1
\$72.0	\$72.0	\$72.0
\$74.4	\$74.7	\$74.9
292	292	292
146	97	73
\$118	\$157	\$177
95.0	95.0	95.0
\$4.85	\$2.87	\$2.22
\$3.13	\$1.59	\$1.07
\$1.71	\$1.29	\$1.14
\$16,983	\$13,429	\$11,653
\$1,154,838	\$913,204	\$792,388
\$3,800,928		

Car Type: Bag Coach Super

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 78

Number of Toilets: 5

Total Tank Capacity (gals): 235.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$36,380

\$33,500

\$2,880

Maintenance Cost:

- Labor:

- Spare Parts:

\$2,085

\$1,080

\$1,005

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

35.02

70.04

105.07

Flush Fluid Generated:

37.84

75.68

113.51

Capacity Adjustment:

18.21

36.43

54.64

Total Capacity Required per Day:

91.07

182.15

273.22

Pumpout Labor Cost:

\$0.4

\$0.8

\$1.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$4.2

Cleaning Labor Cost:

\$30.0

\$30.0

\$30.0

Total Pumpout/Cleaning Cost per Day:

\$32.5

\$32.9

\$35.3

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$158

\$211

\$237

Maximum Continuous Hours of Service:

61.9

61.9

61.9

Total Operating Cost per Service Hour:

\$2.08

\$1.25

\$1.00

- Trip Related:

\$1.40

\$0.74

\$0.54

- Non-Trip Related:

\$0.68

\$0.51

\$0.45

Total per-Car Operating Cost per Year:

\$6,392

\$5,094

\$4,579

Total Fleet Operating Cost per Year:

\$306,833

\$244,525

\$219,810

Total Fleet Capital Cost:

\$1,746,240

Monogram

Favorable

Unfavorable

\$36,380		
\$33,500		
\$2,880		
\$1,055		
\$720		
\$335		
24	48	72
1	1	1
35.02	70.04	105.07
29.48	58.97	88.45
16.13	32.25	48.38
80.63	161.27	241.90
\$0.3	\$0.6	\$0.9
\$2.1	\$2.1	\$4.2
\$30.0	\$30.0	\$30.0
\$32.4	\$32.7	\$35.1
219	219	219
110	73	55
\$120	\$160	\$180
69.9	69.9	69.9
\$1.80	\$1.03	\$0.80
\$1.40	\$0.73	\$0.53
\$0.40	\$0.30	\$0.27
\$4,722	\$3,601	\$3,156
\$226,671	\$172,870	\$151,488
\$1,746,240		

\$36,380		
\$33,500		
\$2,880		
\$3,115		
\$1,440		
\$1,675		
24	48	72
1	1	1
35.02	70.04	105.07
49.14	98.28	147.42
21.04	42.08	63.12
105.20	210.41	315.61
\$0.5	\$1.0	\$1.5
\$2.1	\$2.1	\$4.2
\$30.0	\$30.0	\$30.0
\$32.6	\$33.1	\$35.7
292	292	292
146	97	73
\$209	\$279	\$313
53.6	53.6	53.6
\$2.31	\$1.42	\$1.15
\$1.42	\$0.75	\$0.56
\$0.89	\$0.67	\$0.59
\$8,082	\$6,614	\$6,033
\$387,947	\$317,452	\$289,562
\$1,746,240		

Car Type: Coach Super
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 75
 Number of Toilets: 6
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost \$39,168
 - Equipment: \$36,000
 - Installation: \$3,168

Maintenance Cost: \$2,376
 - Labor: \$1,296
 - Spare Parts: \$1,080

	24	48	72
Hours per Trip:	24	48	72
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	33.68	67.35	101.03
Flush Fluid Generated:	36.38	72.77	109.15
Capacity Adjustment:	17.51	35.03	52.54
Total Capacity Required per Day:	87.57	175.14	262.72

Pumpout Labor Cost:	\$0.4	\$0.7	\$1.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$4.2
Cleaning Labor Cost:	\$36.0	\$36.0	\$36.0
Total Pumpout/Cleaning Cost per Day:	\$38.5	\$38.8	\$41.3

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64

Waste Disposal Cost per Year:	\$152	\$203	\$228
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Maximum Continuous Hours of Service:	64.4	64.4	64.4
Total Operating Cost per Service Hour:	\$2.43	\$1.44	\$1.14
- Trip Related:	\$1.65	\$0.86	\$0.62
- Non-Trip Related:	\$0.77	\$0.58	\$0.52

Total per-Car Operating Cost per Year:	\$7,442	\$5,886	\$5,242
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Total Fleet Operating Cost per Year:	\$677,213	\$535,597	\$476,996
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Total Fleet Capital Cost:	\$3,564,288
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Monogram

Favorable

\$39,168		
\$36,000		
\$3,168		
\$1,224		
\$864		
\$360		
24	48	72
1	1	1
33.68	67.35	101.03
28.35	56.70	85.05
15.51	31.01	46.52
77.53	155.06	232.59
\$0.3	\$0.6	\$0.9
\$2.1	\$2.1	\$2.1
\$36.0	\$36.0	\$36.0
\$38.4	\$38.7	\$39.0
219	219	219
110	73	55
\$115	\$154	\$173
72.7	72.7	72.7
\$2.11	\$1.20	\$0.90
\$1.64	\$0.85	\$0.58
\$0.47	\$0.35	\$0.31
\$5,542	\$4,201	\$3,530
\$504,363	\$382,258	\$321,205
\$3,564,288		

Unfavorable

\$39,168		
\$36,000		
\$3,168		
\$3,528		
\$1,728		
\$1,800		
24	48	72
1	1	1
33.68	67.35	101.03
47.25	94.50	141.75
20.23	40.46	60.69
101.16	202.31	303.47
\$0.5	\$0.9	\$1.4
\$2.1	\$2.1	\$4.2
\$36.0	\$36.0	\$36.0
\$38.6	\$39.0	\$41.6
292	292	292
146	97	73
\$201	\$268	\$301
55.8	55.8	55.8
\$2.67	\$1.63	\$1.31
\$1.66	\$0.87	\$0.64
\$1.01	\$0.76	\$0.67
\$9,360	\$7,596	\$6,867
\$851,800	\$691,253	\$624,930
\$3,564,288		

Car Type: Horizon
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 82
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost \$28,016
 - Equipment: \$26,000
 - Installation: \$2,016

Maintenance Cost: \$1,212
 - Labor: \$432
 - Spare Parts: \$780

	12	24	48
Hours per Trip:	12	24	48
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	18.41	36.82	73.64
Flush Fluid Generated:	19.89	39.78	79.56
Capacity Adjustment:	9.57	19.15	38.30
Total Capacity Required per Day:	47.87	95.75	191.49

Pumpout Labor Cost:	\$0.2	\$0.4	\$0.8
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.3	\$14.5	\$14.9

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85

Waste Disposal Cost per Year:	\$166	\$166	\$222
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Maximum Continuous Hours of Service:	58.9	58.9	58.9
Total Operating Cost per Service Hour:	\$1.64	\$1.05	\$0.66
- Trip Related:	\$1.25	\$0.66	\$0.36
- Non-Trip Related:	\$0.40	\$0.40	\$0.30

Total per-Car Operating Cost per Year:	\$5,032	\$3,230	\$2,702
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Total Fleet Operating Cost per Year:	\$518,267	\$332,735	\$278,347
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Total Fleet Capital Cost:	\$2,885,648
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Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
12	24	48
1	1	1
18.41	36.82	73.64
15.50	31.00	61.99
8.48	16.95	33.91
42.38	84.77	169.54
\$0.2	\$0.3	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.4	\$14.7
219	219	219
219	110	73
\$126	\$126	\$168
66.5	66.5	66.5
\$1.44	\$0.86	\$0.51
\$1.24	\$0.65	\$0.35
\$0.21	\$0.21	\$0.16
\$3,796	\$2,252	\$1,791
\$390,996	\$231,969	\$184,459
\$2,885,648		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
12	24	48
1	1	1
18.41	36.82	73.64
25.83	51.66	103.32
11.06	22.12	44.24
55.30	110.60	221.20
\$0.3	\$0.5	\$1.0
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.6	\$15.1
292	292	292
292	146	97
\$220	\$220	\$293
51.0	51.0	51.0
\$1.79	\$1.21	\$0.78
\$1.26	\$0.67	\$0.38
\$0.54	\$0.54	\$0.40
\$6,288	\$4,230	\$3,642
\$647,687	\$435,651	\$375,102
\$2,885,648		

Car Type: Coach
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 48
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost
 - Equipment: \$28,016
 - Installation: \$26,000
 \$2,016

Maintenance Cost: \$1,212
 - Labor: \$432
 - Spare Parts: \$780

	12	24	48
Hours per Trip:	12	24	48
Trips per Day:	1	1	1

Waste Generation Data

	10.78	21.55	43.10
<u>Waste Generated:</u>	10.78	21.55	43.10
Flush Fluid Generated:	11.64	23.28	46.57
Capacity Adjustment:	5.60	11.21	22.42
Total Capacity Required per Day:	28.02	56.05	112.09

	\$0.1	\$0.2	\$0.5
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.5
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.3	\$14.6

	255	255	255
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85

	\$97	\$97	\$130
Waste Disposal Cost per Year:	\$97	\$97	\$130

	100.6	100.6	100.6
Maximum Continuous Hours of Service:	100.6	100.6	100.6
Total Operating Cost per Service Hour:	\$1.61	\$1.02	\$0.63
- Trip Related:	\$1.22	\$0.63	\$0.34
- Non-Trip Related:	\$0.40	\$0.40	\$0.30

	\$4,942	\$3,140	\$2,582
Total per-Car Operating Cost per Year:	\$4,942	\$3,140	\$2,582

	\$385,450	\$244,951	\$201,423
Total Fleet Operating Cost per Year:	\$385,450	\$244,951	\$201,423

	\$2,185,248
Total Fleet Capital Cost:	\$2,185,248

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
12	24	48
1	1	1
10.78	21.55	43.10
9.07	18.14	36.29
4.96	9.92	19.85
24.81	49.62	99.24
\$0.1	\$0.2	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.5
219	219	219
219	110	73
\$74	\$74	\$99
113.7	113.7	113.7
\$1.42	\$0.83	\$0.49
\$1.21	\$0.62	\$0.33
\$0.21	\$0.21	\$0.16
\$3,730	\$2,186	\$1,702
\$290,914	\$170,486	\$132,781
\$2,185,248		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
12	24	48
1	1	1
10.78	21.55	43.10
15.12	30.24	60.48
6.47	12.95	25.90
32.37	64.74	129.48
\$0.2	\$0.3	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.4	\$14.7
292	292	292
292	146	97
\$129	\$129	\$171
87.1	87.1	87.1
\$1.76	\$1.17	\$0.74
\$1.22	\$0.64	\$0.34
\$0.54	\$0.54	\$0.40
\$6,166	\$4,107	\$3,479
\$480,940	\$320,369	\$271,336
\$2,185,248		

Car Type: Coach (HDCP)
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 44
 Number of Toilets: 3
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$30,804		
- Equipment:	\$28,500		
- Installation:	\$2,304		
Maintenance Cost:	\$1,503		
- Labor:	\$648		
- Spare Parts:	\$855		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	9.88	19.76	39.51
Flush Fluid Generated:	10.67	21.34	42.69
Capacity Adjustment:	5.14	10.28	20.55
Total Capacity Required per Day:	25.69	51.38	102.75
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.4
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$18.0	\$18.0	\$18.0
Total Pumpout/Cleaning Cost per Day:	\$20.2	\$20.3	\$20.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$89	\$89	\$119
Maximum Continuous Hours of Service:	109.8	109.8	109.8
Total Operating Cost per Service Hour:	\$2.20	\$1.37	\$0.82
- Trip Related:	\$1.71	\$0.88	\$0.46
- Non-Trip Related:	\$0.49	\$0.49	\$0.37
Total per-Car Operating Cost per Year:	\$6,755	\$4,187	\$3,370
Total Fleet Operating Cost per Year:	\$141,857	\$87,933	\$70,775
Total Fleet Capital Cost:	\$646,884		

Monogram

Favorable

Unfavorable

\$30,804		
\$28,500		
\$2,304		
\$717		
\$432		
\$285		
12	24	48
1	1	1
9.88	19.76	39.51
8.32	16.63	33.26
4.55	9.10	18.19
22.74	45.49	90.97
\$0.1	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.2	\$20.3	\$20.4
219	219	219
219	110	73
\$68	\$68	\$90
124.0	124.0	124.0
\$1.98	\$1.14	\$0.66
\$1.71	\$0.87	\$0.45
\$0.27	\$0.27	\$0.20
\$5,205	\$3,004	\$2,299
\$109,302	\$63,082	\$48,277
\$646,884		

\$30,804		
\$28,500		
\$2,304		
\$2,289		
\$864		
\$1,425		
12	24	48
1	1	1
9.88	19.76	39.51
13.86	27.72	55.44
5.93	11.87	23.74
29.67	59.35	118.69
\$0.1	\$0.3	\$0.6
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.2	\$20.4	\$20.7
292	292	292
292	146	97
\$118	\$118	\$157
95.0	95.0	95.0
\$2.37	\$1.54	\$0.95
\$1.72	\$0.88	\$0.46
\$0.65	\$0.65	\$0.49
\$8,317	\$5,382	\$4,456
\$174,647	\$113,020	\$93,586
\$646,884		

Car Type:
Toilet Type:

Dome Coach
Modified Vacuum

Manufacturer:

Number of Passengers: 46
Number of Toilets: 2
Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost
- Equipment: \$28,016
- Installation: \$26,000
\$2,016

Maintenance Cost: \$1,212
- Labor: \$432
- Spare Parts: \$780

Hours per Trip: 12 24 48
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 10.33 20.65 41.31
Flush Fluid Generated: 11.16 22.31 44.63
Capacity Adjustment: 5.37 10.74 21.48
Total Capacity Required per Day: 26.86 53.71 107.42

Pumpout Labor Cost: \$0.1 \$0.2 \$0.4
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.2 \$14.3 \$14.5

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 128 85

Waste Disposal Cost per Year: \$93 \$93 \$124

Maximum Continuous Hours of Service: 105.0 105.0 105.0
Total Operating Cost per Service Hour: \$1.61 \$1.02 \$0.63
- Trip Related: \$1.21 \$0.63 \$0.33
- Non-Trip Related: \$0.40 \$0.40 \$0.30

Total per-Car Operating Cost per Year: \$4,936 \$3,135 \$2,575

Total Fleet Operating Cost per Year: \$59,236 \$37,621 \$30,903

Total Fleet Capital Cost: \$336,192

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
12	24	48
1	1	1
10.33	20.65	41.31
8.69	17.39	34.78
4.76	9.51	19.02
23.78	47.55	95.11
\$0.1	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.4
219	219	219
219	110	73
\$71	\$71	\$94
118.6	118.6	118.6
\$1.42	\$0.83	\$0.48
\$1.21	\$0.62	\$0.33
\$0.21	\$0.21	\$0.16
\$3,726	\$2,182	\$1,697
\$44,709	\$26,182	\$20,365
\$336,192		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
12	24	48
1	1	1
10.33	20.65	41.31
14.49	28.98	57.96
6.20	12.41	24.82
31.02	62.04	124.09
\$0.1	\$0.3	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.4	\$14.7
292	292	292
292	146	97
\$123	\$123	\$164
90.9	90.9	90.9
\$1.76	\$1.17	\$0.74
\$1.22	\$0.63	\$0.34
\$0.54	\$0.54	\$0.40
\$6,159	\$4,100	\$3,469
\$73,904	\$49,201	\$41,629
\$336,192		

Car Type:

Amlounge II

Toilet Type:

Modified Vacuum

Manufacturer:

Number of Passengers:

49

Number of Toilets:

2

Total Tank Capacity (gals):

235.0

Scenario:

Expected

Capital Cost

\$28,016

- Equipment:

\$26,000

- Installation:

\$2,016

Maintenance Cost:

\$1,212

- Labor:

\$432

- Spare Parts:

\$780

Hours per Trip:

12

24

48

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

11.00

22.00

44.00

Flush Fluid Generated:

11.88

23.77

47.54

Capacity Adjustment:

5.72

11.44

22.89

Total Capacity Required per Day:

28.61

57.21

114.43

Pumpout Labor Cost:

\$0.1

\$0.2

\$0.5

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.2

\$14.3

\$14.6

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

128

85

Waste Disposal Cost per Year:

\$99

\$99

\$133

Maximum Continuous Hours of Service:

98.6

98.6

98.6

Total Operating Cost per Service Hour:

\$1.61

\$1.03

\$0.63

- Trip Related:

\$1.22

\$0.63

\$0.34

- Non-Trip Related:

\$0.40

\$0.40

\$0.30

Total per-Car Operating Cost per Year:

\$4,944

\$3,143

\$2,586

Total Fleet Operating Cost per Year:

\$123,608

\$78,576

\$64,647

Total Fleet Capital Cost:

\$700,400

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
12	24	48
1	1	1
11.00	22.00	44.00
9.26	18.52	37.04
5.07	10.13	20.26
25.33	50.65	101.31
\$0.1	\$0.2	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.5
219	219	219
219	110	73
\$75	\$75	\$101
111.3	111.3	111.3
\$1.42	\$0.83	\$0.49
\$1.21	\$0.62	\$0.33
\$0.21	\$0.21	\$0.16
\$3,732	\$2,188	\$1,705
\$93,290	\$54,692	\$42,623
\$700,400		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
12	24	48
1	1	1
11.00	22.00	44.00
15.44	30.87	61.74
6.61	13.22	26.44
33.04	66.09	132.18
\$0.2	\$0.3	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.4	\$14.7
292	292	292
292	146	97
\$131	\$131	\$175
85.3	85.3	85.3
\$1.76	\$1.17	\$0.75
\$1.23	\$0.64	\$0.34
\$0.54	\$0.54	\$0.40
\$6,169	\$4,111	\$3,483
\$154,237	\$102,772	\$87,087
\$700,400		

Car Type: **Sleeper 10-6**
 Toilet Type: **Modified Vacuum**

Manufacturer:

Number of Passengers: 22
 Number of Toilets: 17
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost
 - Equipment: \$69,836
 - Installation: \$63,500
 \$6,336

Maintenance Cost: \$5,577
 - Labor: \$3,672
 - Spare Parts: \$1,905

	12	24	48
Hours per Trip:	1	1	1
Trips per Day:			

Waste Generation Data

	4.94	9.88	19.76
<u>Waste Generated:</u>			
Flush Fluid Generated:	5.34	10.67	21.34
Capacity Adjustment:	2.57	5.14	10.28
Total Capacity Required per Day:	12.84	25.69	51.38

	\$0.1	\$0.1	\$0.2
Pumpout Labor Cost:	\$2.1	\$2.1	\$2.1
Connect/Disconnect Labor Cost:	\$102.0	\$102.0	\$102.0
Cleaning Labor Cost:	\$104.2	\$104.2	\$104.3
Total Pumpout/Cleaning Cost per Day:			

	255	255	255
Days Operated per Year:	255	128	85
Clean-out Cycles per Year:			

	\$45	\$45	\$60
Waste Disposal Cost per Year:			

	219.6	219.6	219.6
Maximum Continuous Hours of Service:	\$10.51	\$6.18	\$3.55
Total Operating Cost per Service Hour:	\$8.69	\$4.36	\$2.19
- Trip Related:	\$1.82	\$1.82	\$1.36
- Non-Trip Related:			

	\$32,233	\$18,934	\$14,521
Total per-Car Operating Cost per Year:			

	\$2,413,091	\$1,552,591	\$1,190,684
Total Fleet Operating Cost per Year:			

	\$5,726,552
Total Fleet Capital Cost:	

Monogram

Favorable

\$69,836		
\$63,500		
\$6,336		
\$3,083		
\$2,448		
\$635		
12	24	48
1	1	1
4.94	9.88	19.76
4.16	8.32	16.63
2.27	4.55	9.10
11.37	22.74	45.49
\$0.0	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.1	\$104.2	\$104.3
219	219	219
219	110	73
\$34	\$34	\$45
248.0	248.0	248.0
\$9.86	\$5.53	\$3.06
\$8.69	\$4.35	\$2.19
\$1.17	\$1.17	\$0.88
\$25,924	\$14,525	\$10,740
\$2,125,758	\$1,191,044	\$880,647
\$5,726,552		

Unfavorable

\$69,836		
\$63,500		
\$6,336		
\$8,071		
\$4,896		
\$3,175		
12	24	48
1	1	1
4.94	9.88	19.76
6.93	13.86	27.72
2.97	5.93	11.87
14.84	29.67	59.35
\$0.1	\$0.1	\$0.3
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.2	\$104.2	\$104.4
292	292	292
292	146	97
\$59	\$59	\$79
190.1	190.1	190.1
\$11.00	\$6.66	\$3.92
\$8.70	\$4.36	\$2.19
\$2.30	\$2.30	\$1.73
\$38,547	\$23,349	\$18,309
\$3,160,883	\$1,914,598	\$1,501,333
\$5,726,552		

Car Type: **Amcoach II**
 Toilet Type: **Modified Vacuum**

Manufacturer:

Number of Passengers: **59**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **235.0**

Scenario: Expected

Capital Cost **\$28,016**
 - Equipment: **\$26,000**
 - Installation: **\$2,016**

Maintenance Cost: **\$1,212**
 - Labor: **\$432**
 - Spare Parts: **\$780**

Hours per Trip: **24** **48** **72**
 Trips per Day: **1** **1** **1**

Waste Generation Data

Waste Generated: **26.49** **52.98** **79.47**
 Flush Fluid Generated: **28.62** **57.24** **85.86**
 Capacity Adjustment: **13.78** **27.56** **41.33**
 Total Capacity Required per Day: **68.89** **137.78** **206.67**

Pumpout Labor Cost: **\$0.3** **\$0.6** **\$0.9**
 Connect/Disconnect Labor Cost: **\$2.1** **\$2.1** **\$2.1**
 Cleaning Labor Cost: **\$12.0** **\$12.0** **\$12.0**
 Total Pumpout/Cleaning Cost per Day: **\$14.4** **\$14.7** **\$15.0**

Days Operated per Year: **255** **255** **255**
 Clean-out Cycles per Year: **128** **85** **64**

Waste Disposal Cost per Year: **\$120** **\$160** **\$180**

Maximum Continuous Hours of Service: **81.9** **81.9** **81.9**
 Total Operating Cost per Service Hour: **\$1.03** **\$0.64** **\$0.51**
 - Trip Related: **\$0.64** **\$0.34** **\$0.25**
 - Non-Trip Related: **\$0.40** **\$0.30** **\$0.26**

Total per-Car Operating Cost per Year: **\$3,170** **\$2,621** **\$2,347**

Total Fleet Operating Cost per Year: **\$377,174** **\$311,921** **\$279,295**

Total Fleet Capital Cost: **\$3,333,904**

Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
24	48	72
1	1	1
26.49	52.98	79.47
22.30	44.60	66.91
12.20	24.40	36.59
60.99	121.98	182.97
\$0.2	\$0.4	\$0.7
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.5	\$14.8
219	219	219
110	73	55
\$91	\$121	\$136
92.5	92.5	92.5
\$0.84	\$0.49	\$0.38
\$0.63	\$0.34	\$0.24
\$0.21	\$0.16	\$0.14
\$2,207	\$1,731	\$1,493
\$262,657	\$205,985	\$177,649
\$3,333,904		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
24	48	72
1	1	1
26.49	52.98	79.47
37.17	74.34	111.51
15.92	31.83	47.75
79.58	159.15	238.73
\$0.4	\$0.7	\$1.1
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.5	\$14.8	\$17.3
292	292	292
146	97	73
\$158	\$211	\$237
70.9	70.9	70.9
\$1.18	\$0.76	\$0.64
\$0.65	\$0.35	\$0.29
\$0.54	\$0.40	\$0.36
\$4,147	\$3,531	\$3,377
\$493,478	\$420,241	\$401,864
\$3,333,904		

Car Type: Slumbercoach 24-8

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 40

Number of Toilets: 32

Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost \$111,656
- Equipment: \$101,000
- Installation: \$10,656

Maintenance Cost: \$9,942
- Labor: \$6,912
- Spare Parts: \$3,030

Hours per Trip:	24	48	72
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	17.96	35.92	53.88
Flush Fluid Generated:	19.40	38.81	58.21
Capacity Adjustment:	9.34	18.68	28.02
Total Capacity Required per Day:	46.71	93.41	140.12

Pumpout Labor Cost:	\$0.2	\$0.4	\$0.6
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$192.0	\$192.0	\$192.0
Total Pumpout/Cleaning Cost per Day:	\$194.3	\$194.5	\$194.7

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64

Waste Disposal Cost per Year:	\$81	\$108	\$122
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Maximum Continuous Hours of Service:	120.8	120.8	120.8
Total Operating Cost per Service Hour:	\$11.36	\$6.51	\$4.89
- Trip Related:	\$8.12	\$4.08	\$2.73
- Non-Trip Related:	\$3.24	\$2.43	\$2.16

Total per-Car Operating Cost per Year:	\$34,844	\$26,614	\$22,499
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Total Fleet Operating Cost per Year:	\$557,507	\$425,826	\$359,985
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Total Fleet Capital Cost:	\$1,786,496		
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Monogram

Favorable

\$111,656		
\$101,000		
\$10,656		
\$5,618		
\$4,608		
\$1,010		
24	48	72
1	1	1
17.96	35.92	53.88
15.12	30.24	45.36
8.27	16.54	24.81
41.35	82.70	124.05
\$0.2	\$0.3	\$0.5
\$2.1	\$2.1	\$2.1
\$192.0	\$192.0	\$192.0
\$194.3	\$194.4	\$194.6
219	219	219
110	73	55
\$62	\$82	\$92
136.4	136.4	136.4
\$10.25	\$5.68	\$4.15
\$8.12	\$4.07	\$2.73
\$2.14	\$1.60	\$1.43
\$26,950	\$19,891	\$16,362
\$431,201	\$318,264	\$261,795
\$1,786,496		

Unfavorable

\$111,656		
\$101,000		
\$10,656		
\$14,266		
\$9,216		
\$5,050		
24	48	72
1	1	1
17.96	35.92	53.88
25.20	50.40	75.60
10.79	21.58	32.37
53.95	107.90	161.85
\$0.3	\$0.5	\$0.8
\$2.1	\$2.1	\$2.1
\$192.0	\$192.0	\$192.0
\$194.4	\$194.6	\$194.9
292	292	292
146	97	73
\$107	\$143	\$161
104.5	104.5	104.5
\$12.20	\$7.14	\$5.45
\$8.13	\$4.08	\$2.74
\$4.07	\$3.05	\$2.71
\$42,749	\$33,350	\$28,651
\$683,976	\$533,605	\$458,419
\$1,786,496		

Car Type: Viewliner-Sleeper

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 34

Number of Toilets: 17

Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$69,836		
- Equipment:	\$63,500		
- Installation:	\$6,336		
Maintenance Cost:	\$5,577		
- Labor:	\$3,672		
- Spare Parts:	\$1,905		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.27	30.53	45.80
Flush Fluid Generated:	16.49	32.99	49.48
Capacity Adjustment:	7.94	15.88	23.82
Total Capacity Required per Day:	39.70	79.40	119.10
Pumpout Labor Cost:	\$0.2	\$0.3	\$0.5
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$104.3	\$104.4	\$104.6
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$69	\$92	\$103
Maximum Continuous Hours of Service:	142.1	142.1	142.1
Total Operating Cost per Service Hour:	\$6.19	\$3.56	\$2.69
- Trip Related:	\$4.37	\$2.20	\$1.48
- Non-Trip Related:	\$1.82	\$1.36	\$1.21
Total per-Car Operating Cost per Year:	\$18,966	\$14,563	\$12,361
Total Fleet Operating Cost per Year:	\$37,932	\$29,126	\$24,723
Total Fleet Capital Cost:	\$139,672		

Monogram

Favorable

Unfavorable

\$69,836		
\$63,500		
\$6,336		
\$3,083		
\$2,448		
\$635		
24	48	72
1	1	1
15.27	30.53	45.80
12.85	25.70	38.56
7.03	14.06	21.09
35.15	70.30	105.44
\$0.1	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.2	\$104.4	\$104.5
219	219	219
110	73	55
\$52	\$70	\$79
160.5	160.5	160.5
\$5.54	\$3.07	\$2.25
\$4.36	\$2.19	\$1.47
\$1.17	\$0.88	\$0.78
\$14,548	\$10,771	\$8,882
\$29,097	\$21,542	\$17,764
\$139,672		

\$69,836		
\$63,500		
\$6,336		
\$8,071		
\$4,896		
\$3,175		
24	48	72
1	1	1
15.27	30.53	45.80
21.42	42.84	64.26
9.17	18.34	27.51
45.86	91.72	137.57
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.3	\$104.5	\$104.7
292	292	292
146	97	73
\$91	\$121	\$137
123.0	123.0	123.0
\$6.68	\$3.93	\$3.02
\$4.37	\$2.20	\$1.48
\$2.30	\$1.73	\$1.54
\$23,392	\$18,367	\$15,854
\$46,784	\$36,733	\$31,708
\$139,672		

Car Type:
Toilet Type:

Amcafe
Modified Vacuum

Manufacturer:

Number of Passengers: 53
Number of Toilets: 2
Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.86	15.86	23.80
Flush Fluid Generated:	17.14	17.14	25.71
Capacity Adjustment:	8.25	8.25	12.38
Total Capacity Required per Day:	41.26	41.26	61.88
Pumpout Labor Cost:	\$0.2	\$0.2	\$0.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.3	\$14.3	\$14.4
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$143	\$143	\$108
Maximum Continuous Hours of Service:	91.1	91.1	91.1
Total Operating Cost per Service Hour:	\$1.22	\$1.22	\$1.03
- Trip Related:	\$0.93	\$0.93	\$0.63
- Non-Trip Related:	\$0.30	\$0.30	\$0.40
Total per-Car Operating Cost per Year:	\$5,002	\$5,002	\$3,154
Total Fleet Operating Cost per Year:	\$225,076	\$225,076	\$141,914
Total Fleet Capital Cost:	\$1,260,720		

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
8	16	24
2	1	1
15.86	15.86	23.80
13.36	13.36	20.03
7.31	7.31	10.96
36.53	36.53	54.79
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
219	219	219
219	219	110
\$109	\$109	\$82
102.9	102.9	102.9
\$1.08	\$1.08	\$0.84
\$0.92	\$0.92	\$0.63
\$0.16	\$0.16	\$0.21
\$3,774	\$3,774	\$2,195
\$169,827	\$169,827	\$98,797
\$1,260,720		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
8	16	24
2	1	1
15.86	15.86	23.80
22.26	22.26	33.39
9.53	9.53	14.30
47.66	47.66	71.48
\$0.2	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.4
292	292	292
292	292	146
\$189	\$189	\$142
78.9	78.9	78.9
\$1.34	\$1.34	\$1.18
\$0.94	\$0.94	\$0.64
\$0.40	\$0.40	\$0.54
\$6,247	\$6,247	\$4,125
\$281,135	\$281,135	\$185,638
\$1,260,720		

Car Type: **Amcoach**
 Toilet Type: **Modified Vacuum**

Manufacturer:

Number of Passengers: **84**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **235.0**

Scenario: **Expected**

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	25.14	25.14	37.72
Flush Fluid Generated:	27.17	27.17	40.75
Capacity Adjustment:	13.08	13.08	19.62
Total Capacity Required per Day:	65.39	65.39	98.08
Pumpout Labor Cost:	\$0.3	\$0.3	\$0.4
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.4	\$14.4	\$14.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$227	\$227	\$170
Maximum Continuous Hours of Service:	57.5	57.5	57.5
Total Operating Cost per Service Hour:	\$1.25	\$1.25	\$1.06
- Trip Related:	\$0.95	\$0.95	\$0.66
- Non-Trip Related:	\$0.30	\$0.30	\$0.40
Total per-Car Operating Cost per Year:	\$5,111	\$5,111	\$3,236
Total Fleet Operating Cost per Year:	\$1,359,570	\$1,359,570	\$860,706
Total Fleet Capital Cost:	\$7,452,256		

Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
8	16	24
2	1	1
25.14	25.14	37.72
21.17	21.17	31.75
11.58	11.58	17.37
57.89	57.89	86.84
\$0.2	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.4
219	219	219
219	219	110
\$172	\$172	\$129
65.0	65.0	65.0
\$1.10	\$1.10	\$0.86
\$0.94	\$0.94	\$0.65
\$0.16	\$0.16	\$0.21
\$3,855	\$3,855	\$2,256
\$1,025,344	\$1,025,344	\$600,105
\$7,452,256		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
8	16	24
2	1	1
25.14	25.14	37.72
35.28	35.28	52.92
15.11	15.11	22.66
75.53	75.53	113.30
\$0.4	\$0.4	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.5	\$14.6
292	292	292
292	292	146
\$300	\$300	\$225
49.8	49.8	49.8
\$1.37	\$1.37	\$1.21
\$0.97	\$0.97	\$0.67
\$0.40	\$0.40	\$0.54
\$6,396	\$6,396	\$4,237
\$1,701,379	\$1,701,379	\$1,126,995
\$7,452,256		

Car Type: Amclub
 Toilet Type: Modified Vacuum
 Manufacturer:

Number of Passengers: 41
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	12.27	12.27	18.41
Flush Fluid Generated:	13.26	13.26	19.89
Capacity Adjustment:	6.38	6.38	9.57
Total Capacity Required per Day:	31.92	31.92	47.87
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$111	\$111	\$83
Maximum Continuous Hours of Service:	117.8	117.8	117.8
Total Operating Cost per Service Hour:	\$1.21	\$1.21	\$1.02
- Trip Related:	\$0.92	\$0.92	\$0.62
- Non-Trip Related:	\$0.30	\$0.30	\$0.40
Total per-Car Operating Cost per Year:	\$4,959	\$4,959	\$3,122
Total Fleet Operating Cost per Year:	\$119,024	\$119,024	\$74,925
Total Fleet Capital Cost:	\$672,384		

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
8	16	24
2	1	1
12.27	12.27	18.41
10.33	10.33	15.50
5.65	5.65	8.48
28.26	28.26	42.38
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
219	219	219
219	219	110
\$84	\$84	\$63
133.1	133.1	133.1
\$1.07	\$1.07	\$0.83
\$0.91	\$0.91	\$0.62
\$0.16	\$0.16	\$0.21
\$3,743	\$3,743	\$2,172
\$89,824	\$89,824	\$52,129
\$672,384		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
8	16	24
2	1	1
12.27	12.27	18.41
17.22	17.22	25.83
7.37	7.37	11.06
36.87	36.87	55.30
\$0.2	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.4
292	292	292
292	292	146
\$146	\$146	\$110
102.0	102.0	102.0
\$1.32	\$1.32	\$1.16
\$0.92	\$0.92	\$0.63
\$0.40	\$0.40	\$0.54
\$6,190	\$6,190	\$4,082
\$148,557	\$148,557	\$97,971
\$672,384		

Car Type:
Toilet Type:

Met-Srvc Dinette
Modified Vacuum

Manufacturer:

Number of Passengers: 23
Number of Toilets: 2
Total Tank Capacity (gals): 235.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$28,016
\$26,000
\$2,016

Maintenance Cost:
- Labor:
- Spare Parts:

\$1,212
\$432
\$780

Hours per Trip:
Trips per Day:

2	12	7
5	1	2

Waste Generation Data

Waste Generated:

4.30	5.16	6.02
------	------	------

Flush Fluid Generated:

4.65	5.58	6.51
------	------	------

Capacity Adjustment:

2.24	2.69	3.13
------	------	------

Total Capacity Required per Day:

11.19	13.43	15.67
-------	-------	-------

Pumpout Labor Cost:

\$0.0	\$0.1	\$0.1
-------	-------	-------

Connect/Disconnect Labor Cost:

\$2.1	\$2.1	\$2.1
-------	-------	-------

Cleaning Labor Cost:

\$12.0	\$12.0	\$12.0
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Total Pumpout/Cleaning Cost per Day:

\$14.1	\$14.2	\$14.2
--------	--------	--------

Days Operated per Year:

255	255	255
-----	-----	-----

Clean-out Cycles per Year:

255	255	255
-----	-----	-----

Waste Disposal Cost per Year:

\$39	\$47	\$54
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Maximum Continuous Hours of Service:

210.0	210.0	210.0
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Total Operating Cost per Service Hour:

\$1.90	\$1.59	\$1.37
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- Trip Related:

\$1.43	\$1.19	\$1.03
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- Non-Trip Related:

\$0.47	\$0.40	\$0.34
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Total per-Car Operating Cost per Year:

\$4,865	\$4,875	\$4,886
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Total Fleet Operating Cost per Year:

\$63,249	\$63,381	\$63,513
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Total Fleet Capital Cost:

\$364,208

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
4.30	5.16	6.02
3.62	4.35	5.07
1.98	2.38	2.77
9.91	11.89	13.87
\$0.0	\$0.0	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.1	\$14.2
219	219	219
219	219	219
\$30	\$35	\$41
237.2	237.2	237.2
\$1.68	\$1.40	\$1.20
\$1.43	\$1.19	\$1.02
\$0.25	\$0.21	\$0.18
\$3,673	\$3,681	\$3,688
\$47,753	\$47,851	\$47,948
\$364,208		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
4.30	5.16	6.02
6.04	7.25	8.45
2.59	3.10	3.62
12.93	15.51	18.10
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
292	292	292
292	292	292
\$51	\$62	\$72
181.8	181.8	181.8
\$2.08	\$1.73	\$1.49
\$1.43	\$1.20	\$1.03
\$0.64	\$0.54	\$0.46
\$6,062	\$6,076	\$6,090
\$78,808	\$78,987	\$79,167
\$364,208		

Car Type: Met-Srvc Coach

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 60

Number of Toilets: 2

Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	11.23	13.47	15.72
Flush Fluid Generated:	12.13	14.55	16.98
Capacity Adjustment:	5.84	7.01	8.17
Total Capacity Required per Day:	29.19	35.03	40.87
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$101	\$122	\$142
Maximum Continuous Hours of Service:	80.5	80.5	80.5
Total Operating Cost per Service Hour:	\$1.94	\$1.62	\$1.40
- Trip Related:	\$1.46	\$1.23	\$1.06
- Non-Trip Related:	\$0.47	\$0.40	\$0.34
Total per-Car Operating Cost per Year:	\$4,947	\$4,973	\$5,000
Total Fleet Operating Cost per Year:	\$247,348	\$248,673	\$249,097
Total Fleet Capital Cost:	\$1,400,800		

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
11.23	13.47	15.72
9.45	11.34	13.23
5.17	6.20	7.24
25.84	31.01	36.18
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$77	\$92	\$108
90.9	90.9	90.9
\$1.70	\$1.43	\$1.23
\$1.45	\$1.22	\$1.05
\$0.25	\$0.21	\$0.18
\$3,734	\$3,753	\$3,773
\$186,678	\$187,655	\$188,632
\$1,400,800		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
11.23	13.47	15.72
15.75	18.90	22.05
6.74	8.09	9.44
33.72	40.46	47.21
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
292	292	292
292	292	292
\$134	\$161	\$187
69.7	69.7	69.7
\$2.11	\$1.77	\$1.53
\$1.47	\$1.24	\$1.07
\$0.64	\$0.54	\$0.46
\$6,173	\$6,209	\$6,245
\$308,655	\$310,454	\$312,253
\$1,400,800		

Car Type: Met-Srvc Club
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 33
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	6.17	7.41	8.64
Flush Fluid Generated:	6.67	8.00	9.34
Capacity Adjustment:	3.21	3.85	4.50
Total Capacity Required per Day:	16.05	19.27	22.48
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$56	\$67	\$78
Maximum Continuous Hours of Service:	146.4	146.4	146.4
Total Operating Cost per Service Hour:	\$1.91	\$1.60	\$1.37
- Trip Related:	\$1.44	\$1.20	\$1.04
- Non-Trip Related:	\$0.47	\$0.40	\$0.34
Total per-Car Operating Cost per Year:	\$4,887	\$4,902	\$4,917
Total Fleet Operating Cost per Year:	\$63,536	\$63,725	\$63,915
Total Fleet Capital Cost:	\$364,208		

Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
6.17	7.41	8.64
5.20	6.24	7.28
2.84	3.41	3.98
14.21	17.06	19.90
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$42	\$51	\$59
165.3	165.3	165.3
\$1.68	\$1.41	\$1.21
\$1.43	\$1.20	\$1.03
\$0.25	\$0.21	\$0.18
\$3,690	\$3,700	\$3,711
\$47,965	\$48,105	\$48,244
\$364,208		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
6.17	7.41	8.64
8.66	10.40	12.13
3.71	4.45	5.19
18.55	22.25	25.96
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
292	292	292
292	292	292
\$74	\$88	\$103
126.7	126.7	126.7
\$2.09	\$1.74	\$1.50
\$1.44	\$1.21	\$1.04
\$0.64	\$0.54	\$0.46
\$6,092	\$6,112	\$6,132
\$79,198	\$79,455	\$79,712
\$364,208		

Car Type: Amdinette
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 23
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	4.65	5.58	6.51
Capacity Adjustment:	2.24	2.69	3.13
Total Capacity Required per Day:	11.19	13.43	15.67
Pumpout Labor Cost:	\$0.0	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.1	\$14.2	\$14.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$39	\$47	\$54
Maximum Continuous Hours of Service:	210.0	210.0	210.0
Total Operating Cost per Service Hour:	\$1.90	\$1.59	\$1.37
- Trip Related:	\$1.43	\$1.19	\$1.03
- Non-Trip Related:	\$0.47	\$0.40	\$0.34
Total per-Car Operating Cost per Year:	\$4,865	\$4,875	\$4,886
Total Fleet Operating Cost per Year:	\$121,633	\$121,887	\$122,140
Total Fleet Capital Cost:	\$700,400		

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
4.30	5.16	6.02
3.62	4.35	5.07
1.98	2.38	2.77
9.91	11.89	13.87
\$0.0	\$0.0	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.1	\$14.2
219	219	219
219	219	219
\$30	\$35	\$41
237.2	237.2	237.2
\$1.68	\$1.40	\$1.20
\$1.43	\$1.19	\$1.02
\$0.25	\$0.21	\$0.18
\$3,673	\$3,681	\$3,688
\$91,833	\$92,02	\$92,208
\$700,400		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
4.30	5.16	6.02
6.04	7.25	8.45
2.59	3.10	3.62
12.93	15.51	18.10
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
292	292	292
292	292	292
\$51	\$62	\$72
181.8	181.8	181.8
\$2.08	\$1.73	\$1.49
\$1.43	\$1.20	\$1.03
\$0.64	\$0.54	\$0.46
\$6,062	\$6,076	\$6,090
\$151,554	\$151,899	\$152,244
\$700,400		

Car Type: **Amcoach**
 Toilet Type: **Modified Vacuum** Manufacturer:

Number of Passengers: **60**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **235.0**

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	11.23	13.47	15.72
Flush Fluid Generated:	12.13	14.55	16.98
Capacity Adjustment:	5.84	7.01	8.17
Total Capacity Required per Day:	29.19	35.03	40.87
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$101	\$122	\$142
Maximum Continuous Hours of Service:	80.5	80.5	80.5
Total Operating Cost per Service Hour:	\$1.94	\$1.62	\$1.40
- Trip Related:	\$1.46	\$1.23	\$1.06
- Non-Trip Related:	\$0.47	\$0.40	\$0.34
Total per-Car Operating Cost per Year:	\$4,947	\$4,973	\$5,000
Total Fleet Operating Cost per Year:	\$153,356	\$154,177	\$154,998
Total Fleet Capital Cost:	\$868,496		

Monogram

Favorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
11.23	13.47	15.72
9.45	11.34	13.23
5.17	6.20	7.24
25.84	31.01	36.18
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$77	\$92	\$108
90.9	90.9	90.9
\$1.70	\$1.43	\$1.23
\$1.45	\$1.22	\$1.05
\$0.25	\$0.21	\$0.18
\$3,734	\$3,753	\$3,773
\$115,741	\$116,346	\$116,952
\$868,496		

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
11.23	13.47	15.72
15.75	18.90	22.05
6.74	8.09	9.44
33.72	40.46	47.21
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
292	292	292
292	292	292
\$134	\$161	\$187
69.7	69.7	69.7
\$2.11	\$1.77	\$1.53
\$1.47	\$1.24	\$1.07
\$0.64	\$0.54	\$0.46
\$6,173	\$6,209	\$6,245
\$191,366	\$192,481	\$193,597
\$868,496		

Car Type: Turbo Power Club

Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 27

Number of Toilets: 1

Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$25,228

\$23,500

\$1,728

Maintenance Cost:

- Labor:

- Spare Parts:

\$921

\$216

\$705

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

5.05

6.06

7.07

Flush Fluid Generated:

5.46

6.55

7.64

Capacity Adjustment:

2.63

3.15

3.68

Total Capacity Required per Day:

13.14

15.76

18.39

Pumpout Labor Cost:

\$0.1

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$6.0

\$6.0

\$6.0

Total Pumpout/Cleaning Cost per Day:

\$8.2

\$8.2

\$8.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$46

\$55

\$64

Maximum Continuous Hours of Service:

178.9

178.9

178.9

Total Operating Cost per Service Hour:

\$1.19

\$1.00

\$0.86

- Trip Related:

\$0.83

\$0.70

\$0.60

- Non-Trip Related:

\$0.36

\$0.30

\$0.26

Total per-Car Operating Cost per Year:

\$3,050

\$3,062

\$3,074

Total Fleet Operating Cost per Year

\$18,301

\$18,372

\$18,444

Total Fleet Capital Cost:

\$151,368

Monogram

Favorable

\$25,228		
\$23,500		
\$1,728		
\$379		
\$144		
\$235		
2	12	7
5	1	2
5.05	6.06	7.07
4.25	5.10	5.95
2.33	2.79	3.26
11.63	13.96	16.28
\$0.0	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.1	\$8.2	\$8.2
219	219	219
219	219	219
\$35	\$42	\$48
202.1	202.1	202.1
\$1.00	\$0.84	\$0.72
\$0.83	\$0.70	\$0.60
\$0.17	\$0.14	\$0.12
\$2,197	\$2,206	\$2,214
\$13,181	\$13,234	\$13,287
\$151,368		

Unfavorable

\$25,228		
\$23,500		
\$1,728		
\$1,463		
\$288		
\$1,175		
2	12	7
5	1	2
5.05	6.06	7.07
7.09	8.51	9.92
3.03	3.64	4.25
15.17	18.21	21.24
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
292	292	292
292	292	292
\$60	\$72	\$84
154.9	154.9	154.9
\$1.34	\$1.12	\$0.96
\$0.84	\$0.70	\$0.61
\$0.50	\$0.42	\$0.36
\$3,909	\$3,925	\$3,942
\$23,455	\$23,552	\$23,649
\$151,368		

Car Type: Turbo Coach
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 72
 Number of Toilets: 2
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$28,016		
- Equipment:	\$26,000		
- Installation:	\$2,016		
Maintenance Cost:	\$1,212		
- Labor:	\$432		
- Spare Parts:	\$780		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	13.47	16.16	18.86
Flush Fluid Generated:	14.55	17.46	20.37
Capacity Adjustment:	7.01	8.41	9.81
Total Capacity Required per Day:	35.03	42.03	49.04
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.3	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$122	\$146	\$170
Maximum Continuous Hours of Service:	67.1	67.1	67.1
Total Operating Cost per Service Hour:	\$1.95	\$1.63	\$1.41
- Trip Related:	\$1.47	\$1.24	\$1.07
- Non-Trip Related:	\$0.47	\$0.40	\$0.34
Total per-Car Operating Cost per Year:	\$4,973	\$5,005	\$5,037
Total Fleet Operating Cost per Year:	\$104,442	\$105,110	\$105,777
Total Fleet Capital Cost:	\$588,336		

Monogram

Favorable

Unfavorable

\$28,016		
\$26,000		
\$2,016		
\$548		
\$288		
\$260		
2	12	7
5	1	2
13.47	16.16	18.86
11.34	13.61	15.88
6.20	7.44	8.68
31.01	37.22	43.42
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
219	219	219
219	219	219
\$92	\$111	\$129
75.8	75.8	75.8
\$1.71	\$1.44	\$1.24
\$1.46	\$1.23	\$1.06
\$0.25	\$0.21	\$0.18
\$3,753	\$3,777	\$3,800
\$78,815	\$79,307	\$79,800
\$588,336		

\$28,016		
\$26,000		
\$2,016		
\$1,876		
\$576		
\$1,300		
2	12	7
5	1	2
13.47	16.16	18.86
18.90	22.68	26.46
8.09	9.71	11.33
40.46	48.56	56.65
\$0.2	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.4
292	292	292
292	292	292
\$161	\$193	\$225
58.1	58.1	58.1
\$2.13	\$1.78	\$1.54
\$1.48	\$1.25	\$1.08
\$0.64	\$0.54	\$0.46
\$6,209	\$6,252	\$6,295
\$130,391	\$131,297	\$132,204
\$588,336		

Car Type:
Toilet Type:

Turbo Cafe
Modified Vacuum

Manufacturer:

Number of Passengers: 52
Number of Toilets: 1
Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$25,228		
- Equipment:	\$23,500		
- Installation:	\$1,728		
Maintenance Cost:	\$921		
- Labor:	\$216		
- Spare Parts:	\$705		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	9.73	11.67	13.62
Flush Fluid Generated:	10.51	12.61	14.71
Capacity Adjustment:	5.06	6.07	7.08
Total Capacity Required per Day:	25.30	30.36	35.42
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$8.2	\$8.2	\$8.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$88	\$105	\$123
Maximum Continuous Hours of Service:	92.9	92.9	92.9
Total Operating Cost per Service Hour:	\$1.22	\$1.02	\$0.88
- Trip Related:	\$0.85	\$0.72	\$0.62
- Non-Trip Related:	\$0.36	\$0.30	\$0.26
Total per-Car Operating Cost per Year:	\$3,105	\$3,128	\$3,151
Total Fleet Operating Cost per Year:	\$9,316	\$9,385	\$9,454
Total Fleet Capital Cost:	\$75,684		

Monogram

Favorable

\$25,228		
\$23,500		
\$1,728		
\$379		
\$144		
\$235		
2	12	7
5	1	2
9.73	11.67	13.62
8.19	9.83	11.47
4.48	5.38	6.27
22.40	26.88	31.36
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
219	219	219
219	219	219
\$67	\$80	\$93
104.9	104.9	104.9
\$1.02	\$0.86	\$0.74
\$0.85	\$0.71	\$0.62
\$0.17	\$0.14	\$0.12
\$2,238	\$2,254	\$2,271
\$6,713	\$6,763	\$6,814
\$75,684		

Unfavorable

\$25,228		
\$23,500		
\$1,728		
\$1,463		
\$288		
\$1,175		
2	12	7
5	1	2
9.73	11.67	13.62
13.65	16.38	19.11
5.84	7.01	8.18
29.22	35.07	40.91
\$0.1	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.3	\$8.3
292	292	292
292	292	292
\$116	\$139	\$162
80.4	80.4	80.4
\$1.36	\$1.15	\$0.99
\$0.86	\$0.73	\$0.63
\$0.50	\$0.42	\$0.36
\$3,984	\$4,015	\$4,046
\$11,952	\$12,046	\$12,139
\$75,684		

Car Type: Turbo Power Coach
 Toilet Type: Modified Vacuum

Manufacturer:

Number of Passengers: 40
 Number of Toilets: 1
 Total Tank Capacity (gals): 235.0

Scenario: Expected

Capital Cost	\$25,228		
- Equipment:	\$23,500		
- Installation:	\$1,728		
Maintenance Cost:	\$921		
- Labor:	\$216		
- Spare Parts:	\$705		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	7.48	8.98	10.48
Flush Fluid Generated:	8.09	9.70	11.32
Capacity Adjustment:	3.89	4.67	5.45
Total Capacity Required per Day:	19.46	23.35	27.24
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$8.2	\$8.2	\$8.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$68	\$81	\$95
Maximum Continuous Hours of Service:	120.8	120.8	120.8
Total Operating Cost per Service Hour:	\$1.21	\$1.01	\$0.87
- Trip Related:	\$0.84	\$0.71	\$0.61
- Non-Trip Related:	\$0.36	\$0.30	\$0.26
Total per-Car Operating Cost per Year:	\$3,079	\$3,096	\$3,114
Total Fleet Operating Cost per Year:	\$43,104	\$43,351	\$43,598
Total Fleet Capital Cost:	\$353,192		

Monogram

Favorable

Unfavorable

\$25,228		
\$23,500		
\$1,728		
\$379		
\$144		
\$235		
2	12	7
5	1	2
7.48	8.98	10.48
6.30	7.56	8.82
3.45	4.14	4.82
17.23	20.68	24.12
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
219	219	219
219	219	219
\$51	\$62	\$72
136.4	136.4	136.4
\$1.01	\$0.85	\$0.73
\$0.84	\$0.70	\$0.61
\$0.17	\$0.14	\$0.12
\$2,218	\$2,231	\$2,244
\$31,052	\$31,234	\$31,417
\$353,192		

\$25,228		
\$23,500		
\$1,728		
\$1,463		
\$288		
\$1,175		
2	12	7
5	1	2
7.48	8.98	10.48
10.50	12.60	14.70
4.50	5.40	6.29
22.48	26.98	31.47
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
292	292	292
292	292	292
\$89	\$107	\$125
104.5	104.5	104.5
\$1.35	\$1.13	\$0.98
\$0.85	\$0.72	\$0.62
\$0.50	\$0.42	\$0.36
\$3,948	\$3,972	\$3,996
\$55,274	\$55,610	\$55,945
\$353,192		

D2 Monogram Self-Contained Recirculating

Car Type: Coach-HEP-HLV
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 72
 Number of Toilets: 4
 Total Tank Capacity (gals): 54.0

Scenario: Expected

Capital Cost	\$14,152		
- Equipment:	\$13,000		
- Installation:	\$1,152		
Maintenance Cost:	\$3,846		
- Labor:	\$3,456		
- Spare Parts:	\$390		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	32.33	64.66	96.98
Flush Fluid Generated:	10.00	10.00	10.00
Capacity Adjustment:	10.58	18.66	26.75
Total Capacity Required per Day:	52.91	93.32	133.73
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$8.4	\$16.8	\$25.2
Cleaning Labor Cost:	\$24.0	\$24.0	\$24.0
Total Pumpout/Cleaning Cost per Day:	\$32.5	\$40.9	\$49.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$119	\$140	\$150
Maximum Continuous Hours of Service:	24.5	27.8	29.1
Total Operating Cost per Service Hour:	\$2.65	\$1.83	\$1.55
- Trip Related:	\$1.39	\$0.89	\$0.72
- Non-Trip Related:	\$1.25	\$0.94	\$0.84
Total per-Car Operating Cost per Year:	\$8,117	\$7,469	\$7,145
Total Fleet Operating Cost per Year:	\$170,454	\$156,853	\$150,053
Total Fleet Capital Cost:	\$297,192		

Monogram

Favorable

Unfavorable

\$14,152		
\$13,000		
\$1,152		
\$2,434		
\$2,304		
\$130		
24	48	72
1	1	1
32.33	64.66	96.98
10.00	10.00	10.00
10.58	18.66	26.75
52.91	93.32	133.73
\$0.1	\$0.1	\$0.1
\$8.4	\$16.8	\$25.2
\$24.0	\$24.0	\$24.0
\$32.5	\$40.9	\$49.3
219	219	219
110	73	55
\$102	\$120	\$129
24.5	27.8	29.1
\$2.32	\$1.58	\$1.33
\$1.39	\$0.89	\$0.72
\$0.93	\$0.69	\$0.62
\$6,095	\$5,540	\$5,262
\$127,989	\$116,332	\$110,503
\$297,192		

\$14,152		
\$13,000		
\$1,152		
\$5,258		
\$4,608		
\$650		
24	48	72
1	1	1
32.33	64.66	96.98
10.00	10.00	10.00
10.58	18.66	26.75
52.91	93.32	133.73
\$0.1	\$0.1	\$0.1
\$8.4	\$16.8	\$25.2
\$24.0	\$24.0	\$24.0
\$32.5	\$40.9	\$49.3
292	292	292
146	97	73
\$136	\$160	\$172
24.5	27.8	29.1
\$2.89	\$2.01	\$1.72
\$1.39	\$0.89	\$0.72
\$1.50	\$1.13	\$1.00
\$10,139	\$9,399	\$9,029
\$212,918	\$197,375	\$189,603
\$297,192		

Car Type: Lounge-HEP-HLV
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 86
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	38.61	77.23	115.84
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	10.90	20.56	30.21
Total Capacity Required per Day:	54.52	102.79	151.05
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$12.6	\$16.8	\$25.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$24.7	\$28.9	\$37.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$123	\$154	\$170
Maximum Continuous Hours of Service:	11.9	12.6	12.9
Total Operating Cost per Service Hour:	\$1.69	\$1.11	\$0.97
- Trip Related:	\$1.07	\$0.64	\$0.55
- Non-Trip Related:	\$0.63	\$0.47	\$0.42
Total per-Car Operating Cost per Year:	\$5,195	\$4,534	\$4,472
Total Fleet Operating Cost per Year:	\$31,168	\$27,205	\$26,833
Total Fleet Capital Cost:	\$42,456		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
24	48	72
1	1	1
38.61	77.23	115.84
5.00	5.00	5.00
10.90	20.56	30.21
54.52	102.79	151.05
\$0.1	\$0.1	\$0.1
\$12.6	\$16.8	\$25.2
\$12.0	\$12.0	\$12.0
\$24.7	\$28.9	\$37.3
219	219	219
110	73	55
\$105	\$132	\$146
11.9	12.6	12.9
\$1.53	\$0.99	\$0.86
\$1.07	\$0.64	\$0.55
\$0.46	\$0.35	\$0.31
\$4,021	\$3,455	\$3,402
\$24,127	\$20,731	\$20,412
\$42,456		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
24	48	72
1	1	1
38.61	77.23	115.84
5.00	5.00	5.00
10.90	20.56	30.21
54.52	102.79	151.05
\$0.1	\$0.1	\$0.1
\$12.6	\$16.8	\$25.2
\$12.0	\$12.0	\$12.0
\$24.7	\$28.9	\$37.3
292	292	292
146	97	73
\$140	\$176	\$194
11.9	12.6	12.9
\$1.82	\$1.20	\$1.05
\$1.07	\$0.64	\$0.55
\$0.75	\$0.56	\$0.50
\$6,368	\$5,613	\$5,542
\$38,208	\$33,679	\$33,254
\$42,456		

Car Type: Trans Dorm Coach

Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 40

Number of Toilets: 4

Total Tank Capacity (gals): 54.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$14,152

\$13,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$3,846

\$3,456

\$390

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

17.96

35.92

53.88

Flush Fluid Generated:

10.00

10.00

10.00

Capacity Adjustment:

6.99

11.48

15.97

Total Capacity Required per Day:

34.95

57.40

79.85

Pumpout Labor Cost:

\$0.1

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$8.4

\$16.8

\$16.8

Cleaning Labor Cost:

\$24.0

\$24.0

\$24.0

Total Pumpout/Cleaning Cost per Day:

\$32.5

\$40.9

\$40.9

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$79

\$86

\$90

Maximum Continuous Hours of Service:

37.1

45.2

48.7

Total Operating Cost per Service Hour:

\$2.63

\$1.81

\$1.42

- Trip Related:

\$1.38

\$0.87

\$0.59

- Non-Trip Related:

\$1.25

\$0.94

\$0.84

Total per-Car Operating Cost per Year:

\$8,076

\$7,415

\$6,548

Total Fleet Operating Cost per Year:

\$290,752

\$266,953

\$235,737

Total Fleet Capital Cost:

\$509,472

Monogram

Favorable

Unfavorable

\$14,152		
\$13,000		
\$1,152		
\$2,434		
\$2,304		
\$130		
24	48	72
1	1	1
17.96	35.92	53.88
10.00	10.00	10.00
6.99	11.48	15.97
34.95	57.40	79.85
\$0.1	\$0.1	\$0.1
\$8.4	\$16.8	\$16.8
\$24.0	\$24.0	\$24.0
\$32.5	\$40.9	\$40.9
219	219	219
110	73	55
\$67	\$74	\$77
37.1	45.2	48.7
\$2.31	\$1.57	\$1.21
\$1.38	\$0.87	\$0.59
\$0.93	\$0.69	\$0.62
\$6,060	\$5,493	\$4,750
\$218,164	\$197,764	\$171,008
\$509,472		

\$14,152		
\$13,000		
\$1,152		
\$5,258		
\$4,608		
\$650		
24	48	72
1	1	1
17.96	35.92	53.88
10.00	10.00	10.00
6.99	11.48	15.97
34.95	57.40	79.85
\$0.1	\$0.1	\$0.1
\$8.4	\$16.8	\$16.8
\$24.0	\$24.0	\$24.0
\$32.5	\$40.9	\$40.9
292	292	292
146	97	73
\$90	\$98	\$103
37.1	45.2	48.7
\$2.88	\$2.00	\$1.59
\$1.38	\$0.87	\$0.59
\$1.50	\$1.13	\$1.00
\$10,093	\$9,337	\$8,346
\$363,341	\$336,141	\$300,466
\$509,472		

Car Type: **Sleeper Super**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: **44**
 Number of Toilets: **12**
 Total Tank Capacity (gals): **162.0**

Scenario: Expected

Capital Cost	\$42,456		
- Equipment:	\$39,000		
- Installation:	\$3,456		
Maintenance Cost:	\$11,538		
- Labor:	\$10,368		
- Spare Parts:	\$1,170		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	19.76	39.51	59.27
Flush Fluid Generated:	30.00	30.00	30.00
Capacity Adjustment:	12.44	17.38	22.32
Total Capacity Required per Day:	62.20	86.89	111.59
Pumpout Labor Cost:	\$0.3	\$0.3	\$0.3
Connect/Disconnect Labor Cost:	\$25.2	\$25.2	\$25.2
Cleaning Labor Cost:	\$72.0	\$72.0	\$72.0
Total Pumpout/Cleaning Cost per Day:	\$97.5	\$97.5	\$97.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$140	\$130	\$125
Maximum Continuous Hours of Service:	62.5	89.5	104.5
Total Operating Cost per Service Hour:	\$7.87	\$4.89	\$3.89
- Trip Related:	\$4.11	\$2.06	\$1.38
- Non-Trip Related:	\$3.76	\$2.82	\$2.51
Total per-Car Operating Cost per Year:	\$24,133	\$19,972	\$17,891
Total Fleet Operating Cost per Year:	\$1,641,076	\$1,358,095	\$1,216,605
Total Fleet Capital Cost:	\$2,887,008		

Monogram

Favorable

\$42,456		
\$39,000		
\$3,456		
\$7,302		
\$6,912		
\$390		
24	48	72
1	1	1
19.76	39.51	59.27
30.00	30.00	30.00
12.44	17.38	22.32
62.20	86.89	111.59
\$0.3	\$0.3	\$0.3
\$25.2	\$25.2	\$25.2
\$72.0	\$72.0	\$72.0
\$97.5	\$97.5	\$97.5
219	219	219
110	73	55
\$120	\$112	\$108
62.5	89.5	104.5
\$6.89	\$4.15	\$3.23
\$4.11	\$2.06	\$1.38
\$2.78	\$2.08	\$1.85
\$18,098	\$14,531	\$12,748
\$1,230,672	\$988,117	\$866,840
\$2,887,008		

Unfavorable

\$42,456		
\$39,000		
\$3,456		
\$15,774		
\$13,824		
\$1,950		
24	48	72
1	1	1
19.76	39.51	59.27
30.00	30.00	30.00
12.44	17.38	22.32
62.20	86.89	111.59
\$0.3	\$0.3	\$0.3
\$25.2	\$25.2	\$25.2
\$72.0	\$72.0	\$72.0
\$97.5	\$97.5	\$97.5
292	292	292
146	97	73
\$160	\$149	\$143
62.5	89.5	104.5
\$8.61	\$5.44	\$4.38
\$4.11	\$2.06	\$1.38
\$4.50	\$3.38	\$3.00
\$30,169	\$25,413	\$23,035
\$2,051,480	\$1,728,074	\$1,566,371
\$2,887,008		

Car Type: **Bag Coach Super**
 Toilet Type: **Self-Cont'd Recirc.**

Manufacturer:

Number of Passengers: **78**
 Number of Toilets: **5**
 Total Tank Capacity (gals): **67.5**

Scenario: Expected

Capital Cost	\$17,690		
- Equipment:	\$16,250		
- Installation:	\$1,440		
Maintenance Cost:	\$4,808		
- Labor:	\$4,320		
- Spare Parts:	\$488		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	35.02	70.04	105.07
Flush Fluid Generated:	12.50	12.50	12.50
Capacity Adjustment:	11.88	20.64	29.39
Total Capacity Required per Day:	59.40	103.18	146.96
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$10.5	\$21.0	\$31.5
Cleaning Labor Cost:	\$30.0	\$30.0	\$30.0
Total Pumpout/Cleaning Cost per Day:	\$40.6	\$51.1	\$61.6
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$134	\$155	\$165
Maximum Continuous Hours of Service:	27.3	31.4	33.1
Total Operating Cost per Service Hour:	\$3.30	\$2.28	\$1.94
- Trip Related:	\$1.74	\$1.10	\$0.89
- Non-Trip Related:	\$1.57	\$1.18	\$1.05
Total per-Car Operating Cost per Year:	\$10,131	\$9,316	\$8,909
Total Fleet Operating Cost per Year:	\$486,283	\$447,183	\$427,632
Total Fleet Capital Cost:	\$849,120		

Monogram

Favorable

\$17,690		
\$16,250		
\$1,440		
\$3,043		
\$2,880		
\$163		
24	48	72
1	1	1
35.02	70.04	105.07
12.50	12.50	12.50
11.88	20.64	29.39
59.40	103.18	146.96
\$0.1	\$0.1	\$0.1
\$10.5	\$21.0	\$31.5
\$30.0	\$30.0	\$30.0
\$40.6	\$51.1	\$61.6
219	219	219
110	73	55
\$114	\$133	\$142
27.3	31.4	33.1
\$2.89	\$1.97	\$1.66
\$1.74	\$1.10	\$0.89
\$1.16	\$0.87	\$0.77
\$7,605	\$6,907	\$6,558
\$365,060	\$331,545	\$314,788
\$849,120		

Unfavorable

\$17,690		
\$16,250		
\$1,440		
\$6,573		
\$5,760		
\$813		
24	48	72
1	1	1
35.02	70.04	105.07
12.50	12.50	12.50
11.88	20.64	29.39
59.40	103.18	146.96
\$0.1	\$0.1	\$0.1
\$10.5	\$21.0	\$31.5
\$30.0	\$30.0	\$30.0
\$40.6	\$51.1	\$61.6
292	292	292
146	97	73
\$153	\$177	\$189
27.3	31.4	33.1
\$3.61	\$2.51	\$2.14
\$1.74	\$1.10	\$0.89
\$1.88	\$1.41	\$1.25
\$12,656	\$11,725	\$11,260
\$607,507	\$562,820	\$540,477
\$849,120		

Car Type: Coach Super
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 75
 Number of Toilets: 6
 Total Tank Capacity (gals): 81.0

Scenario: Expected

Capital Cost	\$21,228		
- Equipment:	\$19,500		
- Installation:	\$1,728		
Maintenance Cost:	\$5,769		
- Labor:	\$5,184		
- Spare Parts:	\$585		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	33.68	67.35	101.03
Flush Fluid Generated:	15.00	15.00	15.00
Capacity Adjustment:	12.17	20.59	29.01
Total Capacity Required per Day:	60.84	102.94	145.03
Pumpout Labor Cost:	\$0.2	\$0.2	\$0.2
Connect/Disconnect Labor Cost:	\$12.6	\$25.2	\$25.2
Cleaning Labor Cost:	\$36.0	\$36.0	\$36.0
Total Pumpout/Cleaning Cost per Day:	\$48.8	\$61.4	\$61.4
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$137	\$154	\$163
Maximum Continuous Hours of Service:	32.0	37.8	40.2
Total Operating Cost per Service Hour:	\$3.96	\$2.73	\$2.14
- Trip Related:	\$2.08	\$1.32	\$0.89
- Non-Trip Related:	\$1.88	\$1.41	\$1.25
Total per-Car Operating Cost per Year:	\$12,134	\$11,148	\$9,851
Total Fleet Operating Cost per Year:	\$1,107,159	\$1,014,493	\$896,421
Total Fleet Capital Cost:	\$1,931,748		

Monogram

Favorable

\$21,228		
\$19,500		
\$1,728		
\$3,651		
\$3,456		
\$195		
24	48	72
1	1	1
33.68	67.35	101.03
15.00	15.00	15.00
12.17	20.59	29.01
60.84	102.94	145.03
\$0.2	\$0.2	\$0.2
\$12.6	\$25.2	\$25.2
\$36.0	\$36.0	\$36.0
\$48.8	\$61.4	\$61.4
219	219	219
110	73	55
\$117	\$132	\$140
32.0	37.8	40.2
\$3.47	\$2.36	\$1.81
\$2.08	\$1.32	\$0.89
\$1.39	\$1.04	\$0.93
\$9,106	\$8,262	\$7,150
\$828,681	\$751,824	\$650,619
\$1,931,748		

Unfavorable

\$21,228		
\$19,500		
\$1,728		
\$7,887		
\$6,912		
\$975		
24	48	72
1	1	1
33.68	67.35	101.03
15.00	15.00	15.00
12.17	20.59	29.01
60.84	102.94	145.03
\$0.2	\$0.2	\$0.2
\$12.6	\$25.2	\$25.2
\$36.0	\$36.0	\$36.0
\$48.8	\$61.4	\$61.4
292	292	292
146	97	73
\$156	\$176	\$186
32.0	37.8	40.2
\$4.33	\$3.00	\$2.39
\$2.08	\$1.32	\$0.89
\$2.25	\$1.69	\$1.50
\$15,161	\$14,035	\$12,552
\$1,379,637	\$1,277,161	\$1,142,222
\$1,931,748		

Car Type:
Toilet Type:

Horizon
Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 82
Number of Toilets: 2
Total Tank Capacity (gals): 27.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$7,076
\$6,500
\$576

Maintenance Cost:
- Labor:
- Spare Parts:

\$1,923
\$1,728
\$195

Hours per Trip:
Trips per Day:

	12	24	48
	1	1	1

Waste Generation Data

Waste Generated:

18.41	36.82	73.64
-------	-------	-------

Flush Fluid Generated:

5.00	5.00	5.00
------	------	------

Capacity Adjustment:

5.85	10.45	19.66
------	-------	-------

Total Capacity Required per Day:

29.26	52.27	98.30
-------	-------	-------

Pumpout Labor Cost:

\$0.1	\$0.1	\$0.1
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Connect/Disconnect Labor Cost:

\$8.4	\$8.4	\$16.8
-------	-------	--------

Cleaning Labor Cost:

\$12.0	\$12.0	\$12.0
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Total Pumpout/Cleaning Cost per Day:

\$20.5	\$20.5	\$28.9
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Days Operated per Year:

255	255	255
-----	-----	-----

Clean-out Cycles per Year:

255	128	85
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Waste Disposal Cost per Year:

\$132	\$118	\$147
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Maximum Continuous Hours of Service:

11.1	12.4	13.2
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Total Operating Cost per Service Hour:

\$2.37	\$1.52	\$1.11
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- Trip Related:

\$1.75	\$0.89	\$0.64
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- Non-Trip Related:

\$0.63	\$0.63	\$0.47
--------	--------	--------

Total per-Car Operating Cost per Year:

\$7,280	\$4,653	\$4,527
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Total Fleet Operating Cost per Year:

\$749,794	\$479,261	\$466,322
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Total Fleet Capital Cost:

\$728,828

Monogram

Favorable

Unfavorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
12	24	48
1	1	1
18.41	36.82	73.64
5.00	5.00	5.00
5.85	10.45	19.66
29.26	52.27	98.30
\$0.1	\$0.1	\$0.1
\$8.4	\$8.4	\$16.8
\$12.0	\$12.0	\$12.0
\$20.5	\$20.5	\$28.9
219	219	219
219	110	73
\$113	\$101	\$126
11.1	12.4	13.2
\$2.21	\$1.35	\$0.98
\$1.75	\$0.89	\$0.64
\$0.46	\$0.46	\$0.35
\$5,808	\$3,557	\$3,449
\$598,258	\$366,372	\$355,282
\$728,828		

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
12	24	48
1	1	1
18.41	36.82	73.64
5.00	5.00	5.00
5.85	10.45	19.66
29.26	52.27	98.30
\$0.1	\$0.1	\$0.1
\$8.4	\$8.4	\$16.8
\$12.0	\$12.0	\$12.0
\$20.5	\$20.5	\$28.9
292	292	292
292	146	97
\$150	\$134	\$168
11.1	12.4	13.2
\$2.50	\$1.64	\$1.20
\$1.75	\$0.89	\$0.64
\$0.75	\$0.75	\$0.56
\$8,751	\$5,749	\$5,605
\$901,330	\$592,149	\$577,362
\$728,828		

Car Type: Coach
 Toilet Type: Self-Cont'd Recirc Manufacturer:

Number of Passengers: 48
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	10.78	21.55	43.10
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	3.94	6.64	12.03
Total Capacity Required per Day:	19.72	33.19	60.13
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$8.4	\$12.6
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$20.5	\$24.7
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$89	\$75	\$90
Maximum Continuous Hours of Service:	16.4	19.5	21.6
Total Operating Cost per Service Hour:	\$2.01	\$1.50	\$1.01
- Trip Related:	\$1.38	\$0.88	\$0.54
- Non-Trip Related:	\$0.63	\$0.63	\$0.47
Total per-Car Operating Cost per Year:	\$6,164	\$4,610	\$4,112
Total Fleet Operating Cost per Year:	\$480,757	\$359,589	\$320,774
Total Fleet Capital Cost:	\$551,928		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
12	24	48
1	1	1
10.78	21.55	43.10
5.00	5.00	5.00
3.94	6.64	12.03
19.72	33.19	60.13
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
219	219	219
219	110	73
\$76	\$64	\$77
16.4	19.5	21.6
\$1.85	\$1.34	\$0.88
\$1.38	\$0.88	\$0.54
\$0.46	\$0.46	\$0.35
\$4,852	\$3,520	\$3,094
\$378,437	\$274,579	\$241,309
\$551,928		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
12	24	48
1	1	1
10.78	21.55	43.10
5.00	5.00	5.00
3.94	6.64	12.03
19.72	33.19	60.13
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
292	292	292
292	146	97
\$101	\$85	\$103
16.4	19.5	21.6
\$2.13	\$1.63	\$1.10
\$1.38	\$0.88	\$0.54
\$0.75	\$0.75	\$0.56
\$7,475	\$5,700	\$5,131
\$583,077	\$444,599	\$400,239
\$551,928		

Car Type: Coach (HDCP)
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 44
 Number of Toilets: 3
 Total Tank Capacity (gals): 40.5

Scenario: Expected

Capital Cost	\$10,614		
- Equipment:	\$9,750		
- Installation:	\$864		
Maintenance Cost:	\$2,885		
- Labor:	\$2,592		
- Spare Parts:	\$293		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	9.88	19.76	39.51
Flush Fluid Generated:	7.50	7.50	7.50
Capacity Adjustment:	4.34	6.81	11.75
Total Capacity Required per Day:	21.72	34.07	58.77
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$6.3	\$6.3	\$12.6
Cleaning Labor Cost:	\$18.0	\$18.0	\$18.0
Total Pumpout/Cleaning Cost per Day:	\$24.4	\$24.4	\$30.7
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$98	\$77	\$88
Maximum Continuous Hours of Service:	22.4	28.5	33.1
Total Operating Cost per Service Hour:	\$3.00	\$1.98	\$1.37
- Trip Related:	\$2.06	\$1.04	\$0.66
- Non-Trip Related:	\$0.94	\$0.94	\$0.71
Total per-Car Operating Cost per Year:	\$9,210	\$6,075	\$5,585
Total Fleet Operating Cost per Year:	\$193,410	\$127,575	\$117,287
Total Fleet Capital Cost:	\$222,894		

Monogram

Favorable

\$10,614		
\$9,750		
\$864		
\$1,826		
\$1,728		
\$98		
12	24	48
1	1	1
9.88	19.76	39.51
7.50	7.50	7.50
4.34	6.81	11.75
21.72	34.07	58.77
\$0.1	\$0.1	\$0.1
\$6.3	\$6.3	\$12.6
\$18.0	\$18.0	\$18.0
\$24.4	\$24.4	\$30.7
219	219	219
219	110	73
\$84	\$66	\$76
22.4	28.5	33.1
\$2.76	\$1.74	\$1.18
\$2.06	\$1.04	\$0.66
\$0.69	\$0.69	\$0.52
\$7,247	\$4,560	\$4,140
\$152,194	\$95,765	\$86,946
\$222,894		

Unfavorable

\$10,614		
\$9,750		
\$864		
\$3,944		
\$3,456		
\$488		
12	24	48
1	1	1
9.88	19.76	39.51
7.50	7.50	7.50
4.34	6.81	11.75
21.72	34.07	58.77
\$0.1	\$0.1	\$0.1
\$6.3	\$6.3	\$12.6
\$18.0	\$18.0	\$18.0
\$24.4	\$24.4	\$30.7
292	292	292
292	146	97
\$112	\$88	\$101
22.4	28.5	33.1
\$3.19	\$2.17	\$1.50
\$2.06	\$1.04	\$0.66
\$1.13	\$1.13	\$0.84
\$11,173	\$7,590	\$7,030
\$234,625	\$159,386	\$147,627
\$222,894		

Car Type:
Toilet Type:

Dome Coach
Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 46
Number of Toilets: 2
Total Tank Capacity (gals): 27.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$7,076
\$6,500
\$576

Maintenance Cost:
- Labor:
- Spare Parts:

\$1,923
\$1,728
\$195

Hours per Trip:
Trips per Day:

12	24	48
1	1	1

Waste Generation Data

Waste Generated:

10.33	20.65	41.31
-------	-------	-------

Flush Fluid Generated:

5.00	5.00	5.00
------	------	------

Capacity Adjustment:

3.83	6.41	11.58
------	------	-------

Total Capacity Required per Day:

19.16	32.07	57.89
-------	-------	-------

Pumpout Labor Cost:

\$0.1	\$0.1	\$0.1
-------	-------	-------

Connect/Disconnect Labor Cost:

\$4.2	\$8.4	\$12.6
-------	-------	--------

Cleaning Labor Cost:

\$12.0	\$12.0	\$12.0
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Total Pumpout/Cleaning Cost per Day:

\$16.3	\$20.5	\$24.7
--------	--------	--------

Days Operated per Year:

255	255	255
-----	-----	-----

Clean-out Cycles per Year:

255	128	85
-----	-----	----

Waste Disposal Cost per Year:

\$86	\$72	\$87
------	------	------

Maximum Continuous Hours of Service:

16.9	20.2	22.4
------	------	------

Total Operating Cost per Service Hour:

\$2.01	\$1.50	\$1.01
--------	--------	--------

- Trip Related:

\$1.38	\$0.88	\$0.53
--------	--------	--------

- Non-Trip Related:

\$0.63	\$0.63	\$0.47
--------	--------	--------

Total per-Car Operating Cost per Year:

\$6,161	\$4,608	\$4,109
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Total Fleet Operating Cost per Year:

\$73,932	\$55,291	\$49,309
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Total Fleet Capital Cost:

\$84,912

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
12	24	48
1	1	1
10.33	20.65	41.31
5.00	5.00	5.00
3.83	6.41	11.58
19.16	32.07	57.89
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
219	219	219
219	110	73
\$74	\$62	\$74
16.9	20.2	22.4
\$1.85	\$1.34	\$0.88
\$1.38	\$0.88	\$0.53
\$0.46	\$0.46	\$0.35
\$4,850	\$3,518	\$3,091
\$58,195	\$42,217	\$37,090
\$84,912		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
12	24	48
1	1	1
10.33	20.65	41.31
5.00	5.00	5.00
3.83	6.41	11.58
19.16	32.07	57.89
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
292	292	292
292	146	97
\$98	\$82	\$99
16.9	20.2	22.4
\$2.13	\$1.63	\$1.10
\$1.38	\$0.88	\$0.53
\$0.75	\$0.75	\$0.56
\$7,472	\$5,697	\$5,127
\$89,670	\$68,365	\$61,529
\$84,912		

Car Type:
Toilet Type:

Amlounge II
Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 49
Number of Toilets: 2
Total Tank Capacity (gals): 27.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$7,076
\$6,500
\$576

Maintenance Cost:
- Labor:
- Spare Parts:

\$1,923
\$1,728
\$195

Hours per Trip:
Trips per Day:

12	24	48
1	1	1

Waste Generation Data

Waste Generated:

11.00	22.00	44.00
-------	-------	-------

Flush Fluid Generated:

5.00	5.00	5.00
------	------	------

Capacity Adjustment:

4.00	6.75	12.25
------	------	-------

Total Capacity Required per Day:

20.00	33.75	61.25
-------	-------	-------

Pumpout Labor Cost:

\$0.1	\$0.1	\$0.1
-------	-------	-------

Connect/Disconnect Labor Cost:

\$4.2	\$8.4	\$12.6
-------	-------	--------

Cleaning Labor Cost:

\$12.0	\$12.0	\$12.0
--------	--------	--------

Total Pumpout/Cleaning Cost per Day:

\$16.3	\$20.5	\$24.7
--------	--------	--------

Days Operated per Year:

255	255	255
-----	-----	-----

Clean-out Cycles per Year:

255	128	85
-----	-----	----

Waste Disposal Cost per Year:

\$90	\$76	\$92
------	------	------

Maximum Continuous Hours of Service:

16.2	19.2	21.2
------	------	------

Total Operating Cost per Service Hour:

\$2.01	\$1.50	\$1.01
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- Trip Related:

\$1.38	\$0.88	\$0.54
--------	--------	--------

- Non-Trip Related:

\$0.63	\$0.63	\$0.47
--------	--------	--------

Total per-Car Operating Cost per Year:

\$6,165	\$4,611	\$4,114
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Total Fleet Operating Cost per Year:

\$154,120	\$115,284	\$102,854
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Total Fleet Capital Cost:

\$176,900

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
12	24	48
1	1	1
11.00	22.00	44.00
5.00	5.00	5.00
4.00	6.75	12.25
20.00	33.75	61.25
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
219	219	219
219	110	73
\$77	\$65	\$79
16.2	19.2	21.2
\$1.85	\$1.34	\$0.88
\$1.38	\$0.88	\$0.54
\$0.46	\$0.46	\$0.35
\$4,853	\$3,521	\$3,095
\$121,321	\$88,033	\$77,379
\$176,900		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
12	24	48
1	1	1
11.00	22.00	44.00
5.00	5.00	5.00
4.00	6.75	12.25
20.00	33.75	61.25
\$0.1	\$0.1	\$0.1
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.3	\$20.5	\$24.7
292	292	292
292	146	97
\$103	\$87	\$105
16.2	19.2	21.2
\$2.13	\$1.63	\$1.10
\$1.38	\$0.88	\$0.54
\$0.75	\$0.75	\$0.56
\$7,477	\$5,701	\$5,133
\$186,920	\$142,536	\$128,330
\$176,900		

Car Type: **Sleeper 10-6**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: **22**
 Number of Toilets: **17**
 Total Tank Capacity (gals): **229.5**

Scenario: **Expected**

Capital Cost	\$60,146		
- Equipment:	\$55,250		
- Installation:	\$4,896		
Maintenance Cost:	\$16,346		
- Labor:	\$14,688		
- Spare Parts:	\$1,658		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	4.94	9.88	19.76
Flush Fluid Generated:	42.50	42.50	42.50
Capacity Adjustment:	11.86	13.09	15.56
Total Capacity Required per Day:	59.30	65.47	77.82
Pumpout Labor Cost:	\$0.4	\$0.4	\$0.4
Connect/Disconnect Labor Cost:	\$35.7	\$35.7	\$35.7
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$138.1	\$138.1	\$138.1
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$267	\$147	\$117
Maximum Continuous Hours of Service:	46.4	84.1	141.6
Total Operating Cost per Service Hour:	\$16.93	\$11.13	\$6.90
- Trip Related:	\$11.60	\$5.80	\$2.91
- Non-Trip Related:	\$5.33	\$5.33	\$4.00
Total per-Car Operating Cost per Year:	\$51,903	\$34,138	\$28,226
Total Fleet Operating Cost per Year:	\$4,256,054	\$2,799,331	\$2,314,515
Total Fleet Capital Cost:	\$4,931,972		

Monogram

Favorable

\$60,146		
\$55,250		
\$4,896		
\$10,345		
\$9,792		
\$553		
12	24	48
1	1	1
4.94	9.88	19.76
42.50	42.50	42.50
11.86	13.09	15.56
59.30	65.47	77.82
\$0.4	\$0.4	\$0.4
\$35.7	\$35.7	\$35.7
\$102.0	\$102.0	\$102.0
\$138.1	\$138.1	\$138.1
219	219	219
219	110	73
\$229	\$126	\$100
46.4	84.1	141.6
\$15.53	\$9.74	\$5.86
\$11.60	\$5.80	\$2.91
\$3.94	\$3.94	\$2.95
\$40,822	\$25,595	\$20,528
\$3,347,440	\$2,098,820	\$1,683,264
\$4,931,972		

Unfavorable

\$60,146		
\$55,250		
\$4,896		
\$22,347		
\$19,584		
\$2,763		
12	24	48
1	1	1
4.94	9.88	19.76
42.50	42.50	42.50
11.86	13.09	15.56
59.30	65.47	77.82
\$0.4	\$0.4	\$0.4
\$35.7	\$35.7	\$35.7
\$102.0	\$102.0	\$102.0
\$138.1	\$138.1	\$138.1
292	292	292
292	146	97
\$305	\$168	\$133
46.4	84.1	141.6
\$17.97	\$12.18	\$7.69
\$11.60	\$5.80	\$2.91
\$6.38	\$6.38	\$4.78
\$62,984	\$42,681	\$35,924
\$5,164,667	\$3,499,841	\$2,945,766
\$4,931,972		

Car Type: Amcoach II

Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 59

Number of Toilets: 2

Total Tank Capacity (gals): 27.0

Scenario:	Expected		
Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	26.49	52.98	79.47
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	7.87	14.50	21.12
Total Capacity Required per Day:	39.36	72.48	105.59
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$8.4	\$12.6	\$16.8
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$20.5	\$24.7	\$28.9
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$89	\$109	\$119
Maximum Continuous Hours of Service:	16.5	17.9	18.4
Total Operating Cost per Service Hour:	\$1.51	\$1.01	\$0.84
- Trip Related:	\$0.88	\$0.54	\$0.43
- Non-Trip Related:	\$0.63	\$0.47	\$0.42
Total per-Car Operating Cost per Year:	\$4,624	\$4,131	\$3,884
Total Fleet Operating Cost per Year:	\$550,255	\$491,589	\$462,255
Total Fleet Capital Cost:	\$842,044		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
24	48	72
1	1	1
26.49	52.98	79.47
5.00	5.00	5.00
7.87	14.50	21.12
39.36	72.48	105.59
\$0.1	\$0.1	\$0.1
\$8.4	\$12.6	\$16.8
\$12.0	\$12.0	\$12.0
\$20.5	\$24.7	\$28.9
219	219	219
110	73	55
\$76	\$93	\$102
16.5	17.9	18.4
\$1.34	\$0.89	\$0.74
\$0.88	\$0.54	\$0.43
\$0.46	\$0.35	\$0.31
\$3,532	\$3,110	\$2,898
\$420,324	\$370,039	\$344,896
\$842,044		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
24	48	72
1	1	1
26.49	52.98	79.47
5.00	5.00	5.00
7.87	14.50	21.12
39.36	72.48	105.59
\$0.1	\$0.1	\$0.1
\$8.4	\$12.6	\$16.8
\$12.0	\$12.0	\$12.0
\$20.5	\$24.7	\$28.9
292	292	292
146	97	73
\$101	\$124	\$136
16.5	17.9	18.4
\$1.63	\$1.10	\$0.93
\$0.88	\$0.54	\$0.43
\$0.75	\$0.56	\$0.50
\$5,716	\$5,152	\$4,871
\$690,186	\$613,139	\$579,615
\$842,044		

Car Type: Slumbercoach 24-8

Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 40

Number of Toilets: 32

Total Tank Capacity (gals): 432.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$113,216

\$104,000

\$9,216

Maintenance Cost:

- Labor:

- Spare Parts:

\$30,768

\$27,648

\$3,120

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

17.96

35.92

53.88

Flush Fluid Generated:

80.00

80.00

80.00

Capacity Adjustment:

24.49

28.98

33.47

Total Capacity Required per Day:

122.45

144.90

167.35

Pumpout Labor Cost:

\$0.8

\$0.8

\$0.8

Connect/Disconnect Labor Cost:

\$67.2

\$67.2

\$67.2

Cleaning Labor Cost:

\$192.0

\$192.0

\$192.0

Total Pumpout/Cleaning Cost per Day:

\$260.0

\$260.0

\$260.0

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$275

\$217

\$188

Maximum Continuous Hours of Service:

84.7

143.1

185.9

Total Operating Cost per Service Hour:

\$20.96

\$13.00

\$10.34

- Trip Related:

\$10.92

\$5.47

\$3.65

- Non-Trip Related:

\$10.04

\$7.53

\$6.69

Total per-Car Operating Cost per Year:

\$64,258

\$53,129

\$47,564

Total Fleet Operating Cost per Year:

\$1,028,133

\$850,056

\$761,018

Total Fleet Capital Cost:

\$1,811,456

Monogram

Favorable

\$113,216		
\$104,000		
\$9,216		
\$19,472		
\$18,432		
\$1,040		
24	48	72
1	1	1
17.96	35.92	53.88
80.00	80.00	80.00
24.49	28.98	33.47
122.45	144.90	167.35
\$0.8	\$0.8	\$0.8
\$67.2	\$67.2	\$67.2
\$192.0	\$192.0	\$192.0
\$260.0	\$260.0	\$260.0
219	219	219
110	73	55
\$236	\$186	\$161
84.7	143.1	185.9
\$18.33	\$11.03	\$8.59
\$10.92	\$5.47	\$3.65
\$7.41	\$5.56	\$4.94
\$48,178	\$38,638	\$33,868
\$770,848	\$618,211	\$541,892
\$1,811,456		

Unfavorable

\$113,216		
\$104,000		
\$9,216		
\$42,064		
\$36,864		
\$5,200		
24	48	72
1	1	1
17.96	35.92	53.88
80.00	80.00	80.00
24.49	28.98	33.47
122.45	144.90	167.35
\$0.8	\$0.8	\$0.8
\$67.2	\$67.2	\$67.2
\$192.0	\$192.0	\$192.0
\$260.0	\$260.0	\$260.0
292	292	292
146	97	73
\$315	\$248	\$215
84.7	143.1	185.9
\$22.93	\$14.47	\$11.66
\$10.92	\$5.47	\$3.65
\$12.00	\$9.00	\$8.00
\$80,339	\$67,619	\$61,259
\$1,285,418	\$1,081,902	\$980,144
\$1,811,456		

Car Type: **Viewliner-Sleeper**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: **34**
 Number of Toilets: **17**
 Total Tank Capacity (gals): **229.5**

Scenario: Expected

Capital Cost	\$60,146		
- Equipment:	\$55,250		
- Installation:	\$4,896		
Maintenance Cost:	\$16,346		
- Labor:	\$14,688		
- Spare Parts:	\$1,658		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.27	30.53	45.80
Flush Fluid Generated:	42.50	42.50	42.50
Capacity Adjustment:	14.44	18.26	22.07
Total Capacity Required per Day:	72.21	91.29	110.37
Pumpout Labor Cost:	\$0.4	\$0.4	\$0.4
Connect/Disconnect Labor Cost:	\$35.7	\$35.7	\$35.7
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$138.1	\$138.1	\$138.1
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$162	\$137	\$124
Maximum Continuous Hours of Service:	76.3	120.7	149.7
Total Operating Cost per Service Hour:	\$11.14	\$6.91	\$5.50
- Trip Related:	\$5.81	\$2.91	\$1.95
- Non-Trip Related:	\$5.33	\$4.00	\$3.55
Total per-Car Operating Cost per Year:	\$34,153	\$28,246	\$25,292
Total Fleet Operating Cost per Year:	\$68,307	\$56,492	\$50,585
Total Fleet Capital Cost:	\$120,292		

Monogram

Favorable

Unfavorable

\$60,146		
\$55,250		
\$4,896		
\$10,345		
\$9,792		
\$553		
24	48	72
1	1	1
15.27	30.53	45.80
42.50	42.50	42.50
14.44	18.26	22.07
72.21	91.29	110.37
\$0.4	\$0.4	\$0.4
\$35.7	\$35.7	\$35.7
\$102.0	\$102.0	\$102.0
\$138.1	\$138.1	\$138.1
219	219	219
110	73	55
\$139	\$117	\$106
76.3	120.7	149.7
\$9.74	\$5.86	\$4.57
\$5.81	\$2.91	\$1.95
\$3.94	\$2.95	\$2.62
\$25,608	\$20,545	\$18,013
\$51,217	\$41,090	\$36,026
\$120,292		

\$60,146		
\$55,250		
\$4,896		
\$22,347		
\$19,584		
\$2,763		
24	48	72
1	1	1
15.27	30.53	45.80
42.50	42.50	42.50
14.44	18.26	22.07
72.21	91.29	110.37
\$0.4	\$0.4	\$0.4
\$35.7	\$35.7	\$35.7
\$102.0	\$102.0	\$102.0
\$138.1	\$138.1	\$138.1
292	292	292
146	97	73
\$186	\$156	\$142
76.3	120.7	149.7
\$12.19	\$7.69	\$6.20
\$5.81	\$2.91	\$1.95
\$6.38	\$4.78	\$4.25
\$42,698	\$35,947	\$32,571
\$85,397	\$71,894	\$65,143
\$120,292		

Car Type: Amcafe
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 53
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.86	15.86	23.80
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	5.22	5.22	7.20
Total Capacity Required per Day:	26.08	26.08	36.00
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$20.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$117	\$117	\$81
Maximum Continuous Hours of Service:	16.6	16.6	18.0
Total Operating Cost per Service Hour:	\$1.51	\$1.51	\$1.51
- Trip Related:	\$1.04	\$1.04	\$0.88
- Non-Trip Related:	\$0.47	\$0.47	\$0.63
Total per-Car Operating Cost per Year:	\$6,192	\$6,192	\$4,616
Total Fleet Operating Cost per Year:	\$278,547	\$278,647	\$207,739
Total Fleet Capital Cost:	\$318,420		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
8	16	24
2	1	1
15.86	15.86	23.80
5.00	5.00	5.00
5.22	5.22	7.20
26.08	26.08	36.00
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
219	219	219
219	219	110
\$101	\$101	\$69
16.6	16.6	18.0
\$1.39	\$1.39	\$1.34
\$1.04	\$1.04	\$0.88
\$0.35	\$0.35	\$0.46
\$4,876	\$4,876	\$3,526
\$219,432	\$219,432	\$158,654
\$318,420		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
8	16	24
2	1	1
15.86	15.86	23.80
5.00	5.00	5.00
5.22	5.22	7.20
26.08	26.08	36.00
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
292	292	292
292	292	146
\$134	\$134	\$92
16.6	16.6	18.0
\$1.61	\$1.61	\$1.63
\$1.04	\$1.04	\$0.88
\$0.56	\$0.56	\$0.75
\$7,508	\$7,508	\$5,707
\$337,862	\$337,862	\$256,824
\$318,420		

Car Type: **Amcoach**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: **84**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **27.0**

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	25.14	25.14	37.72
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	7.54	7.54	10.68
Total Capacity Required per Day:	37.68	37.68	53.40
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$8.4	\$8.4	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$20.5	\$20.5	\$20.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$169	\$169	\$120
Maximum Continuous Hours of Service:	11.5	11.5	12.1
Total Operating Cost per Service Hour:	\$1.79	\$1.79	\$1.52
- Trip Related:	\$1.32	\$1.32	\$0.89
- Non-Trip Related:	\$0.47	\$0.47	\$0.63
Total per-Car Operating Cost per Year:	\$7,317	\$7,317	\$4,656
Total Fleet Operating Cost per Year:	\$1,946,432	\$1,946,432	\$1,238,374
Total Fleet Capital Cost:	\$1,882,216		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
8	16	24
2	1	1
25.14	25.14	37.72
5.00	5.00	5.00
7.54	7.54	10.68
37.68	37.68	53.40
\$0.1	\$0.1	\$0.1
\$8.4	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$20.5	\$20.5	\$20.5
219	219	219
219	219	110
\$145	\$145	\$103
11.5	11.5	12.1
\$1.67	\$1.67	\$1.35
\$1.32	\$1.32	\$0.89
\$0.35	\$0.35	\$0.46
\$5,841	\$5,841	\$3,559
\$1,552,648	\$1,553,648	\$946,741
\$1,882,216		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
8	16	24
2	1	1
25.14	25.14	37.72
5.00	5.00	5.00
7.54	7.54	10.68
37.68	37.68	53.40
\$0.1	\$0.1	\$0.1
\$8.4	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$20.5	\$20.5	\$20.5
292	292	292
292	292	146
\$194	\$194	\$137
11.5	11.5	12.1
\$1.88	\$1.88	\$1.64
\$1.32	\$1.32	\$0.89
\$0.56	\$0.56	\$0.75
\$8,794	\$8,794	\$5,752
\$2,339,216	\$2,339,216	\$1,530,006
\$1,882,216		

Car Type:
Toilet Type:

Amclub
Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 41
Number of Toilets: 2
Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	12.27	12.27	18.41
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	4.32	4.32	5.85
Total Capacity Required per Day:	21.59	21.59	29.26
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$20.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$97	\$97	\$66
Maximum Continuous Hours of Service:	20.0	20.0	22.1
Total Operating Cost per Service Hour:	\$1.51	\$1.51	\$1.50
- Trip Related:	\$1.04	\$1.04	\$0.87
- Non-Trip Related:	\$0.47	\$0.47	\$0.63
Total per-Car Operating Cost per Year:	\$6,172	\$6,172	\$4,601
Total Fleet Operating Cost per Year:	\$148,127	\$148,127	\$110,431
Total Fleet Capital Cost:	\$169,824		

Monogram

Favorable

Unfavorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
8	16	24
2	1	1
12.27	12.27	18.41
5.00	5.00	5.00
4.32	4.32	5.85
21.59	21.59	29.26
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
219	219	219
219	219	110
\$83	\$83	\$56
20.0	20.0	22.1
\$1.39	\$1.39	\$1.34
\$1.04	\$1.04	\$0.87
\$0.35	\$0.35	\$0.46
\$4,859	\$4,859	\$3,513
\$116,615	\$116,615	\$84,304
\$169,824		

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
8	16	24
2	1	1
12.27	12.27	18.41
5.00	5.00	5.00
4.32	4.32	5.85
21.59	21.59	29.26
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
292	292	292
292	292	146
\$111	\$111	\$75
20.0	20.0	22.1
\$1.60	\$1.60	\$1.62
\$1.04	\$1.04	\$0.87
\$0.56	\$0.56	\$0.75
\$7,485	\$7,485	\$5,690
\$179,639	\$179,639	\$136,557
\$169,824		

Car Type: **Met-Srvc Dinette**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: 23
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: **Expected**

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	2.33	2.54	2.76
Total Capacity Required per Day:	11.63	12.70	13.78
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$16.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$52	\$57	\$62
Maximum Continuous Hours of Service:	23.2	25.5	27.4
Total Operating Cost per Service Hour:	\$2.40	\$2.00	\$1.72
- Trip Related:	\$1.65	\$1.37	\$1.18
- Non-Trip Related:	\$0.75	\$0.63	\$0.54
Total per-Car Operating Cost per Year:	\$6,127	\$6,132	\$6,137
Total Fleet Operating Cost per Year:	\$79,653	\$79,716	\$79,779
Total Fleet Capital Cost:	\$91,988		

Monogram

Favorable

Unfavorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
4.30	5.16	6.02
5.00	5.00	5.00
2.33	2.54	2.76
11.63	12.70	13.78
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
219	219	219
219	219	219
\$45	\$49	\$53
23.2	25.5	27.4
\$2.20	\$1.84	\$1.57
\$1.65	\$1.37	\$1.18
\$0.56	\$0.46	\$0.40
\$4,821	\$4,825	\$4,829
\$62,667	\$62,721	\$62,775
\$91,988		

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
4.30	5.16	6.02
5.00	5.00	5.00
2.33	2.54	2.76
11.63	12.70	13.78
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
292	292	292
292	292	292
\$60	\$65	\$71
23.2	25.5	27.4
\$2.55	\$2.12	\$1.82
\$1.65	\$1.37	\$1.18
\$0.90	\$0.75	\$0.64
\$7,434	\$7,439	\$7,445
\$96,639	\$96,711	\$96,783
\$91,988		

Car Type: Met-Srvc Coach
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 60
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	11.23	13.47	15.72
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	4.06	4.62	5.18
Total Capacity Required per Day:	20.28	23.09	25.89
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$16.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$91	\$104	\$116
Maximum Continuous Hours of Service:	13.3	14.0	14.6
Total Operating Cost per Service Hour:	\$2.41	\$2.02	\$1.73
- Trip Related:	\$1.66	\$1.39	\$1.19
- Non-Trip Related:	\$0.75	\$0.63	\$0.54
Total per-Car Operating Cost per Year:	\$6,166	\$6,179	\$6,191
Total Fleet Operating Cost per Year:	\$308,304	\$303,935	\$309,566
Total Fleet Capital Cost:	\$353,800		

Monogram

Favorable

Unfavorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
11.23	13.47	15.72
5.00	5.00	5.00
4.06	4.62	5.18
20.28	23.09	25.89
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
219	219	219
219	219	219
\$78	\$89	\$100
13.3	14.0	14.6
\$2.22	\$1.85	\$1.59
\$1.66	\$1.39	\$1.19
\$0.56	\$0.46	\$0.40
\$4,854	\$4,865	\$4,876
\$242,696	\$243,237	\$243,778
\$353,800		

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
11.23	13.47	15.72
5.00	5.00	5.00
4.06	4.62	5.18
20.28	23.09	25.89
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
292	292	292
292	292	292
\$104	\$119	\$133
13.3	14.0	14.6
\$2.56	\$2.14	\$1.84
\$1.66	\$1.39	\$1.19
\$0.90	\$0.75	\$0.64
\$7,478	\$7,493	\$7,507
\$373,911	\$374,633	\$375,354
\$353,800		

Car Type: **Met-Srvc Club**
 Toilet Type: **Self-Cont'd Recirc**

Manufacturer:

Number of Passengers: **33**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **27.0**

Scenario: **Expected**

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	6.17	7.41	8.64
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	2.79	3.10	3.41
Total Capacity Required per Day:	13.97	15.51	17.05
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$16.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$63	\$70	\$77
Maximum Continuous Hours of Service:	19.3	20.9	22.2
Total Operating Cost per Service Hour:	\$2.40	\$2.00	\$1.72
- Trip Related:	\$1.65	\$1.38	\$1.18
- Non-Trip Related:	\$0.75	\$0.63	\$0.54
Total per-Car Operating Cost per Year:	\$6,138	\$6,145	\$6,152
Total Fleet Operating Cost per Year:	\$79,790	\$79,880	\$79,970
Total Fleet Capital Cost:	\$91,988		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
6.17	7.41	8.64
5.00	5.00	5.00
2.79	3.10	3.41
13.97	15.51	17.05
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
219	219	219
219	219	219
\$54	\$60	\$66
19.3	20.9	22.2
\$2.21	\$1.84	\$1.58
\$1.65	\$1.38	\$1.18
\$0.56	\$0.46	\$0.40
\$4,830	\$4,836	\$4,841
\$62,785	\$62,862	\$62,939
\$91,988		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
6.17	7.41	8.64
5.00	5.00	5.00
2.79	3.10	3.41
13.97	15.51	17.05
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
292	292	292
292	292	292
\$72	\$80	\$88
19.3	20.9	22.2
\$2.55	\$2.13	\$1.83
\$1.65	\$1.38	\$1.18
\$0.90	\$0.75	\$0.64
\$7,446	\$7,454	\$7,462
\$96,795	\$96,898	\$97,001
\$91,988		

Car Type: Amdinette
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 23
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	2.33	2.54	2.76
Total Capacity Required per Day:	11.63	12.70	13.78
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$16.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$52	\$57	\$62
Maximum Continuous Hours of Service:	23.2	25.5	27.4
Total Operating Cost per Service Hour:	\$2.40	\$2.00	\$1.72
- Trip Related:	\$1.65	\$1.37	\$1.18
- Non-Trip Related:	\$0.75	\$0.63	\$0.54
Total per-Car Operating Cost per Year:	\$6,127	\$6,132	\$6,137
Total Fleet Operating Cost per Year:	\$153,179	\$153,300	\$153,421
Total Fleet Capital Cost:	\$176,900		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
4.30	5.16	6.02
5.00	5.00	5.00
2.33	2.54	2.76
11.63	12.70	13.78
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
219	219	219
219	219	219
\$45	\$49	\$53
23.2	25.5	27.4
\$2.20	\$1.84	\$1.57
\$1.65	\$1.37	\$1.18
\$0.56	\$0.46	\$0.40
\$4,821	\$4,825	\$4,829
\$120,514	\$120,618	\$120,722
\$176,900		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
4.30	5.16	6.02
5.00	5.00	5.00
2.33	2.54	2.76
11.63	12.70	13.78
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
292	292	292
292	292	292
\$60	\$65	\$71
23.2	25.5	27.4
\$2.55	\$2.12	\$1.82
\$1.65	\$1.37	\$1.18
\$0.90	\$0.75	\$0.64
\$7,434	\$7,439	\$7,445
\$185,844	\$185,982	\$186,120
\$176,900		

Car Type:
Toilet Type:

Amcoach
Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 60
Number of Toilets: 2
Total Tank Capacity (gals): 27.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$7,076
\$6,500
\$576

Maintenance Cost:
- Labor:
- Spare Parts:

\$1,923
\$1,728
\$195

Hours per Trip:
Trips per Day:

2
5

12
1

7
2

Waste Generation Data

Waste Generated:

11.23

13.47

15.72

Flush Fluid Generated:

5.00

5.00

5.00

Capacity Adjustment:

4.06

4.62

5.18

Total Capacity Required per Day:

20.28

23.09

25.89

Pumpout Labor Cost:

\$0.1

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$4.2

\$4.2

\$4.2

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$16.3

\$16.3

\$16.3

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$91

\$104

\$116

Maximum Continuous Hours of Service:

13.3

14.0

14.6

Total Operating Cost per Service Hour:

\$2.41

\$2.02

\$1.73

- Trip Related:

\$1.66

\$1.39

\$1.19

- Non-Trip Related:

\$0.75

\$0.63

\$0.54

Total per-Car Operating Cost per Year:

\$6,166

\$6,179

\$6,191

Total Fleet Operating Cost per Year:

\$191,148

\$191,540

\$191,931

Total Fleet Capital Cost:

\$219,356

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
11.23	13.47	15.72
5.00	5.00	5.00
4.06	4.62	5.18
20.28	23.09	25.89
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
219	219	219
219	219	219
\$78	\$89	\$100
13.3	14.0	14.6
\$2.22	\$1.85	\$1.59
\$1.66	\$1.39	\$1.19
\$0.56	\$0.46	\$0.40
\$4,854	\$4,865	\$4,876
\$150,472	\$150,807	\$151,142
\$219,356		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
11.23	13.47	15.72
5.00	5.00	5.00
4.06	4.62	5.18
20.28	23.09	25.89
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$16.3
292	292	292
292	292	292
\$104	\$119	\$133
13.3	14.0	14.6
\$2.56	\$2.14	\$1.84
\$1.66	\$1.39	\$1.19
\$0.90	\$0.75	\$0.64
\$7,478	\$7,493	\$7,507
\$231,825	\$232,272	\$232,719
\$219,356		

Car Type: Turbo Power Club
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 27
 Number of Toilets: 1
 Total Tank Capacity (gals): 13.5

Scenario: Expected

Capital Cost	\$3,538		
- Equipment:	\$3,250		
- Installation:	\$288		
Maintenance Cost:	\$962		
- Labor:	\$864		
- Spare Parts:	\$98		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	5.05	6.06	7.07
Flush Fluid Generated:	2.50	2.50	2.50
Capacity Adjustment:	1.89	2.14	2.39
Total Capacity Required per Day:	9.44	10.70	11.96
Pumpout Labor Cost:	\$0.0	\$0.0	\$0.0
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$8.1	\$8.1	\$8.1
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$42	\$48	\$54
Maximum Continuous Hours of Service:	14.3	15.1	15.8
Total Operating Cost per Service Hour:	\$1.21	\$1.01	\$0.86
- Trip Related:	\$0.83	\$0.69	\$0.60
- Non-Trip Related:	\$0.38	\$0.31	\$0.27
Total per-Car Operating Cost per Year:	\$3,080	\$3,086	\$3,091
Total Fleet Operating Cost per Year:	\$18,479	\$18,513	\$18,547
Total Fleet Capital Cost:	\$21,228		

Monogram

Favorable

Unfavorable

\$3,538		
\$3,250		
\$288		
\$609		
\$576		
\$33		
2	12	7
5	1	2
5.05	6.06	7.07
2.50	2.50	2.50
1.89	2.14	2.39
9.44	10.70	11.96
\$0.0	\$0.0	\$0.0
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.1	\$8.1	\$8.1
219	219	219
219	219	219
\$36	\$41	\$46
14.3	15.1	15.8
\$1.11	\$0.92	\$0.79
\$0.83	\$0.69	\$0.60
\$0.28	\$0.23	\$0.20
\$2,424	\$2,429	\$2,434
\$14,546	\$14,575	\$14,604
\$21,228		

\$3,538		
\$3,250		
\$288		
\$1,315		
\$1,152		
\$163		
2	12	7
5	1	2
5.05	6.06	7.07
2.50	2.50	2.50
1.89	2.14	2.39
9.44	10.70	11.96
\$0.0	\$0.0	\$0.0
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.1	\$8.1	\$8.1
292	292	292
292	292	292
\$49	\$55	\$61
14.3	15.1	15.8
\$1.28	\$1.07	\$0.92
\$0.83	\$0.69	\$0.60
\$0.45	\$0.38	\$0.32
\$3,736	\$3,742	\$3,748
\$22,413	\$22,452	\$22,491
\$21,228		

Car Type: Turbo Coach
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 72
 Number of Toilets: 2
 Total Tank Capacity (gals): 27.0

Scenario: Expected

Capital Cost	\$7,076		
- Equipment:	\$6,500		
- Installation:	\$576		
Maintenance Cost:	\$1,923		
- Labor:	\$1,728		
- Spare Parts:	\$195		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	13.47	16.16	18.86
Flush Fluid Generated:	5.00	5.00	5.00
Capacity Adjustment:	4.62	5.29	5.96
Total Capacity Required per Day:	23.09	26.46	29.82
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.3	\$16.3	\$20.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$104	\$119	\$134
Maximum Continuous Hours of Service:	11.7	12.2	12.7
Total Operating Cost per Service Hour:	\$2.42	\$2.02	\$2.04
- Trip Related:	\$1.67	\$1.39	\$1.50
- Non-Trip Related:	\$0.75	\$0.63	\$0.54
Total per-Car Operating Cost per Year:	\$6,179	\$6,194	\$7,282
Total Fleet Operating Cost per Year:	\$129,753	\$130,071	\$152,924
Total Fleet Capital Cost:	\$148,596		

Monogram

Favorable

\$7,076		
\$6,500		
\$576		
\$1,217		
\$1,152		
\$65		
2	12	7
5	1	2
13.47	16.16	18.86
5.00	5.00	5.00
4.62	5.29	5.96
23.09	26.46	29.82
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
219	219	219
219	219	219
\$89	\$102	\$115
11.7	12.2	12.7
\$2.22	\$1.86	\$1.90
\$1.67	\$1.39	\$1.50
\$0.56	\$0.46	\$0.40
\$4,865	\$4,878	\$5,810
\$102,160	\$102,432	\$122,020
\$148,596		

Unfavorable

\$7,076		
\$6,500		
\$576		
\$2,629		
\$2,304		
\$325		
2	12	7
5	1	2
13.47	16.16	18.86
5.00	5.00	5.00
4.62	5.29	5.96
23.09	26.46	29.82
\$0.1	\$0.1	\$0.1
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.3	\$16.3	\$20.5
292	292	292
292	292	292
\$119	\$136	\$153
11.7	12.2	12.7
\$2.57	\$2.14	\$2.14
\$1.67	\$1.39	\$1.50
\$0.90	\$0.75	\$0.64
\$7,493	\$7,510	\$8,754
\$157,346	\$157,709	\$183,827
\$148,596		

Car Type: Turbo Cafe
 Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 52
 Number of Toilets: 1
 Total Tank Capacity (gals): 13.5

Scenario: Expected

Capital Cost	\$3,538		
- Equipment:	\$3,250		
- Installation:	\$288		
Maintenance Cost:	\$962		
- Labor:	\$864		
- Spare Parts:	\$98		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	9.73	11.67	13.62
Flush Fluid Generated:	2.50	2.50	2.50
Capacity Adjustment:	3.06	3.54	4.03
Total Capacity Required per Day:	15.29	17.72	20.15
Pumpout Labor Cost:	\$0.0	\$0.0	\$0.0
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$10.2	\$10.2	\$10.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$69	\$80	\$91
Maximum Continuous Hours of Service:	8.8	9.1	9.4
Total Operating Cost per Service Hour:	\$1.43	\$1.19	\$1.02
- Trip Related:	\$1.05	\$0.88	\$0.76
- Non-Trip Related:	\$0.38	\$0.31	\$0.27
Total per-Car Operating Cost per Year:	\$3,643	\$3,654	\$3,665
Total Fleet Operating Cost per Year:	\$10,929	\$10,961	\$10,994
Total Fleet Capital Cost:	\$10,614		

Monogram

Favorable

Unfavorable

\$3,538		
\$3,250		
\$288		
\$609		
\$576		
\$33		
2	12	7
5	1	2
9.73	11.67	13.62
2.50	2.50	2.50
3.06	3.54	4.03
15.29	17.72	20.15
\$0.0	\$0.0	\$0.0
\$4.2	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$10.2	\$10.2	\$10.2
219	219	219
219	219	219
\$59	\$68	\$78
8.8	9.1	9.4
\$1.33	\$1.11	\$0.95
\$1.05	\$0.88	\$0.76
\$0.28	\$0.23	\$0.20
\$2,907	\$2,916	\$2,925
\$8,720	\$8,748	\$8,776
\$10,614		

\$3,538		
\$3,250		
\$288		
\$1,315		
\$1,152		
\$163		
2	12	7
5	1	2
9.73	11.67	13.62
2.50	2.50	2.50
3.06	3.54	4.03
15.29	17.72	20.15
\$0.0	\$0.0	\$0.0
\$4.2	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$10.2	\$10.2	\$10.2
292	292	292
292	292	292
\$79	\$91	\$104
8.8	9.1	9.4
\$1.50	\$1.25	\$1.08
\$1.05	\$0.88	\$0.76
\$0.45	\$0.38	\$0.32
\$4,379	\$4,391	\$4,404
\$13,136	\$13,174	\$13,211
\$10,614		

Car Type: Turbo Power Coach

Toilet Type: Self-Cont'd Recirc

Manufacturer:

Number of Passengers: 40

Number of Toilets: 1

Total Tank Capacity (gals): 13.5

Scenario:

Expected

Capital Cost

\$3,538

- Equipment:

\$3,250

- Installation:

\$288

Maintenance Cost:

\$962

- Labor:

\$864

- Spare Parts:

\$98

Hours per Trip:

2

12

7

Trips per Day:

5

1

2

Waste Generation Data

Waste Generated:

7.48

8.98

10.48

Flush Fluid Generated:

2.50

2.50

2.50

Capacity Adjustment:

2.50

2.87

3.24

Total Capacity Required per Day:

12.48

14.35

16.22

Pumpout Labor Cost:

\$0.0

\$0.0

\$0.0

Connect/Disconnect Labor Cost:

\$2.1

\$4.2

\$4.2

Cleaning Labor Cost:

\$6.0

\$6.0

\$6.0

Total Pumpout/Cleaning Cost per Day:

\$8.1

\$10.2

\$10.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$56

\$65

\$73

Maximum Continuous Hours of Service:

10.8

11.3

11.7

Total Operating Cost per Service Hour:

\$1.21

\$1.19

\$1.02

- Trip Related:

\$0.83

\$0.87

\$0.75

- Non-Trip Related:

\$0.38

\$0.31

\$0.27

Total per-Car Operating Cost per Year:

\$3,094

\$3,639

\$3,647

Total Fleet Operating Cost per Year:

\$43,310

\$50,939

\$51,057

Total Fleet Capital Cost:

\$49,532

Monogram

Favorable

\$3,538		
\$3,250		
\$288		
\$609		
\$576		
\$33		
2	12	7
5	1	2
7.48	8.98	10.48
2.50	2.50	2.50
2.50	2.87	3.24
12.48	14.35	16.22
\$0.0	\$0.0	\$0.0
\$2.1	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$8.1	\$10.2	\$10.2
219	219	219
219	219	219
\$48	\$55	\$63
10.8	11.3	11.7
\$1.11	\$1.10	\$0.95
\$0.83	\$0.87	\$0.75
\$0.28	\$0.23	\$0.20
\$2,436	\$2,903	\$2,910
\$34,104	\$40,643	\$40,744
\$49,532		

Unfavorable

\$3,538		
\$3,250		
\$288		
\$1,315		
\$1,152		
\$163		
2	12	7
5	1	2
7.48	8.98	10.48
2.50	2.50	2.50
2.50	2.87	3.24
12.48	14.35	16.22
\$0.0	\$0.0	\$0.0
\$2.1	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$8.1	\$10.2	\$10.2
292	292	292
292	292	292
\$64	\$74	\$83
10.8	11.3	11.7
\$1.28	\$1.25	\$1.07
\$0.83	\$0.87	\$0.75
\$0.45	\$0.38	\$0.32
\$3,751	\$4,374	\$4,384
\$52,516	\$61,235	\$61,370
\$49,532		

D3 Microphor Gravity

Car Type: Coach-HEP-HLV

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 72

Number of Toilets: 4

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

\$31,728

- Equipment:

\$30,000

- Installation:

\$1,728

Maintenance Cost:

\$1,764

- Labor:

\$864

- Spare Parts:

\$900

Hours per Trip:

24

48

72

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

32.33

64.66

96.98

Flush Fluid Generated:

95.36

190.71

286.07

Capacity Adjustment:

31.92

63.84

95.76

Total Capacity Required per Day:

159.61

319.21

478.82

Pumpout Labor Cost:

\$1.0

\$1.9

\$2.9

Connect/Disconnect Labor Cost:

\$2.1

\$4.2

\$4.2

Cleaning Labor Cost:

\$24.0

\$24.0

\$24.0

Total Pumpout/Cleaning Cost per Day:

\$27.1

\$30.1

\$31.1

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$277

\$370

\$416

Maximum Continuous Hours of Service:

45.1

45.1

45.1

Total Operating Cost per Service Hour:

\$1.79

\$1.15

\$0.91

- Trip Related:

\$1.22

\$0.72

\$0.52

- Non-Trip Related:

\$0.58

\$0.43

\$0.38

Total per-Car Operating Cost per Year:

\$5,497

\$4,698

\$4,164

Total Fleet Operating Cost per Year:

\$115,445

\$98,655

\$87,443

Total Fleet Capital Cost:

\$666,288

Microphor

Favorable

\$31,728		
\$30,000		
\$1,728		
\$876		
\$576		
\$300		
24	48	72
1	1	1
32.33	64.66	96.98
74.30	148.61	222.91
26.66	53.32	79.97
133.29	266.58	399.87
\$0.7	\$1.5	\$2.2
\$2.1	\$2.1	\$4.2
\$24.0	\$24.0	\$24.0
\$26.8	\$27.6	\$30.4
219	219	219
110	73	55
\$198	\$265	\$298
54.0	54.0	54.0
\$1.53	\$0.90	\$0.72
\$1.19	\$0.65	\$0.50
\$0.33	\$0.25	\$0.22
\$4,014	\$3,154	\$2,840
\$84,290	\$66,243	\$59,634
\$666,288		

Unfavorable

\$31,728		
\$30,000		
\$1,728		
\$2,652		
\$1,152		
\$1,500		
24	48	72
1	1	1
32.33	64.66	96.98
123.84	247.68	371.52
39.04	78.08	117.13
195.21	390.42	585.63
\$1.2	\$2.5	\$3.7
\$2.1	\$4.2	\$4.2
\$24.0	\$24.0	\$24.0
\$27.3	\$30.7	\$31.9
292	292	292
146	97	73
\$388	\$517	\$581
36.9	36.9	36.9
\$2.01	\$1.32	\$1.06
\$1.25	\$0.75	\$0.55
\$0.76	\$0.57	\$0.50
\$7,031	\$6,155	\$5,563
\$147,651	\$129,248	\$116,828
\$666,288		

Car Type: Lounge-HEP-HLV

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 86

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

\$21,152

- Equipment:

\$20,000

- Installation:

\$1,152

Maintenance Cost:

\$1,032

- Labor:

\$432

- Spare Parts:

\$600

Hours per Trip:

24

48

72

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

38.61

77.23

115.84

Flush Fluid Generated:

113.90

227.80

341.70

Capacity Adjustment:

38.13

76.26

114.38

Total Capacity Required per Day:

190.64

381.28

571.92

Pumpout Labor Cost:

\$1.1

\$2.3

\$3.4

Connect/Disconnect Labor Cost:

\$2.1

\$4.2

\$4.2

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$15.2

\$18.5

\$19.6

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$331

\$442

\$497

Maximum Continuous Hours of Service:

37.8

37.8

37.8

Total Operating Cost per Service Hour:

\$1.08

\$0.75

\$0.60

- Trip Related:

\$0.74

\$0.49

\$0.38

- Non-Trip Related:

\$0.34

\$0.25

\$0.22

Total per-Car Operating Cost per Year:

\$3,310

\$3,047

\$2,782

Total Fleet Operating Cost per Year:

\$19,860

\$18,284

\$16,691

Total Fleet Capital Cost:

\$126,912

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
24	48	72
1	1	1
38.61	77.23	115.84
88.75	177.50	266.26
31.84	63.68	95.52
159.21	318.42	477.62
\$0.9	\$1.8	\$2.7
\$2.1	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$15.0	\$18.0	\$18.9
219	219	219
110	73	55
\$237	\$316	\$356
45.2	45.2	45.2
\$0.90	\$0.60	\$0.48
\$0.71	\$0.46	\$0.35
\$0.19	\$0.14	\$0.12
\$2,366	\$2,116	\$1,876
\$14,197	\$12,698	\$11,258
\$126,912		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
24	48	72
1	1	1
38.61	77.23	115.84
147.92	295.84	443.76
46.63	93.27	139.90
233.17	466.34	699.50
\$1.5	\$3.0	\$4.4
\$2.1	\$4.2	\$6.3
\$12.0	\$12.0	\$12.0
\$15.6	\$19.2	\$22.7
292	292	292
146	97	73
\$463	\$617	\$694
30.9	30.9	30.9
\$1.23	\$0.87	\$0.75
\$0.78	\$0.53	\$0.45
\$0.45	\$0.34	\$0.30
\$4,314	\$4,058	\$3,930
\$25,881	\$24,348	\$23,582
\$126,912		

Car Type: Trans Dorm Coach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 40

Number of Toilets: 4

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

\$31,728

- Equipment:

\$30,000

- Installation:

\$1,728

Maintenance Cost:

\$1,764

- Labor:

\$864

- Spare Parts:

\$900

Hours per Trip:

24

48

72

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

17.96

35.92

53.88

Flush Fluid Generated:

52.98

105.95

158.93

Capacity Adjustment:

17.73

35.47

53.20

Total Capacity Required per Day:

88.67

177.34

266.01

Pumpout Labor Cost:

\$0.5

\$1.1

\$1.6

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$24.0

\$24.0

\$24.0

Total Pumpout/Cleaning Cost per Day:

\$26.6

\$27.2

\$27.7

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$154

\$205

\$231

Maximum Continuous Hours of Service:

81.2

81.2

81.2

Total Operating Cost per Service Hour:

\$1.74

\$1.05

\$0.82

- Trip Related:

\$1.16

\$0.62

\$0.43

- Non-Trip Related:

\$0.58

\$0.43

\$0.38

Total per-Car Operating Cost per Year:

\$5,320

\$4,282

\$3,764

Total Fleet Operating Cost per Year:

\$191,520

\$154,170

\$135,494

Total Fleet Capital Cost:

\$1,142,208

Microphor

Favorable

\$31,728		
\$30,000		
\$1,728		
\$876		
\$576		
\$300		
24	48	72
1	1	1
17.96	35.92	53.88
41.28	82.56	123.84
14.81	29.62	44.43
74.05	148.10	222.15
\$0.4	\$0.8	\$1.2
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.5	\$26.9	\$27.3
219	219	219
110	73	55
\$110	\$147	\$165
97.2	97.2	97.2
\$1.48	\$0.85	\$0.64
\$1.15	\$0.60	\$0.42
\$0.33	\$0.25	\$0.22
\$3,889	\$2,989	\$2,538
\$140,019	\$107,590	\$91,375
\$1,142,208		

Unfavorable

\$31,728		
\$30,000		
\$1,728		
\$2,652		
\$1,152		
\$1,500		
24	48	72
1	1	1
17.96	35.92	53.88
68.80	137.60	206.40
21.69	43.38	65.07
108.45	216.90	325.35
\$0.7	\$1.4	\$2.1
\$2.1	\$2.1	\$4.2
\$24.0	\$24.0	\$24.0
\$26.8	\$27.5	\$30.3
292	292	292
146	97	73
\$215	\$287	\$323
66.4	66.4	66.4
\$1.93	\$1.20	\$0.99
\$1.18	\$0.63	\$0.48
\$0.76	\$0.57	\$0.50
\$6,778	\$5,613	\$5,184
\$244,022	\$202,084	\$186,634
\$1,142,208		

Car Type: **Sleeper Super**
 Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: **44**
 Number of Toilets: **12**
 Total Tank Capacity (gals): **300.0**

Scenario: **Expected**

Capital Cost	\$74,032		
- Equipment:	\$70,000		
- Installation:	\$4,032		
Maintenance Cost:	\$4,692		
- Labor:	\$2,592		
- Spare Parts:	\$2,100		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	19.76	39.51	59.27
Flush Fluid Generated:	58.27	116.55	174.82
Capacity Adjustment:	19.51	39.01	58.52
Total Capacity Required per Day:	97.54	195.07	292.61
Pumpout Labor Cost:	\$0.6	\$1.2	\$1.7
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$72.0	\$72.0	\$72.0
Total Pumpout/Cleaning Cost per Day:	\$74.7	\$75.3	\$75.8
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$169	\$226	\$254
Maximum Continuous Hours of Service:	73.8	73.8	73.8
Total Operating Cost per Service Hour:	\$4.70	\$2.77	\$2.13
- Trip Related:	\$3.17	\$1.62	\$1.11
- Non-Trip Related:	\$1.53	\$1.15	\$1.02
Total per-Car Operating Cost per Year:	\$14,402	\$11,328	\$9,791
Total Fleet Operating Cost per Year:	\$979,344	\$770,308	\$665,788
Total Fleet Capital Cost:	\$5,034,176		

Microphor

Favorable

\$74,032		
\$70,000		
\$4,032		
\$2,428		
\$1,728		
\$700		
24	48	72
1	1	1
19.76	39.51	59.27
45.41	90.82	136.22
16.29	32.58	48.87
81.46	162.91	244.36
\$0.5	\$0.9	\$1.4
\$2.1	\$2.1	\$2.1
\$72.0	\$72.0	\$72.0
\$74.6	\$75.0	\$75.5
219	219	219
110	73	55
\$121	\$162	\$182
88.4	88.4	88.4
\$4.08	\$2.30	\$1.71
\$3.15	\$1.61	\$1.09
\$0.92	\$0.69	\$0.62
\$10,713	\$8,065	\$6,742
\$728,482	\$548,443	\$458,423
\$5,034,176		

Unfavorable

\$74,032		
\$70,000		
\$4,032		
\$6,956		
\$3,456		
\$3,500		
24	48	72
1	1	1
19.76	39.51	59.27
75.68	151.36	227.04
23.86	47.72	71.58
119.29	238.59	357.89
\$0.8	\$1.5	\$2.3
\$2.1	\$2.1	\$4.2
\$72.0	\$72.0	\$72.0
\$74.9	\$75.6	\$78.5
292	292	292
146	97	73
\$237	\$316	\$355
60.4	60.4	60.4
\$5.17	\$3.13	\$2.48
\$3.19	\$1.64	\$1.16
\$1.99	\$1.49	\$1.32
\$18,122	\$14,632	\$13,040
\$1,232,294	\$994,946	\$886,696
\$5,034,176		

Car Type: **Bag Coach Super**
 Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: **78**
 Number of Toilets: **5**
 Total Tank Capacity (gals): **300.0**

Scenario: **Expected**

Capital Cost	\$37,016		
- Equipment:	\$35,000		
- Installation:	\$2,016		
Maintenance Cost:	\$2,130		
- Labor:	\$1,080		
- Spare Parts:	\$1,050		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	35.02	70.04	105.07
Flush Fluid Generated:	103.30	206.61	309.91
Capacity Adjustment:	34.58	69.16	103.74
Total Capacity Required per Day:	172.91	345.81	518.72
Pumpout Labor Cost:	\$1.0	\$2.1	\$3.1
Connect/Disconnect Labor Cost:	\$2.1	\$4.2	\$4.2
Cleaning Labor Cost:	\$30.0	\$30.0	\$30.0
Total Pumpout/Cleaning Cost per Day:	\$33.1	\$36.3	\$37.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$300	\$401	\$451
Maximum Continuous Hours of Service:	41.6	41.6	41.6
Total Operating Cost per Service Hour:	\$2.17	\$1.37	\$1.08
- Trip Related:	\$1.48	\$0.85	\$0.62
- Non-Trip Related:	\$0.69	\$0.52	\$0.46
Total per-Car Operating Cost per Year:	\$6,663	\$5,619	\$4,963
Total Fleet Operating Cost per Year:	\$319,831	\$269,722	\$238,228
Total Fleet Capital Cost:	\$1,776,768		

Microphor

Favorable

Unfavorable

\$37,016		
\$35,000		
\$2,016		
\$1,070		
\$720		
\$350		
24	48	72
1	1	1
35.02	70.04	105.07
80.50	160.99	241.49
28.88	57.76	86.64
144.40	288.80	433.19
\$0.8	\$1.6	\$2.4
\$2.1	\$2.1	\$4.2
\$30.0	\$30.0	\$30.0
\$32.9	\$33.7	\$36.6
219	219	219
110	73	55
\$215	\$287	\$323
49.9	49.9	49.9
\$1.86	\$1.09	\$0.86
\$1.45	\$0.78	\$0.59
\$0.41	\$0.31	\$0.27
\$4,888	\$3,818	\$3,397
\$234,630	\$183,242	\$163,067
\$1,776,768		

\$37,016		
\$35,000		
\$2,016		
\$3,190		
\$1,440		
\$1,750		
24	48	72
1	1	1
35.02	70.04	105.07
134.16	268.32	402.48
42.30	84.59	126.89
211.48	422.96	634.43
\$1.3	\$2.7	\$4.0
\$2.1	\$4.2	\$6.3
\$30.0	\$30.0	\$30.0
\$33.4	\$36.9	\$40.3
292	292	292
146	97	73
\$420	\$560	\$630
34.0	34.0	34.0
\$2.42	\$1.57	\$1.29
\$1.51	\$0.89	\$0.68
\$0.91	\$0.68	\$0.61
\$8,492	\$7,340	\$6,764
\$407,634	\$352,313	\$324,652
\$1,776,768		

Car Type: Coach Super

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 75

Number of Toilets: 6

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$42,304		
- Equipment:	\$40,000		
- Installation:	\$2,304		
Maintenance Cost:	\$2,496		
- Labor:	\$1,296		
- Spare Parts:	\$1,200		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	33.68	67.35	101.03
Flush Fluid Generated:	99.33	198.66	297.99
Capacity Adjustment:	33.25	66.50	99.75
Total Capacity Required per Day:	166.26	332.51	498.77
Pumpout Labor Cost:	\$1.0	\$2.0	\$3.0
Connect/Disconnect Labor Cost:	\$2.1	\$4.2	\$4.2
Cleaning Labor Cost:	\$36.0	\$36.0	\$36.0
Total Pumpout/Cleaning Cost per Day:	\$39.1	\$42.2	\$43.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$289	\$385	\$433
Maximum Continuous Hours of Service:	43.3	43.3	43.3
Total Operating Cost per Service Hour:	\$2.54	\$1.58	\$1.24
- Trip Related:	\$1.72	\$0.97	\$0.69
- Non-Trip Related:	\$0.81	\$0.61	\$0.54
Total per-Car Operating Cost per Year:	\$7,779	\$6,474	\$5,687
Total Fleet Operating Cost per Year:	\$707,891	\$589,137	\$517,553
Total Fleet Capital Cost:	\$3,849,664		

Microphor

Favorable

Unfavorable

\$42,304		
\$40,000		
\$2,304		
\$1,264		
\$864		
\$400		
24	48	72
1	1	1
33.68	67.35	101.03
77.40	154.80	232.20
27.77	55.54	83.31
138.84	277.69	416.53
\$0.8	\$1.5	\$2.3
\$2.1	\$2.1	\$4.2
\$36.0	\$36.0	\$36.0
\$38.9	\$39.6	\$42.5
219	219	219
110	73	55
\$207	\$276	\$310
51.9	51.9	51.9
\$2.18	\$1.27	\$0.99
\$1.70	\$0.90	\$0.67
\$0.48	\$0.36	\$0.32
\$5,727	\$4,434	\$3,902
\$521,200	\$403,493	\$355,103
\$3,849,664		

\$42,304		
\$40,000		
\$2,304		
\$3,728		
\$1,728		
\$2,000		
24	48	72
1	1	1
33.68	67.35	101.03
129.00	258.00	387.00
40.67	81.34	122.01
203.34	406.69	610.03
\$1.3	\$2.6	\$3.9
\$2.1	\$4.2	\$6.3
\$36.0	\$36.0	\$36.0
\$39.4	\$42.8	\$46.2
292	292	292
146	97	73
\$404	\$538	\$606
35.4	35.4	35.4
\$2.82	\$1.80	\$1.47
\$1.76	\$1.01	\$0.76
\$1.06	\$0.80	\$0.71
\$9,883	\$8,430	\$7,704
\$899,326	\$767,154	\$701,068
\$3,849,664		

Car Type: Horizon
Toilet Type: Gravity

Manufacturer:

Number of Passengers: 82
Number of Toilets: 2
Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost \$21,152
- Equipment: \$20,000
- Installation: \$1,152

Maintenance Cost: \$1,032
- Labor: \$432
- Spare Parts: \$600

Hours per Trip: 12 24 48
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 18.41 36.82 73.64
Flush Fluid Generated: 54.30 108.60 217.20
Capacity Adjustment: 18.18 36.35 72.71
Total Capacity Required per Day: 90.89 181.77 363.55

Pumpout Labor Cost: \$0.5 \$1.1 \$2.2
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$4.2
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.6 \$15.2 \$18.4

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 128 85

Waste Disposal Cost per Year: \$316 \$316 \$421

Maximum Continuous Hours of Service: 39.6 39.6 39.6
Total Operating Cost per Service Hour: \$1.66 \$1.07 \$0.74
- Trip Related: \$1.32 \$0.74 \$0.49
- Non-Trip Related: \$0.34 \$0.34 \$0.25

Total per-Car Operating Cost per Year: \$5,089 \$3,288 \$3,018

Total Fleet Operating Cost per Year: \$524,177 \$338,646 \$310,830

Total Fleet Capital Cost: \$2,178,656

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
12	24	48
1	1	1
18.41	36.82	73.64
42.31	84.62	169.25
15.18	30.36	60.72
75.90	151.80	303.60
\$0.4	\$0.8	\$1.7
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.5	\$14.9	\$17.9
219	219	219
219	110	73
\$226	\$226	\$301
47.4	47.4	47.4
\$1.48	\$0.89	\$0.60
\$1.30	\$0.71	\$0.46
\$0.19	\$0.19	\$0.14
\$3,895	\$2,351	\$2,096
\$401,147	\$242,120	\$215,844
\$2,178,656		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
12	24	48
1	1	1
18.41	36.82	73.64
70.52	141.04	282.08
22.23	44.46	88.93
111.16	222.32	444.65
\$0.7	\$1.4	\$2.8
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.8	\$15.5	\$19.0
292	292	292
292	146	97
\$441	\$441	\$589
32.4	32.4	32.4
\$1.81	\$1.22	\$0.86
\$1.36	\$0.77	\$0.52
\$0.45	\$0.45	\$0.34
\$6,341	\$4,282	\$4,016
\$653,078	\$441,042	\$413,643
\$2,178,656		

Car Type: Coach
 Toilet Type: Gravity

Manufacturer:

Number of Passengers: 48
 Number of Toilets: 2
 Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost
 - Equipment: \$21,152
 - Installation: \$20,000
 \$1,152

Maintenance Cost: \$1,032
 - Labor: \$432
 - Spare Parts: \$600

	12	24	48
Hours per Trip:	12	24	48
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	10.78	21.55	43.10
Flush Fluid Generated:	31.79	63.57	127.14
Capacity Adjustment:	10.64	21.28	42.56
Total Capacity Required per Day:	53.20	106.40	212.81

Pumpout Labor Cost:	\$0.3	\$0.6	\$1.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.4	\$14.7	\$15.4

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85

Waste Disposal Cost per Year:	\$185	\$185	\$246
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Maximum Continuous Hours of Service:	67.7	67.7	67.7
Total Operating Cost per Service Hour:	\$1.60	\$1.01	\$0.63
- Trip Related:	\$1.26	\$0.67	\$0.38
- Non-Trip Related:	\$0.34	\$0.34	\$0.25

Total per-Car Operating Cost per Year:	\$4,901	\$3,099	\$2,588
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Total Fleet Operating Cost per Year:	\$382,249	\$241,750	\$201,834
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Total Fleet Capital Cost:	\$1,649,856
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Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
12	24	48
1	1	1
10.78	21.55	43.10
24.77	49.54	99.07
8.89	17.77	35.54
44.43	88.86	177.72
\$0.2	\$0.5	\$1.0
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.6	\$15.1
219	219	219
219	110	73
\$132	\$132	\$176
81.0	81.0	81.0
\$1.43	\$0.84	\$0.50
\$1.25	\$0.66	\$0.36
\$0.19	\$0.19	\$0.14
\$3,762	\$2,219	\$1,766
\$293,473	\$173,045	\$137,753
\$1,649,856		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
12	24	48
1	1	1
10.78	21.55	43.10
41.28	82.56	165.12
13.01	26.03	52.06
65.07	130.14	260.28
\$0.4	\$0.8	\$1.7
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.9	\$15.8
292	292	292
292	146	97
\$258	\$258	\$345
55.3	55.3	55.3
\$1.73	\$1.15	\$0.74
\$1.28	\$0.70	\$0.40
\$0.45	\$0.45	\$0.34
\$6,072	\$4,014	\$3,454
\$473,627	\$313,056	\$269,385
\$1,649,856		

Car Type: Coach (HDCP)

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 44

Number of Toilets: 3

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$26,440		
- Equipment:	\$25,000		
- Installation:	\$1,440		
Maintenance Cost:	\$1,398		
- Labor:	\$648		
- Spare Parts:	\$750		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	9.88	19.76	39.51
Flush Fluid Generated:	29.14	58.27	116.55
Capacity Adjustment:	9.75	19.51	39.01
Total Capacity Required per Day:	48.77	97.54	195.07
Pumpout Labor Cost:	\$0.3	\$0.6	\$1.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$18.0	\$18.0	\$18.0
Total Pumpout/Cleaning Cost per Day:	\$20.4	\$20.7	\$21.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$169	\$169	\$226
Maximum Continuous Hours of Service:	73.8	73.8	73.8
Total Operating Cost per Service Hour:	\$2.21	\$1.37	\$0.84
- Trip Related:	\$1.75	\$0.92	\$0.50
- Non-Trip Related:	\$0.46	\$0.46	\$0.34
Total per-Car Operating Cost per Year:	\$6,777	\$4,210	\$3,435
Total Fleet Operating Cost per Year:	\$142,327	\$88,403	\$72,136
Total Fleet Capital Cost:	\$555,240		

Microphor

Favorable

Unfavorable

\$26,440		
\$25,000		
\$1,440		
\$682		
\$432		
\$250		
12	24	48
1	1	1
9.88	19.76	39.51
22.70	45.41	90.82
8.15	16.29	32.58
40.73	81.46	162.91
\$0.2	\$0.5	\$0.9
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.3	\$20.6	\$21.0
219	219	219
219	110	73
\$121	\$121	\$162
88.4	88.4	88.4
\$2.00	\$1.16	\$0.68
\$1.74	\$0.90	\$0.48
\$0.26	\$0.26	\$0.19
\$5,255	\$3,054	\$2,377
\$110,353	\$64,133	\$49,924
\$555,240		

\$26,440		
\$25,000		
\$1,440		
\$2,114		
\$864		
\$1,250		
12	24	48
1	1	1
9.88	19.76	39.51
37.84	75.68	151.36
11.93	23.86	47.72
59.65	119.29	238.59
\$0.4	\$0.8	\$1.5
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.5	\$20.9	\$21.6
292	292	292
292	146	97
\$237	\$237	\$316
60.4	60.4	60.4
\$2.38	\$1.54	\$0.97
\$1.77	\$0.94	\$0.52
\$0.60	\$0.60	\$0.45
\$8,331	\$5,396	\$4,534
\$174,942	\$113,315	\$95,205
\$555,240		

Car Type: Dome Coach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 46

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$21,152

\$20,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,032

\$432

\$600

Hours per Trip:

Trips per Day:

12

1

24

1

48

1

Waste Generation Data

Waste Generated:

10.33

20.65

41.31

Flush Fluid Generated:

30.46

60.92

121.84

Capacity Adjustment:

10.20

20.39

40.79

Total Capacity Required per Day:

50.99

101.97

203.94

Pumpout Labor Cost:

\$0.3

\$0.6

\$1.2

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.4

\$14.7

\$15.3

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

128

85

Waste Disposal Cost per Year:

\$177

\$177

\$236

Maximum Continuous Hours of Service:

70.6

70.6

70.6

Total Operating Cost per Service Hour:

\$1.59

\$1.01

\$0.63

- Trip Related:

\$1.26

\$0.67

\$0.38

- Non-Trip Related:

\$0.34

\$0.34

\$0.25

Total per-Car Operating Cost per Year:

\$4,890

\$3,088

\$2,573

Total Fleet Operating Cost per Year:

\$58,675

\$37,059

\$30,874

Total Fleet Capital Cost:

\$253,824

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
12	24	48
1	1	1
10.33	20.65	41.31
23.74	47.47	94.94
8.52	17.03	34.06
42.58	85.16	170.32
\$0.2	\$0.5	\$0.9
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.6	\$15.0
219	219	219
219	110	73
\$127	\$127	\$169
84.5	84.5	84.5
\$1.43	\$0.84	\$0.50
\$1.24	\$0.66	\$0.36
\$0.19	\$0.19	\$0.14
\$3,755	\$2,211	\$1,756
\$45,056	\$26,529	\$21,068
\$253,824		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
12	24	48
1	1	1
10.33	20.65	41.31
39.56	79.12	158.24
12.47	24.94	49.89
62.36	124.72	249.43
\$0.4	\$0.8	\$1.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.9	\$15.7
292	292	292
292	146	97
\$248	\$248	\$330
57.7	57.7	57.7
\$1.73	\$1.14	\$0.73
\$1.28	\$0.69	\$0.40
\$0.45	\$0.45	\$0.34
\$6,056	\$3,998	\$3,433
\$72,676	\$47,973	\$41,191
\$253,824		

Car Type: Amlounge II

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 49

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	11.00	22.00	44.00
Flush Fluid Generated:	32.45	64.90	129.79
Capacity Adjustment:	10.86	21.72	43.45
Total Capacity Required per Day:	54.31	108.62	217.24
Pumpout Labor Cost:	\$0.3	\$0.6	\$1.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.4	\$14.7	\$15.4
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$189	\$189	\$252
Maximum Continuous Hours of Service:	66.3	66.3	66.3
Total Operating Cost per Service Hour:	\$1.60	\$1.01	\$0.63
- Trip Related:	\$1.26	\$0.68	\$0.38
- Non-Trip Related:	\$0.34	\$0.34	\$0.25
Total per-Car Operating Cost per Year:	\$4,906	\$3,105	\$2,595
Total Fleet Operating Cost per Year:	\$122,654	\$77,622	\$64,875
Total Fleet Capital Cost:	\$528,800		

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
12	24	48
1	1	1
11.00	22.00	44.00
25.28	50.57	101.14
9.07	18.14	36.28
45.36	90.71	181.42
\$0.3	\$0.5	\$1.0
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.6	\$15.1
219	219	219
219	110	73
\$135	\$135	\$180
79.4	79.4	79.4
\$1.43	\$0.85	\$0.51
\$1.25	\$0.66	\$0.37
\$0.19	\$0.19	\$0.14
\$3,766	\$2,222	\$1,771
\$94,159	\$55,560	\$44,281
\$528,800		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
12	24	48
1	1	1
11.00	22.00	44.00
42.14	84.28	168.56
13.29	26.57	53.14
66.43	132.85	265.70
\$0.4	\$0.8	\$1.7
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.9	\$15.8
292	292	292
292	146	97
\$264	\$264	\$352
54.2	54.2	54.2
\$1.74	\$1.15	\$0.74
\$1.29	\$0.70	\$0.40
\$0.45	\$0.45	\$0.34
\$6,080	\$4,021	\$3,464
\$152,001	\$100,536	\$86,605
\$528,800		

Car Type: **Sleeper 10-6**

Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: **22**

Number of Toilets: **17**

Total Tank Capacity (gals): **300.0**

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$100,472

\$95,000

\$5,472

Maintenance Cost:

- Labor:

- Spare Parts:

\$6,522

\$3,672

\$2,850

Hours per Trip:

Trips per Day:

12

1

24

1

48

1

Waste Generation Data

Waste Generated:

4.94

9.88

19.76

Flush Fluid Generated:

14.57

29.14

58.27

Capacity Adjustment:

4.88

9.75

19.51

Total Capacity Required per Day:

24.38

48.77

97.54

Pumpout Labor Cost:

\$0.1

\$0.3

\$0.6

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$102.0

\$102.0

\$102.0

Total Pumpout/Cleaning Cost per Day:

\$104.2

\$104.4

\$104.7

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

128

85

Waste Disposal Cost per Year:

\$85

\$85

\$113

Maximum Continuous Hours of Service:

147.6

147.6

147.6

Total Operating Cost per Service Hour:

\$10.84

\$6.50

\$3.80

- Trip Related:

\$8.71

\$4.38

\$2.21

- Non-Trip Related:

\$2.13

\$2.13

\$1.60

Total per-Car Operating Cost per Year:

\$33,242

\$19,943

\$15,550

Total Fleet Operating Cost per Year:

\$2,725,803

\$1,635,304

\$1,275,137

Total Fleet Capital Cost:

\$8,238,704

Microphor

Favorable

Unfavorable

\$100,472		
\$95,000		
\$5,472		
\$3,398		
\$2,448		
\$950		
12	24	48
1	1	1
4.94	9.88	19.76
11.35	22.70	45.41
4.07	8.15	16.29
20.36	40.73	81.46
\$0.1	\$0.2	\$0.5
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.2	\$104.3	\$104.6
219	219	219
219	110	73
\$61	\$61	\$81
176.8	176.8	176.8
\$10.00	\$5.66	\$3.17
\$8.71	\$4.37	\$2.20
\$1.29	\$1.29	\$0.97
\$26,281	\$14,882	\$11,111
\$2,155,076	\$1,220,362	\$911,128
\$8,238,704		

\$100,472		
\$95,000		
\$5,472		
\$9,646		
\$4,896		
\$4,750		
12	24	48
1	1	1
4.94	9.88	19.76
18.92	37.84	75.68
5.96	11.93	23.86
29.82	59.65	119.29
\$0.2	\$0.4	\$0.8
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.3	\$104.5	\$104.9
292	292	292
292	146	97
\$118	\$118	\$158
120.7	120.7	120.7
\$11.48	\$7.14	\$4.28
\$8.72	\$4.39	\$2.22
\$2.75	\$2.75	\$2.06
\$40,217	\$25,018	\$20,010
\$3,297,784	\$2,051,499	\$1,640,818
\$8,238,704		

Car Type: **Amcoach II**
 Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: **59**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **300.0**

Scenario: **Expected**

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	26.49	52.98	79.47
Flush Fluid Generated:	78.14	156.28	234.42
Capacity Adjustment:	26.16	52.32	78.47
Total Capacity Required per Day:	130.79	261.58	392.36
Pumpout Labor Cost:	\$0.8	\$1.6	\$2.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.9	\$15.7	\$18.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$227	\$303	\$341
Maximum Continuous Hours of Service:	55.1	55.1	55.1
Total Operating Cost per Service Hour:	\$1.03	\$0.65	\$0.56
- Trip Related:	\$0.69	\$0.40	\$0.33
- Non-Trip Related:	\$0.34	\$0.25	\$0.22
Total per-Car Operating Cost per Year:	\$3,160	\$2,669	\$2,557
Total Fleet Operating Cost per Year:	\$376,079	\$317,602	\$304,326
Total Fleet Capital Cost:	\$2,517,088		

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
24	48	72
1	1	1
26.49	52.98	79.47
60.89	121.78	182.66
21.84	43.69	65.53
109.22	218.45	327.67
\$0.6	\$1.2	\$1.8
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.7	\$15.3	\$18.0
219	219	219
110	73	55
\$163	\$217	\$244
65.9	65.9	65.9
\$0.86	\$0.52	\$0.44
\$0.67	\$0.38	\$0.31
\$0.19	\$0.14	\$0.12
\$2,261	\$1,823	\$1,719
\$269,092	\$216,945	\$204,554
\$2,517,088		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
24	48	72
1	1	1
26.49	52.98	79.47
101.48	202.96	304.44
31.99	63.99	95.98
159.96	319.93	479.89
\$1.0	\$2.0	\$3.0
\$2.1	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$15.1	\$18.2	\$19.2
292	292	292
146	97	73
\$318	\$423	\$476
45.0	45.0	45.0
\$1.17	\$0.81	\$0.66
\$0.72	\$0.47	\$0.36
\$0.45	\$0.34	\$0.30
\$4,100	\$3,774	\$3,457
\$487,946	\$449,088	\$411,416
\$2,517,088		

Car Type: Slumbercoach 24-8

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 40

Number of Toilets: 32

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost \$179,792
- Equipment: \$170,000
- Installation: \$9,792

Maintenance Cost: \$12,012
- Labor: \$6,912
- Spare Parts: \$5,100

Hours per Trip: 24 48 72
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 17.96 35.92 53.88
Flush Fluid Generated: 52.98 105.95 158.93
Capacity Adjustment: 17.73 35.47 53.20
Total Capacity Required per Day: 88.67 177.34 266.01

Pumpout Labor Cost: \$0.5 \$1.1 \$1.6
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$192.0 \$192.0 \$192.0
Total Pumpout/Cleaning Cost per Day: \$194.6 \$195.2 \$195.7

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 128 85 64

Waste Disposal Cost per Year: \$154 \$205 \$231

Maximum Continuous Hours of Service: 81.2 81.2 81.2
Total Operating Cost per Service Hour: \$12.08 \$7.05 \$5.38
- Trip Related: \$8.16 \$4.12 \$2.77
- Non-Trip Related: \$3.92 \$2.94 \$2.61

Total per-Car Operating Cost per Year: \$37,030 \$28,838 \$24,743

Total Fleet Operating Cost per Year: \$592,480 \$461,416 \$395,884

Total Fleet Capital Cost: \$2,876,672

Microphor

Favorable

Unfavorable

\$179,792		
\$170,000		
\$9,792		
\$6,308		
\$4,608		
\$1,700		
24	48	72
1	1	1
17.96	35.92	53.88
41.28	82.56	123.84
14.81	29.62	44.43
74.05	148.10	222.15
\$0.4	\$0.8	\$1.2
\$2.1	\$2.1	\$2.1
\$192.0	\$192.0	\$192.0
\$194.5	\$194.9	\$195.3
219	219	219
110	73	55
\$110	\$147	\$165
97.2	97.2	97.2
\$10.55	\$5.90	\$4.36
\$8.15	\$4.10	\$2.75
\$2.40	\$1.80	\$1.60
\$27,717	\$20,685	\$17,168
\$443,479	\$330,954	\$274,691
\$2,876,672		

\$179,792		
\$170,000		
\$9,792		
\$17,716		
\$9,216		
\$8,500		
24	48	72
1	1	1
17.96	35.92	53.88
68.80	137.60	206.40
21.69	43.38	65.07
108.45	216.90	325.35
\$0.7	\$1.4	\$2.1
\$2.1	\$2.1	\$4.2
\$192.0	\$192.0	\$192.0
\$194.8	\$195.5	\$198.3
292	292	292
146	97	73
\$215	\$287	\$323
66.4	66.4	66.4
\$13.23	\$7.93	\$6.19
\$8.18	\$4.13	\$2.82
\$5.06	\$3.79	\$3.37
\$46,370	\$37,029	\$32,512
\$741,926	\$592,471	\$520,196
\$2,876,672		

Car Type: Viewliner-Sleeper

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 34

Number of Toilets: 17

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$100,472

\$95,000

\$5,472

Maintenance Cost:

- Labor:

- Spare Parts:

\$6,522

\$3,672

\$2,850

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

15.27

30.53

45.80

Flush Fluid Generated:

45.03

90.06

135.09

Capacity Adjustment:

15.07

30.15

45.22

Total Capacity Required per Day:

75.37

150.74

226.11

Pumpout Labor Cost:

\$0.5

\$0.9

\$1.4

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$102.0

\$102.0

\$102.0

Total Pumpout/Cleaning Cost per Day:

\$104.6

\$105.0

\$105.5

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$131

\$175

\$196

Maximum Continuous Hours of Service:

95.5

95.5

95.5

Total Operating Cost per Service Hour:

\$6.53

\$3.83

\$2.93

- Trip Related:

\$4.40

\$2.23

\$1.51

- Non-Trip Related:

\$2.13

\$1.60

\$1.42

Total per-Car Operating Cost per Year:

\$20,009

\$15,639

\$13,454

Total Fleet Operating Cost per Year:

\$40,018

\$31,278

\$26,908

Total Fleet Capital Cost:

\$200,944

Microphor

Favorable

\$100,472		
\$95,000		
\$5,472		
\$3,398		
\$2,448		
\$950		
24	48	72
1	1	1
15.27	30.53	45.80
35.09	70.18	105.26
12.59	25.18	37.77
62.94	125.88	188.83
\$0.4	\$0.7	\$1.1
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.5	\$104.8	\$105.2
219	219	219
110	73	55
\$94	\$125	\$141
114.4	114.4	114.4
\$5.68	\$3.19	\$2.36
\$4.39	\$2.22	\$1.50
\$1.29	\$0.97	\$0.86
\$14,929	\$11,174	\$9,296
\$29,858	\$22,347	\$18,591
\$200,944		

Unfavorable

\$100,472		
\$95,000		
\$5,472		
\$9,646		
\$4,896		
\$4,750		
24	48	72
1	1	1
15.27	30.53	45.80
58.48	116.96	175.44
18.44	36.87	55.31
92.18	184.36	276.55
\$0.6	\$1.2	\$1.8
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.7	\$105.3	\$105.9
292	292	292
146	97	73
\$183	\$244	\$275
78.1	78.1	78.1
\$7.17	\$4.31	\$3.36
\$4.41	\$2.25	\$1.52
\$2.75	\$2.06	\$1.84
\$25,113	\$20,136	\$17,648
\$50,226	\$40,273	\$35,296
\$200,944		

Car Type: **Amcafe**
 Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: **53**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **300.0**

Scenario: **Expected**

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.86	15.86	23.80
Flush Fluid Generated:	46.80	46.80	70.19
Capacity Adjustment:	15.67	15.67	23.50
Total Capacity Required per Day:	78.33	78.33	117.49
Pumpout Labor Cost:	\$0.5	\$0.5	\$0.7
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.6	\$14.6	\$14.8
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$272	\$272	\$204
Maximum Continuous Hours of Service:	61.3	61.3	61.3
Total Operating Cost per Service Hour:	\$1.23	\$1.23	\$1.02
- Trip Related:	\$0.98	\$0.98	\$0.68
- Non-Trip Related:	\$0.25	\$0.25	\$0.34
Total per-Car Operating Cost per Year:	\$5,026	\$5,026	\$3,127
Total Fleet Operating Cost per Year:	\$226,182	\$226,182	\$140,718
Total Fleet Capital Cost:	\$951,840		

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
8	16	24
2	1	1
15.86	15.86	23.80
36.46	36.46	54.70
13.08	13.08	19.62
65.41	65.41	98.12
\$0.4	\$0.4	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.5	\$14.6
219	219	219
219	219	110
\$195	\$195	\$146
73.4	73.4	73.4
\$1.10	\$1.10	\$0.85
\$0.96	\$0.96	\$0.67
\$0.14	\$0.14	\$0.19
\$3,851	\$3,851	\$2,238
\$173,276	\$173,276	\$100,708
\$951,840		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
8	16	24
2	1	1
15.86	15.86	23.80
60.77	60.77	91.16
19.16	19.16	28.74
95.80	95.80	143.70
\$0.6	\$0.6	\$0.9
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.7	\$14.7	\$15.0
292	292	292
292	292	146
\$380	\$380	\$285
50.1	50.1	50.1
\$1.34	\$1.34	\$1.16
\$1.00	\$1.00	\$0.71
\$0.34	\$0.34	\$0.45
\$6,251	\$6,251	\$4,053
\$281,299	\$281,299	\$182,386
\$951,840		

Car Type: Amcoach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 84

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$21,152

\$20,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,032

\$432

\$600

Hours per Trip:

Trips per Day:

8

2

16

1

24

1

Waste Generation Data

Waste Generated:

25.14

25.14

37.72

Flush Fluid Generated:

74.17

74.17

111.25

Capacity Adjustment:

24.83

24.83

37.24

Total Capacity Required per Day:

124.14

124.14

186.21

Pumpout Labor Cost:

\$0.7

\$0.7

\$1.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.8

\$14.8

\$15.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

128

Waste Disposal Cost per Year:

\$431

\$431

\$324

Maximum Continuous Hours of Service:

38.7

38.7

38.7

Total Operating Cost per Service Hour:

\$1.29

\$1.29

\$1.08

- Trip Related:

\$1.03

\$1.03

\$0.74

- Non-Trip Related:

\$0.25

\$0.25

\$0.34

Total per-Car Operating Cost per Year:

\$5,255

\$5,255

\$3,299

Total Fleet Operating Cost per Year:

\$1,397,936

\$1,397,936

\$877,511

Total Fleet Capital Cost:

\$5,626,432

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
8	16	24
2	1	1
25.14	25.14	37.72
57.79	57.79	86.69
20.73	20.73	31.10
103.67	103.67	155.51
\$0.6	\$0.6	\$0.9
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.7	\$14.7	\$15.0
219	219	219
219	219	110
\$309	\$309	\$232
46.3	46.3	46.3
\$1.14	\$1.14	\$0.90
\$1.01	\$1.01	\$0.71
\$0.14	\$0.14	\$0.19
\$4,011	\$4,011	\$2,358
\$1,066,989	\$1,066,989	\$627,348
\$5,626,432		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
8	16	24
2	1	1
25.14	25.14	37.72
96.32	96.32	144.48
30.37	30.37	45.55
151.83	151.83	227.75
\$1.0	\$1.0	\$1.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$15.1	\$15.1	\$15.5
292	292	292
292	292	146
\$603	\$603	\$452
31.6	31.6	31.6
\$1.41	\$1.41	\$1.23
\$1.07	\$1.07	\$0.78
\$0.34	\$0.34	\$0.45
\$6,577	\$6,577	\$4,298
\$1,749,589	\$1,749,589	\$1,143,202
\$5,626,432		

Car Type: Amclub
Toilet Type: Gravity

Manufacturer:

Number of Passengers: 41
Number of Toilets: 2
Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	12.27	12.27	18.41
Flush Fluid Generated:	36.20	36.20	54.30
Capacity Adjustment:	12.12	12.12	18.18
Total Capacity Required per Day:	60.59	60.59	90.89
Pumpout Labor Cost:	\$0.4	\$0.4	\$0.5
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.5	\$14.5	\$14.6
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$211	\$211	\$158
Maximum Continuous Hours of Service:	79.2	79.2	79.2
Total Operating Cost per Service Hour:	\$1.21	\$1.21	\$1.00
- Trip Related:	\$0.96	\$0.96	\$0.66
- Non-Trip Related:	\$0.25	\$0.25	\$0.34
Total per-Car Operating Cost per Year:	\$4,938	\$4,938	\$3,061
Total Fleet Operating Cost per Year:	\$118,502	\$118,502	\$73,453
Total Fleet Capital Cost:	\$507,648		

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
8	16	24
2	1	1
12.27	12.27	18.41
28.21	28.21	42.31
10.12	10.12	15.18
50.60	50.60	75.90
\$0.3	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.4	\$14.5
219	219	219
219	219	110
\$151	\$151	\$113
94.9	94.9	94.9
\$1.08	\$1.08	\$0.83
\$0.94	\$0.94	\$0.65
\$0.14	\$0.14	\$0.19
\$3,788	\$3,788	\$2,191
\$90,921	\$90,921	\$52,592
\$507,648		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
8	16	24
2	1	1
12.27	12.27	18.41
47.01	47.01	70.52
14.82	14.82	22.23
74.11	74.11	111.16
\$0.5	\$0.5	\$0.7
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.6	\$14.6	\$14.8
292	292	292
292	292	146
\$294	\$294	\$221
64.8	64.8	64.8
\$1.31	\$1.31	\$1.13
\$0.97	\$0.97	\$0.68
\$0.34	\$0.34	\$0.45
\$6,125	\$6,125	\$3,958
\$146,995	\$146,995	\$94,999
\$507,648		

Car Type: Met-Srvc Dinette

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 23

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$21,152

\$20,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,032

\$432

\$600

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

4.30

5.16

6.02

Flush Fluid Generated:

12.69

15.23

17.77

Capacity Adjustment:

4.25

5.10

5.95

Total Capacity Required per Day:

21.24

25.49

29.74

Pumpout Labor Cost:

\$0.1

\$0.2

\$0.2

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.2

\$14.3

\$14.3

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$74

\$89

\$103

Maximum Continuous Hours of Service:

141.2

141.2

141.2

Total Operating Cost per Service Hour:

\$1.86

\$1.55

\$1.34

- Trip Related:

\$1.45

\$1.22

\$1.05

- Non-Trip Related:

\$0.40

\$0.34

\$0.29

Total per-Car Operating Cost per Year:

\$4,741

\$4,762

\$4,783

Total Fleet Operating Cost per Year:

\$61,630

\$61,907

\$62,183

Total Fleet Capital Cost:

\$274,976

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
4.30	5.16	6.02
9.89	11.87	13.85
3.55	4.26	4.97
17.74	21.29	24.84
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$53	\$63	\$74
169.1	169.1	169.1
\$1.67	\$1.39	\$1.20
\$1.44	\$1.21	\$1.04
\$0.22	\$0.19	\$0.16
\$3,650	\$3,665	\$3,680
\$47,455	\$47,619	\$47,843
\$274,976		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
4.30	5.16	6.02
16.48	19.78	23.08
5.20	6.24	7.28
25.98	31.18	36.38
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
292	292	292
292	292	292
\$103	\$124	\$144
115.5	115.5	115.5
\$2.00	\$1.68	\$1.44
\$1.46	\$1.23	\$1.06
\$0.54	\$0.45	\$0.39
\$5,845	\$5,875	\$5,905
\$75,979	\$76,372	\$76,766
\$274,976		

Car Type: Met-Srvc Coach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 60

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$21,152

\$20,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,032

\$432

\$600

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

11.23

13.47

15.72

Flush Fluid Generated:

33.11

39.73

46.35

Capacity Adjustment:

11.08

13.30

15.52

Total Capacity Required per Day:

55.42

66.50

77.59

Pumpout Labor Cost:

\$0.3

\$0.4

\$0.5

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.4

\$14.5

\$14.6

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$193

\$231

\$270

Maximum Continuous Hours of Service:

54.1

54.1

54.1

Total Operating Cost per Service Hour:

\$1.92

\$1.62

\$1.40

- Trip Related:

\$1.52

\$1.28

\$1.12

- Non-Trip Related:

\$0.40

\$0.34

\$0.29

Total per-Car Operating Cost per Year:

\$4,912

\$4,967

\$5,023

Total Fleet Operating Cost per Year:

\$245,586

\$248,357

\$251,129

Total Fleet Capital Cost:

\$1,057,600

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
11.23	13.47	15.72
25.80	30.96	36.12
9.26	11.11	12.96
46.28	55.54	64.79
\$0.3	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.4	\$14.5
219	219	219
219	219	219
\$138	\$165	\$193
64.8	64.8	64.8
\$1.72	\$1.45	\$1.26
\$1.50	\$1.26	\$1.10
\$0.22	\$0.19	\$0.16
\$3,770	\$3,809	\$3,848
\$188,512	\$190,456	\$192,399
\$1,057,600		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
11.23	13.47	15.72
43.00	51.60	60.20
13.56	16.27	18.98
67.78	81.34	94.89
\$0.4	\$0.5	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.6	\$14.7
292	292	292
292	292	292
\$269	\$323	\$377
44.3	44.3	44.3
\$2.08	\$1.76	\$1.53
\$1.55	\$1.31	\$1.14
\$0.54	\$0.45	\$0.39
\$6,088	\$6,167	\$6,246
\$304,397	\$308,344	\$312,291
\$1,057,600		

Car Type: Met-Srvc Club

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 33

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost \$21,152
- Equipment: \$20,000
- Installation: \$1,152

Maintenance Cost: \$1,032
- Labor: \$432
- Spare Parts: \$600

Hours per Trip: 2 12 7
Trips per Day: 5 1 2

Waste Generation Data

Waste Generated: 6.17 7.41 8.64
Flush Fluid Generated: 18.21 21.85 25.49
Capacity Adjustment: 6.10 7.32 8.53
Total Capacity Required per Day: 30.48 36.58 42.67

Pumpout Labor Cost: \$0.2 \$0.2 \$0.3
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.3 \$14.3 \$14.4

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 255 255

Waste Disposal Cost per Year: \$106 \$127 \$148

Maximum Continuous Hours of Service: 98.4 98.4 98.4
Total Operating Cost per Service Hour: \$1.87 \$1.57 \$1.36
- Trip Related: \$1.47 \$1.23 \$1.07
- Non-Trip Related: \$0.40 \$0.34 \$0.29

Total per-Car Operating Cost per Year: \$4,787 \$4,817 \$4,848

Total Fleet Operating Cost per Year: \$62,231 \$62,627 \$63,024

Total Fleet Capital Cost: \$274,976

Microphor

Favorable

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
6.17	7.41	8.64
14.19	17.03	19.87
5.09	6.11	7.13
25.45	30.55	35.64
\$0.1	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.3
219	219	219
219	219	219
\$76	\$91	\$106
117.9	117.9	117.9
\$1.68	\$1.41	\$1.22
\$1.46	\$1.22	\$1.06
\$0.22	\$0.19	\$0.16
\$3,683	\$3,704	\$3,726
\$47,876	\$48,154	\$48,432
\$274,976		

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
6.17	7.41	8.64
23.65	28.38	33.11
7.46	8.95	10.44
37.28	44.74	52.19
\$0.2	\$0.3	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.4	\$14.4
292	292	292
292	292	292
\$148	\$178	\$207
80.5	80.5	80.5
\$2.02	\$1.70	\$1.47
\$1.48	\$1.25	\$1.08
\$0.54	\$0.45	\$0.39
\$5,910	\$5,954	\$5,997
\$76,834	\$77,398	\$77,963
\$274,976		

Car Type: Amdinette
 Toilet Type: Gravity

Manufacturer:

Number of Passengers: 23
 Number of Toilets: 2
 Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	12.69	15.23	17.77
Capacity Adjustment:	4.25	5.10	5.95
Total Capacity Required per Day:	21.24	25.49	29.74
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.3	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$74	\$89	\$103
Maximum Continuous Hours of Service:	141.2	141.2	141.2
Total Operating Cost per Service Hour:	\$1.86	\$1.55	\$1.34
- Trip Related:	\$1.45	\$1.22	\$1.05
- Non-Trip Related:	\$0.40	\$0.34	\$0.29
Total per-Car Operating Cost per Year:	\$4,741	\$4,762	\$4,783
Total Fleet Operating Cost per Year:	\$118,520	\$119,051	\$119,582
Total Fleet Capital Cost:	\$528,800		

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
4.30	5.16	6.02
9.89	11.87	13.85
3.55	4.26	4.97
17.74	21.29	24.84
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$53	\$63	\$74
169.1	169.1	169.1
\$1.67	\$1.39	\$1.20
\$1.44	\$1.21	\$1.04
\$0.22	\$0.19	\$0.16
\$3,650	\$3,665	\$3,680
\$91,260	\$91,632	\$92,005
\$528,800		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
4.30	5.16	6.02
16.48	19.78	23.08
5.20	6.24	7.28
25.98	31.18	36.38
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
292	292	292
292	292	292
\$103	\$124	\$144
115.5	115.5	115.5
\$2.00	\$1.68	\$1.44
\$1.46	\$1.23	\$1.06
\$0.54	\$0.45	\$0.39
\$5,845	\$5,875	\$5,905
\$146,113	\$146,869	\$147,626
\$528,800		

Car Type: **Amcoach**
 Toilet Type: **Gravity**

Manufacturer:

Number of Passengers: 60
 Number of Toilets: 2
 Total Tank Capacity (gals): 300.0

Scenario: **Expected**

Capital Cost	\$21,152		
- Equipment:	\$20,000		
- Installation:	\$1,152		
Maintenance Cost:	\$1,032		
- Labor:	\$432		
- Spare Parts:	\$600		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	11.23	13.47	15.72
Flush Fluid Generated:	33.11	39.73	46.35
Capacity Adjustment:	11.08	13.30	15.52
Total Capacity Required per Day:	55.42	66.50	77.59
Pumpout Labor Cost:	\$0.3	\$0.4	\$0.5
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.4	\$14.5	\$14.6
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$193	\$231	\$270
Maximum Continuous Hours of Service:	54.1	54.1	54.1
Total Operating Cost per Service Hour:	\$1.92	\$1.62	\$1.40
- Trip Related:	\$1.52	\$1.28	\$1.12
- Non-Trip Related:	\$0.40	\$0.34	\$0.29
Total per-Car Operating Cost per Year:	\$4,912	\$4,967	\$5,023
Total Fleet Operating Cost per Year:	\$152,263	\$153,982	\$155,700
Total Fleet Capital Cost:	\$655,712		

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
11.23	13.47	15.72
25.80	30.96	36.12
9.26	11.11	12.96
46.28	55.54	64.79
\$0.3	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.4	\$14.5
219	219	219
219	219	219
\$138	\$165	\$193
64.8	64.8	64.8
\$1.72	\$1.45	\$1.26
\$1.50	\$1.26	\$1.10
\$0.22	\$0.19	\$0.16
\$3,770	\$3,809	\$3,848
\$116,878	\$118,083	\$119,288
\$655,712		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
11.23	13.47	15.72
43.00	51.60	60.20
13.56	16.27	18.98
67.78	81.34	94.89
\$0.4	\$0.5	\$0.6
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.5	\$14.6	\$14.7
292	292	292
292	292	292
\$269	\$323	\$377
44.3	44.3	44.3
\$2.08	\$1.76	\$1.53
\$1.55	\$1.31	\$1.14
\$0.54	\$0.45	\$0.39
\$6,088	\$6,167	\$6,246
\$188,726	\$191,173	\$193,621
\$655,712		

Car Type: Turbo Power Club
 Toilet Type: Gravity

Manufacturer:

Number of Passengers: 27
 Number of Toilets: 1
 Total Tank Capacity (gals): 300.0

Scenario: Expected

Capital Cost	\$15,864		
- Equipment:	\$15,000		
- Installation:	\$864		
Maintenance Cost:	\$666		
- Labor:	\$216		
- Spare Parts:	\$450		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	5.05	6.06	7.07
Flush Fluid Generated:	14.90	17.88	20.86
Capacity Adjustment:	4.99	5.99	6.98
Total Capacity Required per Day:	24.94	29.93	34.91
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$8.2	\$8.3	\$8.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$87	\$104	\$121
Maximum Continuous Hours of Service:	120.3	120.3	120.3
Total Operating Cost per Service Hour:	\$1.12	\$0.94	\$0.81
- Trip Related:	\$0.86	\$0.72	\$0.63
- Non-Trip Related:	\$0.26	\$0.22	\$0.19
Total per-Car Operating Cost per Year:	\$2,860	\$2,885	\$2,910
Total Fleet Operating Cost per Year:	\$17,162	\$17,311	\$17,461
Total Fleet Capital Cost:	\$95,184		

Microphor

Favorable

\$15,864		
\$15,000		
\$864		
\$294		
\$144		
\$150		
2	12	7
5	1	2
5.05	6.06	7.07
11.61	13.93	16.25
4.17	5.00	5.83
20.83	24.99	29.16
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.3
219	219	219
219	219	219
\$62	\$74	\$87
144.0	144.0	144.0
\$0.98	\$0.83	\$0.71
\$0.85	\$0.71	\$0.62
\$0.13	\$0.11	\$0.10
\$2,155	\$2,173	\$2,190
\$12,932	\$13,037	\$13,142
\$95,184		

Unfavorable

\$15,864		
\$15,000		
\$864		
\$1,038		
\$288		
\$750		
2	12	7
5	1	2
5.05	6.06	7.07
19.35	23.22	27.09
6.10	7.32	8.54
30.50	36.60	42.70
\$0.2	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.3	\$8.3	\$8.4
292	292	292
292	292	292
\$121	\$145	\$170
98.4	98.4	98.4
\$1.23	\$1.03	\$0.89
\$0.87	\$0.74	\$0.64
\$0.36	\$0.30	\$0.25
\$3,581	\$3,616	\$3,652
\$21,485	\$21,698	\$21,911
\$95,184		

Car Type: Turbo Coach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 72

Number of Toilets: 2

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$21,152

\$20,000

\$1,152

Maintenance Cost:

- Labor:

- Spare Parts:

\$1,032

\$432

\$600

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

13.47

16.16

18.86

Flush Fluid Generated:

39.73

47.68

55.62

Capacity Adjustment:

13.30

15.96

18.62

Total Capacity Required per Day:

66.50

79.80

93.10

Pumpout Labor Cost:

\$0.4

\$0.5

\$0.6

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.5

\$14.6

\$14.7

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$231

\$277

\$324

Maximum Continuous Hours of Service:

45.1

45.1

45.1

Total Operating Cost per Service Hour:

\$1.94

\$1.64

\$1.43

- Trip Related:

\$1.54

\$1.31

\$1.14

- Non-Trip Related:

\$0.40

\$0.34

\$0.29

Total per-Car Operating Cost per Year:

\$4,967

\$5,034

\$5,100

Total Fleet Operating Cost per Year:

\$104,310

\$105,707

\$107,104

Total Fleet Capital Cost:

\$444,192

Microphor

Favorable

\$21,152		
\$20,000		
\$1,152		
\$488		
\$288		
\$200		
2	12	7
5	1	2
13.47	16.16	18.86
30.96	37.15	43.34
11.11	13.33	15.55
55.54	66.65	77.75
\$0.3	\$0.4	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.5	\$14.5
219	219	219
219	219	219
\$165	\$198	\$232
54.0	54.0	54.0
\$1.74	\$1.47	\$1.27
\$1.52	\$1.28	\$1.11
\$0.22	\$0.19	\$0.16
\$3,809	\$3,856	\$3,902
\$79,991	\$80,971	\$81,950
\$444,192		

Unfavorable

\$21,152		
\$20,000		
\$1,152		
\$1,576		
\$576		
\$1,000		
2	12	7
5	1	2
13.47	16.16	18.86
51.60	61.92	72.24
16.27	19.52	22.77
81.34	97.61	113.87
\$0.5	\$0.6	\$0.7
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.6	\$14.7	\$14.8
292	292	292
292	292	292
\$323	\$388	\$452
36.9	36.9	36.9
\$2.11	\$1.79	\$1.55
\$1.57	\$1.34	\$1.17
\$0.54	\$0.45	\$0.39
\$6,167	\$6,262	\$6,356
\$129,504	\$131,494	\$133,483
\$444,192		

Car Type: Turbo Cafe

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 52

Number of Toilets: 1

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$15,864

\$15,000

\$864

Maintenance Cost:

- Labor:

- Spare Parts:

\$666

\$216

\$450

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

9.73

11.67

13.62

Flush Fluid Generated:

28.70

34.43

40.17

Capacity Adjustment:

9.61

11.53

13.45

Total Capacity Required per Day:

48.03

57.64

67.24

Pumpout Labor Cost:

\$0.3

\$0.3

\$0.4

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$6.0

\$6.0

\$6.0

Total Pumpout/Cleaning Cost per Day:

\$8.4

\$8.4

\$8.5

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$167

\$200

\$234

Maximum Continuous Hours of Service:

62.5

62.5

62.5

Total Operating Cost per Service Hour:

\$1.16

\$0.99

\$0.86

- Trip Related:

\$0.90

\$0.77

\$0.67

- Non-Trip Related:

\$0.26

\$0.22

\$0.19

Total per-Car Operating Cost per Year:

\$2,976

\$3,024

\$3,072

Total Fleet Operating Cost per Year:

\$8,927

\$9,071

\$9,216

Total Fleet Capital Cost:

\$47,592

Microphor

Favorable

\$15,864		
\$15,000		
\$864		
\$294		
\$144		
\$150		
2	12	7
5	1	2
9.73	11.67	13.62
22.36	26.83	31.30
8.02	9.63	11.23
40.11	48.13	56.15
\$0.2	\$0.3	\$0.3
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.3	\$8.4	\$8.4
219	219	219
219	219	219
\$119	\$143	\$167
74.8	74.8	74.8
\$1.02	\$0.86	\$0.75
\$0.89	\$0.75	\$0.66
\$0.13	\$0.11	\$0.10
\$2,236	\$2,270	\$2,304
\$6,709	\$6,810	\$6,911
\$47,592		

Unfavorable

\$15,864		
\$15,000		
\$864		
\$1,038		
\$288		
\$750		
2	12	7
5	1	2
9.73	11.67	13.62
37.27	44.72	52.17
11.75	14.10	16.45
58.74	70.49	82.24
\$0.4	\$0.4	\$0.5
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.5	\$8.5	\$8.6
292	292	292
292	292	292
\$233	\$280	\$327
51.1	51.1	51.1
\$1.28	\$1.09	\$0.95
\$0.93	\$0.79	\$0.70
\$0.36	\$0.30	\$0.25
\$3,745	\$3,814	\$3,882
\$11,236	\$11,441	\$11,646
\$47,592		

Car Type: Turbo Power Coach

Toilet Type: Gravity

Manufacturer:

Number of Passengers: 40

Number of Toilets: 1

Total Tank Capacity (gals): 300.0

Scenario:

Expected

Capital Cost

\$15,864

- Equipment:

\$15,000

- Installation:

\$864

Maintenance Cost:

\$666

- Labor:

\$216

- Spare Parts:

\$450

Hours per Trip:

2

12

7

Trips per Day:

5

1

2

Waste Generation Data

Waste Generated:

7.48

8.98

10.48

Flush Fluid Generated:

22.07

26.49

30.90

Capacity Adjustment:

7.39

8.87

10.34

Total Capacity Required per Day:

36.95

44.34

51.72

Pumpout Labor Cost:

\$0.2

\$0.3

\$0.3

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$6.0

\$6.0

\$6.0

Total Pumpout/Cleaning Cost per Day:

\$8.3

\$8.4

\$8.4

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$128

\$154

\$180

Maximum Continuous Hours of Service:

81.2

81.2

81.2

Total Operating Cost per Service Hour:

\$1.14

\$0.96

\$0.84

- Trip Related:

\$0.88

\$0.75

\$0.65

- Non-Trip Related:

\$0.26

\$0.22

\$0.19

Total per-Car Operating Cost per Year:

\$2,920

\$2,957

\$2,994

Total Fleet Operating Cost per Year:

\$40,885

\$41,402

\$41,919

Total Fleet Capital Cost:

\$222,096

Microphor

Favorable

\$15,864		
\$15,000		
\$864		
\$294		
\$144		
\$150		
2	12	7
5	1	2
7.48	8.98	10.48
17.20	20.64	24.08
6.17	7.40	8.64
30.85	37.03	43.20
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.3	\$8.3	\$8.3
219	219	219
219	219	219
\$92	\$110	\$129
97.2	97.2	97.2
\$1.00	\$0.85	\$0.73
\$0.87	\$0.73	\$0.64
\$0.13	\$0.11	\$0.10
\$2,197	\$2,223	\$2,249
\$30,764	\$31,127	\$31,490
\$222,096		

Unfavorable

\$15,864		
\$15,000		
\$864		
\$1,038		
\$288		
\$750		
2	12	7
5	1	2
7.48	8.98	10.48
28.67	34.40	40.13
9.04	10.85	12.65
45.19	54.23	63.26
\$0.3	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.4	\$8.4	\$8.5
292	292	292
292	292	292
\$179	\$215	\$251
66.4	66.4	66.4
\$1.26	\$1.06	\$0.92
\$0.90	\$0.77	\$0.67
\$0.36	\$0.30	\$0.25
\$3,666	\$3,719	\$3,772
\$51,329	\$52,066	\$52,803
\$222,096		

D4 Evac Ultimate

Car Type: Coach-HEP-HLV

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 72

Number of Toilets: 4

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost	\$26,192		
- Equipment:	\$23,600		
- Installation:	\$2,592		
Maintenance Cost:	\$1,572		
- Labor:	\$864		
- Spare Parts:	\$708		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	32.33	64.66	96.98
Flush Fluid Generated:	26.06	52.11	78.17
Capacity Adjustment:	14.60	29.19	43.79
Total Capacity Required per Day:	72.98	145.96	218.94
Pumpout Labor Cost:	\$0.3	\$0.5	\$0.8
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$4.2
Cleaning Labor Cost:	\$24.0	\$24.0	\$24.0
Total Pumpout/Cleaning Cost per Day:	\$26.4	\$26.6	\$29.0
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$127	\$169	\$190
Maximum Continuous Hours of Service:	65.8	65.8	65.8
Total Operating Cost per Service Hour:	\$1.65	\$0.98	\$0.79
- Trip Related:	\$1.14	\$0.60	\$0.44
- Non-Trip Related:	\$0.51	\$0.38	\$0.34
Total per-Car Operating Cost per Year:	\$5,066	\$4,008	\$3,613
Total Fleet Operating Cost per Year:	\$106,394	\$84,174	\$75,881
Total Fleet Capital Cost:	\$550,032		

Evac

Favorable

Unfavorable

\$26,192		
\$23,600		
\$2,592		
\$812		
\$576		
\$236		
24	48	72
1	1	1
32.33	64.66	96.98
20.30	40.61	60.91
13.16	26.32	39.47
65.79	131.58	197.37
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.3	\$26.5	\$26.7
219	219	219
110	73	55
\$98	\$131	\$147
73.0	73.0	73.0
\$1.44	\$0.82	\$0.61
\$1.13	\$0.59	\$0.41
\$0.31	\$0.23	\$0.21
\$3,790	\$2,878	\$2,421
\$79,593	\$60,429	\$50,847
\$550,032		

\$26,192		
\$23,600		
\$2,592		
\$2,332		
\$1,152		
\$1,180		
24	48	72
1	1	1
32.33	64.66	96.98
33.84	67.68	101.52
16.54	33.08	49.63
82.71	165.42	248.13
\$0.3	\$0.7	\$1.0
\$2.1	\$2.1	\$4.2
\$24.0	\$24.0	\$24.0
\$26.4	\$26.8	\$29.2
292	292	292
146	97	73
\$164	\$219	\$246
58.0	58.0	58.0
\$1.81	\$1.10	\$0.90
\$1.15	\$0.60	\$0.45
\$0.67	\$0.50	\$0.44
\$6,356	\$5,157	\$4,711
\$133,481	\$108,302	\$98,932
\$550,032		

Car Type: Lounge-HEP-HLV

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 86

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$19,816
- Equipment: \$17,800
- Installation: \$2,016

Maintenance Cost: \$966
- Labor: \$432
- Spare Parts: \$534

Hours per Trip: 24 48 72
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 38.61 77.23 115.84
Flush Fluid Generated: 31.12 62.25 93.37
Capacity Adjustment: 17.43 34.87 52.30
Total Capacity Required per Day: 87.17 174.34 261.52

Pumpout Labor Cost: \$0.3 \$0.6 \$0.9
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$4.2
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.4 \$14.7 \$17.1

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 128 85 64

Waste Disposal Cost per Year: \$151 \$202 \$227

Maximum Continuous Hours of Service: 55.1 55.1 55.1

Total Operating Cost per Service Hour: \$0.96 \$0.59 \$0.50
- Trip Related: \$0.65 \$0.36 \$0.29
- Non-Trip Related: \$0.32 \$0.24 \$0.21

Total per-Car Operating Cost per Year: \$2,958 \$2,422 \$2,288

Total Fleet Operating Cost per Year: \$17,751 \$14,531 \$13,726

Total Fleet Capital Cost: \$118,896

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
24	48	72
1	1	1
38.61	77.23	115.84
24.25	48.50	72.76
15.72	31.43	47.15
78.58	157.17	235.75
\$0.2	\$0.5	\$0.7
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.3	\$14.6	\$16.9
219	219	219
110	73	55
\$117	\$156	\$176
61.1	61.1	61.1
\$0.82	\$0.48	\$0.40
\$0.64	\$0.35	\$0.28
\$0.18	\$0.13	\$0.12
\$2,154	\$1,687	\$1,568
\$12,921	\$10,120	\$9,410
\$118,896		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
24	48	72
1	1	1
38.61	77.23	115.84
40.42	80.84	121.26
19.76	39.52	59.28
98.79	197.59	296.38
\$0.4	\$0.8	\$1.2
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.5	\$14.9	\$17.4
292	292	292
146	97	73
\$196	\$262	\$294
48.6	48.6	48.6
\$1.08	\$0.68	\$0.58
\$0.66	\$0.37	\$0.30
\$0.42	\$0.31	\$0.28
\$3,780	\$3,179	\$3,031
\$22,679	\$19,072	\$18,188
\$118,896		

Car Type: Trans Dorm Coach

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 40

Number of Toilets: 4

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$26,192
- Equipment: \$23,600
- Installation: \$2,592

Maintenance Cost: \$1,572
- Labor: \$864
- Spare Parts: \$708

Hours per Trip: 24 48 72
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 17.96 35.92 53.88
Flush Fluid Generated: 14.48 28.95 43.43
Capacity Adjustment: 8.11 16.22 24.33
Total Capacity Required per Day: 40.55 81.09 121.64

Pumpout Labor Cost: \$0.1 \$0.3 \$0.4
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$24.0 \$24.0 \$24.0
Total Pumpout/Cleaning Cost per Day: \$26.2 \$26.4 \$26.5

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 128 85 64

Waste Disposal Cost per Year: \$70 \$94 \$106

Maximum Continuous Hours of Service: 118.4 118.4 118.4
Total Operating Cost per Service Hour: \$1.63 \$0.96 \$0.73
- Trip Related: \$1.12 \$0.57 \$0.39
- Non-Trip Related: \$0.51 \$0.38 \$0.34

Total per-Car Operating Cost per Year: \$4,995 \$3,913 \$3,373

Total Fleet Operating Cost per Year: \$179,828 \$140,884 \$121,411

Total Fleet Capital Cost: \$942,912

Evac

Favorable

Unfavorable

\$26,192		
\$23,600		
\$2,592		
\$812		
\$576		
\$236		
24	48	72
1	1	1
17.96	35.92	53.88
11.28	22.56	33.84
7.31	14.62	21.93
36.55	73.10	109.65
\$0.1	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.2	\$26.3	\$26.4
219	219	219
110	73	55
\$54	\$73	\$82
131.3	131.3	131.3
\$1.42	\$0.80	\$0.59
\$1.11	\$0.57	\$0.39
\$0.31	\$0.23	\$0.21
\$3,737	\$2,806	\$2,341
\$134,522	\$101,028	\$84,281
\$942,912		

\$26,192		
\$23,600		
\$2,592		
\$2,332		
\$1,152		
\$1,180		
24	48	72
1	1	1
17.96	35.92	53.88
18.80	37.60	56.40
9.19	18.38	27.57
45.95	91.90	137.85
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$2.1
\$24.0	\$24.0	\$24.0
\$26.3	\$26.5	\$26.7
292	292	292
146	97	73
\$91	\$122	\$137
104.5	104.5	104.5
\$1.79	\$1.08	\$0.84
\$1.12	\$0.58	\$0.40
\$0.67	\$0.50	\$0.44
\$6,261	\$5,031	\$4,415
\$225,406	\$181,103	\$158,952
\$942,912		

Car Type: **Sleeper Super**

Toilet Type: **Ultimate**

Manufacturer:

Number of Passengers: **44**

Number of Toilets: **12**

Total Tank Capacity (gals): **200.0**

Scenario: **Expected**

Capital Cost
- Equipment: **\$51,696**
- Installation: **\$46,800**
\$4,896

Maintenance Cost: **\$3,996**
- Labor: **\$2,592**
- Spare Parts: **\$1,404**

Hours per Trip: **24** **48** **72**
Trips per Day: **1** **1** **1**

Waste Generation Data

Waste Generated: **19.76** **39.51** **59.27**
Flush Fluid Generated: **15.92** **31.85** **47.77**
Capacity Adjustment: **8.92** **17.84** **26.76**
Total Capacity Required per Day: **44.60** **89.20** **133.80**

Pumpout Labor Cost: **\$0.2** **\$0.3** **\$0.5**
Connect/Disconnect Labor Cost: **\$2.1** **\$2.1** **\$2.1**
Cleaning Labor Cost: **\$72.0** **\$72.0** **\$72.0**
Total Pumpout/Cleaning Cost per Day: **\$74.3** **\$74.4** **\$74.6**

Days Operated per Year: **255** **255** **255**
Clean-out Cycles per Year: **128** **85** **64**

Waste Disposal Cost per Year: **\$77** **\$103** **\$116**

Maximum Continuous Hours of Service: **107.6** **107.6** **107.6**
Total Operating Cost per Service Hour: **\$4.42** **\$2.55** **\$1.93**
- Trip Related: **\$3.12** **\$1.58** **\$1.06**
- Non-Trip Related: **\$1.30** **\$0.98** **\$0.87**

Total per-Car Operating Cost per Year: **\$13,560** **\$10,437** **\$8,876**

Total Fleet Operating Cost per Year: **\$922,087** **\$709,736** **\$603,560**

Total Fleet Capital Cost: **\$3,515,328**

Evac

Favorable

Unfavorable

\$51,696		
\$46,800		
\$4,896		
\$2,196		
\$1,728		
\$468		
24	48	72
1	1	1
19.76	39.51	59.27
12.41	24.82	37.22
8.04	16.08	24.12
40.21	80.41	120.62
\$0.1	\$0.2	\$0.4
\$2.1	\$2.1	\$2.1
\$72.0	\$72.0	\$72.0
\$74.2	\$74.3	\$74.5
219	219	219
110	73	55
\$60	\$80	\$90
119.4	119.4	119.4
\$3.95	\$2.20	\$1.61
\$3.12	\$1.57	\$1.06
\$0.84	\$0.63	\$0.56
\$10,383	\$7,703	\$6,363
\$706,072	\$523,821	\$432,695
\$3,515,328		

\$51,696		
\$46,800		
\$4,896		
\$5,796		
\$3,456		
\$2,340		
24	48	72
1	1	1
19.76	39.51	59.27
20.68	41.36	62.04
10.11	20.22	30.33
50.55	101.09	151.64
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$2.1
\$72.0	\$72.0	\$72.0
\$74.3	\$74.5	\$74.7
292	292	292
146	97	73
\$100	\$134	\$151
95.0	95.0	95.0
\$4.78	\$2.82	\$2.17
\$3.12	\$1.58	\$1.07
\$1.65	\$1.24	\$1.10
\$16,745	\$13,182	\$11,401
\$1,138,671	\$896,408	\$775,277
\$3,515,328		

Car Type: Bag Coach Super

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 78

Number of Toilets: 5

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost	\$29,380		
- Equipment:	\$26,500		
- Installation:	\$2,880		
Maintenance Cost:	\$1,875		
- Labor:	\$1,080		
- Spare Parts:	\$795		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	35.02	70.04	105.07
Flush Fluid Generated:	28.23	56.46	84.68
Capacity Adjustment:	15.81	31.63	47.44
Total Capacity Required per Day:	79.06	158.13	237.19
Pumpout Labor Cost:	\$0.3	\$0.6	\$0.8
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$4.2
Cleaning Labor Cost:	\$30.0	\$30.0	\$30.0
Total Pumpout/Cleaning Cost per Day:	\$32.4	\$32.7	\$35.0
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$137	\$183	\$206
Maximum Continuous Hours of Service:	60.7	60.7	60.7
Total Operating Cost per Service Hour:	\$2.01	\$1.18	\$0.94
- Trip Related:	\$1.39	\$0.73	\$0.53
- Non-Trip Related:	\$0.61	\$0.46	\$0.41
Total per-Car Operating Cost per Year:	\$6,149	\$4,840	\$4,320
Total Fleet Operating Cost per Year:	\$295,162	\$232,324	\$207,344
Total Fleet Capital Cost:	\$1,410,240		

Evac

Favorable

\$29,380		
\$26,500		
\$2,880		
\$985		
\$720		
\$265		
24	48	72
1	1	1
35.02	70.04	105.07
22.00	43.99	65.99
14.25	28.51	42.76
71.27	142.55	213.82
\$0.2	\$0.4	\$0.7
\$2.1	\$2.1	\$4.2
\$30.0	\$30.0	\$30.0
\$32.3	\$32.5	\$34.9
219	219	219
110	73	55
\$106	\$142	\$159
67.3	67.3	67.3
\$1.76	\$1.00	\$0.77
\$1.39	\$0.72	\$0.52
\$0.37	\$0.28	\$0.25
\$4,630	\$3,502	\$3,053
\$222,248	\$168,093	\$146,534
\$1,410,240		

Unfavorable

\$29,380		
\$26,500		
\$2,880		
\$2,765		
\$1,440		
\$1,325		
24	48	72
1	1	1
35.02	70.04	105.07
36.66	73.32	109.98
17.92	35.84	53.76
89.60	179.20	268.81
\$0.4	\$0.7	\$1.1
\$2.1	\$2.1	\$4.2
\$30.0	\$30.0	\$30.0
\$32.5	\$32.8	\$35.3
292	292	292
146	97	73
\$178	\$237	\$267
53.6	53.6	53.6
\$2.19	\$1.33	\$1.07
\$1.40	\$0.73	\$0.54
\$0.79	\$0.59	\$0.53
\$7,683	\$6,198	\$5,609
\$368,786	\$297,503	\$269,220
\$1,410,240		

Car Type: Coach Super

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 75

Number of Toilets: 6

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$32,568

\$29,400

\$3,168

Maintenance Cost:

- Labor:

- Spare Parts:

\$2,178

\$1,296

\$882

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

33.68

67.35

101.03

Flush Fluid Generated:

27.14

54.29

81.43

Capacity Adjustment:

15.20

30.41

45.61

Total Capacity Required per Day:

76.02

152.04

228.07

Pumpout Labor Cost:

\$0.3

\$0.5

\$0.8

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$4.2

Cleaning Labor Cost:

\$36.0

\$36.0

\$36.0

Total Pumpout/Cleaning Cost per Day:

\$38.4

\$38.6

\$41.0

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$132

\$176

\$198

Maximum Continuous Hours of Service:

63.1

63.1

63.1

Total Operating Cost per Service Hour:

\$2.35

\$1.38

\$1.09

- Trip Related:

\$1.64

\$0.85

\$0.61

- Non-Trip Related:

\$0.71

\$0.53

\$0.47

Total per-Car Operating Cost per Year:

\$7,212

\$5,645

\$4,996

Total Fleet Operating Cost per Year:

\$656,295

\$513,712

\$454,628

Total Fleet Capital Cost:

\$2,963,688

Evac

Favorable

\$32,568		
\$29,400		
\$3,168		
\$1,158		
\$864		
\$294		
24	48	72
1	1	1
33.68	67.35	101.03
21.15	42.30	63.45
13.71	27.41	41.12
68.53	137.06	205.59
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$4.2
\$36.0	\$36.0	\$36.0
\$38.3	\$38.5	\$40.8
219	219	219
110	73	55
\$102	\$136	\$153
70.0	70.0	70.0
\$2.08	\$1.17	\$0.90
\$1.64	\$0.84	\$0.61
\$0.44	\$0.33	\$0.29
\$5,455	\$4,106	\$3,547
\$496,420	\$373,669	\$322,756
\$2,963,688		

Unfavorable

\$32,568		
\$29,400		
\$3,168		
\$3,198		
\$1,728		
\$1,470		
24	48	72
1	1	1
33.68	67.35	101.03
35.25	70.50	105.75
17.23	34.46	51.69
86.16	172.31	258.47
\$0.4	\$0.7	\$1.1
\$2.1	\$2.1	\$4.2
\$36.0	\$36.0	\$36.0
\$38.5	\$38.8	\$41.3
292	292	292
146	97	73
\$171	\$228	\$257
55.7	55.7	55.7
\$2.56	\$1.54	\$1.23
\$1.65	\$0.86	\$0.62
\$0.91	\$0.68	\$0.61
\$8,983	\$7,203	\$6,466
\$817,465	\$655,484	\$588,443
\$2,963,688		

Car Type: Horizon

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 82

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$19,816
- Equipment: \$17,800
- Installation: \$2,016

Maintenance Cost: \$966
- Labor: \$432
- Spare Parts: \$534

Hours per Trip: 12 24 48
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 18.41 36.82 73.64
Flush Fluid Generated: 14.84 29.68 59.35
Capacity Adjustment: 8.31 16.62 33.25
Total Capacity Required per Day: 41.56 83.12 166.23

Pumpout Labor Cost: \$0.1 \$0.3 \$0.6
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.2 \$14.4 \$14.7

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 128 85

Waste Disposal Cost per Year: \$144 \$144 \$193

Maximum Continuous Hours of Service: 57.7 57.7 57.7
Total Operating Cost per Service Hour: \$1.55 \$0.96 \$0.59
- Trip Related: \$1.23 \$0.65 \$0.35
- Non-Trip Related: \$0.32 \$0.32 \$0.24

Total per-Car Operating Cost per Year: \$4,751 \$2,950 \$2,410

Total Fleet Operating Cost per Year: \$489,339 \$303,808 \$248,224

Total Fleet Capital Cost: \$2,041,048

Evac

Favorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
12	24	48
1	1	1
18.41	36.82	73.64
11.56	23.12	46.25
7.49	14.99	29.97
37.46	74.93	149.86
\$0.1	\$0.2	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.6
219	219	219
219	110	73
\$112	\$112	\$149
64.1	64.1	64.1
\$1.40	\$0.82	\$0.48
\$1.23	\$0.64	\$0.35
\$0.18	\$0.18	\$0.13
\$3,691	\$2,147	\$1,678
\$380,153	\$221,126	\$172,817
\$2,041,048		

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
12	24	48
1	1	1
18.41	36.82	73.64
19.27	38.54	77.08
9.42	18.84	37.68
47.10	94.20	188.40
\$0.2	\$0.4	\$0.8
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.5	\$14.9
292	292	292
292	146	97
\$187	\$187	\$249
51.0	51.0	51.0
\$1.66	\$1.08	\$0.68
\$1.24	\$0.66	\$0.36
\$0.42	\$0.42	\$0.31
\$5,827	\$3,768	\$3,163
\$600,130	\$388,094	\$325,769
\$2,041,048		

Car Type: Coach
 Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 48
 Number of Toilets: 2
 Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$19,816
 - Equipment: \$17,800
 - Installation: \$2,016

Maintenance Cost: \$966
 - Labor: \$432
 - Spare Parts: \$534

	12	24	48
Hours per Trip:	12	24	48
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	10.78	21.55	43.10
Flush Fluid Generated:	8.69	17.37	34.74
Capacity Adjustment:	4.87	9.73	19.46
Total Capacity Required per Day:	24.33	48.65	97.31

Pumpout Labor Cost:	\$0.1	\$0.2	\$0.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.3	\$14.4

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85

Waste Disposal Cost per Year:	\$85	\$85	\$113
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Maximum Continuous Hours of Service:	98.7	98.7	98.7
Total Operating Cost per Service Hour:	\$1.52	\$0.94	\$0.56
- Trip Related:	\$1.21	\$0.62	\$0.33
- Non-Trip Related:	\$0.32	\$0.32	\$0.24

Total per-Car Operating Cost per Year:	\$4,675	\$2,874	\$2,309
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Total Fleet Operating Cost per Year:	\$361,671	\$224,172	\$180,114
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Total Fleet Capital Cost:	\$1,545,648
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Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
12	24	48
1	1	1
10.78	21.55	43.10
6.77	13.54	27.07
4.39	8.77	17.54
21.93	43.86	87.72
\$0.1	\$0.1	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.4
219	219	219
219	110	73
\$65	\$65	\$87
109.4	109.4	109.4
\$1.38	\$0.80	\$0.46
\$1.21	\$0.62	\$0.32
\$0.18	\$0.18	\$0.13
\$3,634	\$2,090	\$1,602
\$283,455	\$163,027	\$124,968
\$1,545,648		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
12	24	48
1	1	1
10.78	21.55	43.10
11.28	22.56	45.12
5.51	11.03	22.06
27.57	55.14	110.28
\$0.1	\$0.2	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.6
292	292	292
292	146	97
\$109	\$109	\$146
87.1	87.1	87.1
\$1.63	\$1.05	\$0.65
\$1.22	\$0.63	\$0.33
\$0.42	\$0.42	\$0.31
\$5,726	\$3,667	\$3,028
\$446,599	\$286,028	\$236,207
\$1,545,648		

Car Type: Coach (HDCP)

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 44

Number of Toilets: 3

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost: \$23,004
- Equipment: \$20,700
- Installation: \$2,304

Maintenance Cost: \$1,269
- Labor: \$648
- Spare Parts: \$621

Hours per Trip: 12 24 48
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 9.88 19.76 39.51
Flush Fluid Generated: 7.96 15.92 31.85
Capacity Adjustment: 4.46 8.92 17.84
Total Capacity Required per Day: 22.30 44.60 89.20

Pumpout Labor Cost: \$0.1 \$0.2 \$0.3
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$18.0 \$18.0 \$18.0
Total Pumpout/Cleaning Cost per Day: \$20.2 \$20.3 \$20.4

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 128 85

Waste Disposal Cost per Year: \$77 \$77 \$103

Maximum Continuous Hours of Service: 107.6 107.6 107.6
Total Operating Cost per Service Hour: \$2.12 \$1.28 \$0.76
- Trip Related: \$1.71 \$0.87 \$0.45
- Non-Trip Related: \$0.41 \$0.41 \$0.31

Total per-Car Operating Cost per Year: \$6,502 \$3,935 \$3,111

Total Fleet Operating Cost per Year: \$136,550 \$82,627 \$65,337

Total Fleet Capital Cost: \$483,084

Evac

Favorable

Unfavorable

\$23,004		
\$20,700		
\$2,304		
\$639		
\$432		
\$207		
12	24	48
1	1	1
9.88	19.76	39.51
6.20	12.41	24.82
4.02	8.04	16.08
20.10	40.21	80.41
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.2	\$20.2	\$20.3
219	219	219
219	110	73
\$60	\$60	\$80
119.4	119.4	119.4
\$1.95	\$1.11	\$0.63
\$1.70	\$0.87	\$0.45
\$0.24	\$0.24	\$0.18
\$5,114	\$2,913	\$2,204
\$107,402	\$61,182	\$46,289
\$483,084		

\$23,004		
\$20,700		
\$2,304		
\$1,899		
\$864		
\$1,035		
12	24	48
1	1	1
9.88	19.76	39.51
10.34	20.68	41.36
5.05	10.11	20.22
25.27	50.55	101.09
\$0.1	\$0.2	\$0.4
\$2.1	\$2.1	\$2.1
\$18.0	\$18.0	\$18.0
\$20.2	\$20.3	\$20.5
292	292	292
292	146	97
\$100	\$100	\$134
95.0	95.0	95.0
\$2.25	\$1.42	\$0.86
\$1.71	\$0.87	\$0.46
\$0.54	\$0.54	\$0.41
\$7,899	\$4,964	\$4,029
\$165,874	\$104,247	\$84,619
\$483,084		

Car Type: Dome Coach
 Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 46
 Number of Toilets: 2
 Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost
 - Equipment: \$19,816
 - Installation: \$17,800
 \$2,016

Maintenance Cost: \$966
 - Labor: \$432
 - Spare Parts: \$534

Hours per Trip: 12 24 48
 Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 10.33 20.65 41.31
 Flush Fluid Generated: 8.32 16.65 33.29
 Capacity Adjustment: 4.66 9.33 18.65
 Total Capacity Required per Day: 23.31 46.63 93.25

Pumpout Labor Cost: \$0.1 \$0.2 \$0.3
 Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
 Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
 Total Pumpout/Cleaning Cost per Day: \$14.2 \$14.3 \$14.4

Days Operated per Year: 255 255 255
 Clean-out Cycles per Year: 255 128 85

Waste Disposal Cost per Year: \$81 \$81 \$108

Maximum Continuous Hours of Service: 102.9 102.9 102.9
 Total Operating Cost per Service Hour: \$1.52 \$0.94 \$0.56
 - Trip Related: \$1.21 \$0.62 \$0.33
 - Non-Trip Related: \$0.32 \$0.32 \$0.24

Total per-Car Operating Cost per Year: \$4,671 \$2,870 \$2,303

Total Fleet Operating Cost per Year: \$56,050 \$34,435 \$27,639

Total Fleet Capital Cost: \$237,792

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
12	24	48
1	1	1
10.33	20.65	41.31
6.49	12.97	25.94
4.20	8.41	16.81
21.02	42.03	84.07
\$0.1	\$0.1	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.4
219	219	219
219	110	73
\$63	\$63	\$83
114.2	114.2	114.2
\$1.38	\$0.79	\$0.46
\$1.20	\$0.62	\$0.32
\$0.18	\$0.18	\$0.13
\$3,631	\$2,087	\$1,598
\$43,568	\$25,041	\$19,172
\$237,792		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
12	24	48
1	1	1
10.33	20.65	41.31
10.81	21.62	43.24
5.28	10.57	21.14
26.42	52.84	105.69
\$0.1	\$0.2	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.5
292	292	292
292	146	97
\$105	\$105	\$140
90.8	90.8	90.8
\$1.63	\$1.04	\$0.65
\$1.21	\$0.63	\$0.33
\$0.42	\$0.42	\$0.31
\$5,720	\$3,661	\$3,020
\$68,636	\$43,933	\$36,245
\$237,792		

Car Type: Amlounge II

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 49

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$19,816

\$17,800

\$2,016

Maintenance Cost:

- Labor:

- Spare Parts:

\$966

\$432

\$534

Hours per Trip:

Trips per Day:

12

24

48

1

1

Waste Generation Data

Waste Generated:

Flush Fluid Generated:

Capacity Adjustment:

Total Capacity Required per Day:

11.00

22.00

44.00

8.87

17.73

35.47

4.97

9.93

19.87

24.83

49.67

99.34

Pumpout Labor Cost:

Connect/Disconnect Labor Cost:

Cleaning Labor Cost:

Total Pumpout/Cleaning Cost per Day:

\$0.1

\$0.2

\$0.4

\$2.1

\$2.1

\$2.1

\$12.0

\$12.0

\$12.0

\$14.2

\$14.3

\$14.5

Days Operated per Year:

Clean-out Cycles per Year:

255

255

255

255

128

85

Waste Disposal Cost per Year:

\$86

\$86

\$115

Maximum Continuous Hours of Service:

Total Operating Cost per Service Hour:

- Trip Related:

- Non-Trip Related:

96.6

96.6

96.6

\$1.53

\$0.94

\$0.57

\$1.21

\$0.62

\$0.33

\$0.32

\$0.32

\$0.24

Total per-Car Operating Cost per Year:

\$4,677

\$2,876

\$2,312

Total Fleet Operating Cost per Year:

\$116,937

\$71,906

\$57,803

Total Fleet Capital Cost:

\$495,400

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
12	24	48
1	1	1
11.00	22.00	44.00
6.91	13.82	27.64
4.48	8.95	17.91
22.39	44.77	89.55
\$0.1	\$0.1	\$0.3
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.4
219	219	219
219	110	73
\$67	\$67	\$89
107.2	107.2	107.2
\$1.38	\$0.80	\$0.46
\$1.21	\$0.62	\$0.32
\$0.18	\$0.18	\$0.13
\$3,636	\$2,092	\$1,604
\$90,893	\$52,294	\$40,109
\$495,400		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
12	24	48
1	1	1
11.00	22.00	44.00
11.52	23.03	46.06
5.63	11.26	22.52
28.14	56.29	112.58
\$0.1	\$0.2	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.6
292	292	292
292	146	97
\$112	\$112	\$149
85.3	85.3	85.3
\$1.63	\$1.05	\$0.65
\$1.22	\$0.63	\$0.34
\$0.42	\$0.42	\$0.31
\$5,729	\$3,670	\$3,032
\$143,215	\$91,750	\$75,806
\$495,400		

Car Type: **Sleeper 10-6**

Toilet Type: **Ultimate**

Manufacturer:

Number of Passengers: **22**

Number of Toilets: **17**

Total Tank Capacity (gals): **200.0**

Scenario: **Expected**

Capital Cost	\$67,636		
- Equipment:	\$61,300		
- Installation:	\$6,336		
Maintenance Cost:	\$5,511		
- Labor:	\$3,672		
- Spare Parts:	\$1,839		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	4.94	9.88	19.76
Flush Fluid Generated:	3.98	7.96	15.92
Capacity Adjustment:	2.23	4.46	8.92
Total Capacity Required per Day:	11.15	22.30	44.60
Pumpout Labor Cost:	\$0.0	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$104.1	\$104.2	\$104.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$39	\$39	\$52
Maximum Continuous Hours of Service:	215.2	215.2	215.2
Total Operating Cost per Service Hour:	\$10.49	\$6.15	\$3.53
- Trip Related:	\$8.69	\$4.35	\$2.18
- Non-Trip Related:	\$1.80	\$1.80	\$1.35
Total per-Car Operating Cost per Year:	\$32,157	\$18,859	\$14,442
Total Fleet Operating Cost per Year:	\$2,636,912	\$1,546,413	\$1,184,250
Total Fleet Capital Cost:	\$5,546,152		

Evac

Favorable

Unfavorable

\$67,636		
\$61,300		
\$6,336		
\$3,061		
\$2,448		
\$613		
12	24	48
1	1	1
4.94	9.88	19.76
3.10	6.20	12.41
2.01	4.02	8.04
10.05	20.10	40.21
\$0.0	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.1	\$104.2	\$104.2
219	219	219
219	110	73
\$30	\$30	\$40
238.8	238.8	238.8
\$9.85	\$5.52	\$3.06
\$8.69	\$4.35	\$2.18
\$1.16	\$1.16	\$0.87
\$25,896	\$14,497	\$10,709
\$2,123,442	\$1,188,728	\$878,160
\$5,546,152		

\$67,636		
\$61,300		
\$6,336		
\$7,961		
\$4,896		
\$3,065		
12	24	48
1	1	1
4.94	9.88	19.76
5.17	10.34	20.68
2.53	5.05	10.11
12.64	25.27	50.55
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.2	\$104.2	\$104.3
292	292	292
292	146	97
\$50	\$50	\$67
189.9	189.9	189.9
\$10.97	\$6.63	\$3.89
\$8.69	\$4.36	\$2.19
\$2.27	\$2.27	\$1.70
\$38,423	\$23,225	\$18,180
\$3,150,725	\$1,904,440	\$1,490,796
\$5,546,152		

Car Type: Amcoach II

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 59

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$19,816
- Equipment: \$17,800
- Installation: \$2,016

Maintenance Cost: \$966
- Labor: \$432
- Spare Parts: \$534

Hours per Trip: 24 48 72
Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 26.49 52.98 79.47
Flush Fluid Generated: 21.35 42.70 64.06
Capacity Adjustment: 11.96 23.92 35.88
Total Capacity Required per Day: 59.80 119.61 179.41

Pumpout Labor Cost: \$0.2 \$0.4 \$0.6
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.3 \$14.5 \$14.7

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 128 85 64

Waste Disposal Cost per Year: \$104 \$139 \$156

Maximum Continuous Hours of Service: 80.3 80.3 80.3
Total Operating Cost per Service Hour: \$0.95 \$0.57 \$0.45
- Trip Related: \$0.63 \$0.34 \$0.24
- Non-Trip Related: \$0.32 \$0.24 \$0.21

Total per-Car Operating Cost per Year: \$2,898 \$2,342 \$2,063

Total Fleet Operating Cost per Year: \$344,916 \$278,669 \$245,546

Total Fleet Capital Cost: \$2,358,104

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
24	48	72
1	1	1
26.49	52.98	79.47
16.64	33.28	49.91
10.78	21.56	32.35
53.91	107.82	161.73
\$0.2	\$0.3	\$0.5
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.4	\$14.6
219	219	219
110	73	55
\$80	\$107	\$120
89.0	89.0	89.0
\$0.80	\$0.46	\$0.35
\$0.62	\$0.33	\$0.23
\$0.18	\$0.13	\$0.12
\$2,108	\$1,627	\$1,386
\$250,906	\$193,570	\$164,902
\$2,358,104		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
24	48	72
1	1	1
26.49	52.98	79.47
27.73	55.46	83.19
13.56	27.11	40.67
67.78	135.55	203.33
\$0.3	\$0.6	\$0.8
\$2.1	\$2.1	\$4.2
\$12.0	\$12.0	\$12.0
\$14.4	\$14.7	\$17.0
292	292	292
146	97	73
\$135	\$179	\$202
70.8	70.8	70.8
\$1.06	\$0.66	\$0.55
\$0.64	\$0.34	\$0.27
\$0.42	\$0.31	\$0.28
\$3,700	\$3,072	\$2,911
\$440,260	\$365,546	\$346,432
\$2,358,104		

Car Type: Slumbercoach 24-8

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 40

Number of Toilets: 32

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$115,456

\$104,800

\$10,656

Maintenance Cost:

- Labor:

- Spare Parts:

\$10,056

\$6,912

\$3,144

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

17.96

35.92

53.88

Flush Fluid Generated:

14.48

28.95

43.43

Capacity Adjustment:

8.11

16.22

24.33

Total Capacity Required per Day:

40.55

81.09

121.64

Pumpout Labor Cost:

\$0.1

\$0.3

\$0.4

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$192.0

\$192.0

\$192.0

Total Pumpout/Cleaning Cost per Day:

\$194.2

\$194.4

\$194.5

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$70

\$94

\$106

Maximum Continuous Hours of Service:

118.4

118.4

118.4

Total Operating Cost per Service Hour:

\$11.40

\$6.53

\$4.91

- Trip Related:

\$8.12

\$4.07

\$2.72

- Non-Trip Related:

\$3.28

\$2.46

\$2.19

Total per-Car Operating Cost per Year:

\$34,941

\$26,705

\$22,588

Total Fleet Operating Cost per Year:

\$559,059

\$427,287

\$361,401

Total Fleet Capital Cost:

\$1,847,296

Evac

Favorable

Unfavorable

\$115,456		
\$104,800		
\$10,656		
\$5,656		
\$4,608		
\$1,048		
24	48	72
1	1	1
17.96	35.92	53.88
11.28	22.56	33.84
7.31	14.62	21.93
36.55	73.10	109.65
\$0.1	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$192.0	\$192.0	\$192.0
\$194.2	\$194.3	\$194.4
219	219	219
110	73	55
\$54	\$73	\$82
131.3	131.3	131.3
\$10.27	\$5.68	\$4.16
\$8.11	\$4.07	\$2.72
\$2.15	\$1.61	\$1.43
\$26,977	\$19,914	\$16,383
\$431,628	\$318,629	\$262,130
\$1,847,296		

\$115,456		
\$104,800		
\$10,656		
\$14,456		
\$9,216		
\$5,240		
24	48	72
1	1	1
17.96	35.92	53.88
18.80	37.60	56.40
9.19	18.38	27.57
45.95	91.90	137.85
\$0.2	\$0.4	\$0.6
\$2.1	\$2.1	\$2.1
\$192.0	\$192.0	\$192.0
\$194.3	\$194.5	\$194.7
292	292	292
146	97	73
\$91	\$122	\$137
104.5	104.5	104.5
\$12.25	\$7.17	\$5.48
\$8.12	\$4.08	\$2.73
\$4.13	\$3.09	\$2.75
\$42,913	\$33,507	\$28,803
\$686,613	\$536,106	\$460,853
\$1,847,296		

Car Type: **Viewliner-Sleeper**
 Toilet Type: **Ultimate**

Manufacturer:

Number of Passengers: **34**
 Number of Toilets: **17**
 Total Tank Capacity (gals): **200.0**

Scenario: Expected

Capital Cost	\$67,636		
- Equipment:	\$61,300		
- Installation:	\$6,336		
Maintenance Cost:	\$5,511		
- Labor:	\$3,672		
- Spare Parts:	\$1,839		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.27	30.53	45.80
Flush Fluid Generated:	12.30	24.61	36.91
Capacity Adjustment:	6.89	13.79	20.68
Total Capacity Required per Day:	34.46	68.93	103.39
Pumpout Labor Cost:	\$0.1	\$0.2	\$0.4
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$104.2	\$104.3	\$104.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$60	\$80	\$90
Maximum Continuous Hours of Service:	139.3	139.3	139.3
Total Operating Cost per Service Hour:	\$6.16	\$3.54	\$2.67
- Trip Related:	\$4.36	\$2.19	\$1.47
- Non-Trip Related:	\$1.80	\$1.35	\$1.20
Total per-Car Operating Cost per Year:	\$18,885	\$14,478	\$12,274
Total Fleet Operating Cost per Year:	\$37,771	\$28,955	\$24,548
Total Fleet Capital Cost:	\$135,272		

Evac

Favorable

Unfavorable

\$67,636		
\$61,300		
\$6,336		
\$3,061		
\$2,448		
\$613		
24	48	72
1	1	1
15.27	30.53	45.80
9.59	19.18	28.76
6.21	12.43	18.64
31.07	62.14	93.20
\$0.1	\$0.2	\$0.3
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.2	\$104.3	\$104.4
219	219	219
110	73	55
\$46	\$62	\$69
154.5	154.5	154.5
\$5.52	\$3.06	\$2.24
\$4.36	\$2.19	\$1.47
\$1.16	\$0.87	\$0.78
\$14,517	\$10,736	\$8,846
\$29,033	\$21,472	\$17,691
\$135,272		

\$67,636		
\$61,300		
\$6,336		
\$7,961		
\$4,896		
\$3,065		
24	48	72
1	1	1
15.27	30.53	45.80
15.98	31.96	47.94
7.81	15.62	23.43
39.06	78.12	117.17
\$0.2	\$0.3	\$0.5
\$2.1	\$2.1	\$2.1
\$102.0	\$102.0	\$102.0
\$104.3	\$104.4	\$104.6
292	292	292
146	97	73
\$78	\$103	\$116
122.9	122.9	122.9
\$6.64	\$3.90	\$2.99
\$4.37	\$2.20	\$1.47
\$2.27	\$1.70	\$1.51
\$23,260	\$18,228	\$15,712
\$46,521	\$36,456	\$31,423
\$135,272		

Car Type: Amcafe
 Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 53
 Number of Toilets: 2
 Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost	\$19,816		
- Equipment:	\$17,800		
- Installation:	\$2,016		
Maintenance Cost:	\$966		
- Labor:	\$432		
- Spare Parts:	\$534		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.86	15.86	23.80
Flush Fluid Generated:	12.79	12.79	19.18
Capacity Adjustment:	7.16	7.16	10.74
Total Capacity Required per Day:	35.81	35.81	53.72
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$124	\$124	\$93
Maximum Continuous Hours of Service:	89.3	89.3	89.3
Total Operating Cost per Service Hour:	\$1.16	\$1.16	\$0.94
- Trip Related:	\$0.92	\$0.92	\$0.63
- Non-Trip Related:	\$0.24	\$0.24	\$0.32
Total per-Car Operating Cost per Year:	\$4,726	\$4,726	\$2,885
Total Fleet Operating Cost per Year:	\$212,655	\$212,655	\$129,830
Total Fleet Capital Cost:	\$891,720		

Evac

Favorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
8	16	24
2	1	1
15.86	15.86	23.80
9.96	9.96	14.95
6.46	6.46	9.69
32.29	32.29	48.43
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	110
\$96	\$96	\$72
99.1	99.1	99.1
\$1.05	\$1.05	\$0.80
\$0.91	\$0.91	\$0.62
\$0.13	\$0.13	\$0.18
\$3,672	\$3,672	\$2,098
\$165,235	\$165,235	\$94,430
\$891,720		

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
8	16	24
2	1	1
15.86	15.86	23.80
16.61	16.61	24.91
8.12	8.12	12.18
40.59	40.59	60.88
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
292	292	292
292	292	146
\$161	\$161	\$121
78.8	78.8	78.8
\$1.24	\$1.24	\$1.05
\$0.93	\$0.93	\$0.63
\$0.31	\$0.31	\$0.42
\$5,793	\$5,793	\$3,682
\$260,680	\$260,680	\$165,684
\$891,720		

Car Type: **Amcoach**
 Toilet Type: **Ultimate**

Manufacturer:

Number of Passengers: **84**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **200.0**

Scenario: **Expected**

Capital Cost **\$19,816**
 - Equipment: **\$17,800**
 - Installation: **\$2,016**

Maintenance Cost: **\$966**
 - Labor: **\$432**
 - Spare Parts: **\$534**

Hours per Trip: **8** **16** **24**
 Trips per Day: **2** **1** **1**

Waste Generation Data

Waste Generated: **25.14** **25.14** **37.72**
 Flush Fluid Generated: **20.27** **20.27** **30.40**
 Capacity Adjustment: **11.35** **11.35** **17.03**
 Total Capacity Required per Day: **56.76** **56.76** **85.14**

Pumpout Labor Cost: **\$0.2** **\$0.2** **\$0.3**
 Connect/Disconnect Labor Cost: **\$2.1** **\$2.1** **\$2.1**
 Cleaning Labor Cost: **\$12.0** **\$12.0** **\$12.0**
 Total Pumpout/Cleaning Cost per Day: **\$14.3** **\$14.3** **\$14.4**

Days Operated per Year: **255** **255** **255**
 Clean-out Cycles per Year: **255** **255** **128**

Waste Disposal Cost per Year: **\$197** **\$197** **\$148**

Maximum Continuous Hours of Service: **56.4** **56.4** **56.4**
 Total Operating Cost per Service Hour: **\$1.18** **\$1.18** **\$0.96**
 - Trip Related: **\$0.94** **\$0.94** **\$0.65**
 - Non-Trip Related: **\$0.24** **\$0.24** **\$0.32**

Total per-Car Operating Cost per Year: **\$4,818** **\$4,818** **\$2,954**

Total Fleet Operating Cost per Year: **\$1,281,474** **\$1,281,474** **\$785,775**

Total Fleet Capital Cost: **\$5,271,056**

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
8	16	24
2	1	1
25.14	25.14	37.72
15.79	15.79	23.69
10.23	10.23	15.35
51.17	51.17	76.76
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.3	\$14.3	\$14.3
219	219	219
219	219	110
\$152	\$152	\$114
62.5	62.5	62.5
\$1.07	\$1.07	\$0.82
\$0.93	\$0.93	\$0.64
\$0.13	\$0.13	\$0.18
\$3,741	\$3,741	\$2,150
\$995,077	\$995,077	\$571,951
\$5,271,056		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
8	16	24
2	1	1
25.14	25.14	37.72
26.32	26.32	39.48
12.87	12.87	19.30
64.33	64.33	96.50
\$0.3	\$0.3	\$0.4
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.4	\$14.4	\$14.5
292	292	292
292	292	146
\$255	\$255	\$192
49.7	49.7	49.7
\$1.27	\$1.27	\$1.08
\$0.95	\$0.95	\$0.66
\$0.31	\$0.31	\$0.42
\$5,916	\$5,916	\$3,774
\$1,573,529	\$1,573,529	\$1,003,842
\$5,271,056		

Car Type: Amclub

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 41

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$19,816
- Equipment: \$17,800
- Installation: \$2,016

Maintenance Cost: \$966
- Labor: \$432
- Spare Parts: \$534

Hours per Trip: 8 16 24
Trips per Day: 2 1 1

Waste Generation Data

Waste Generated: 12.27 12.27 18.41
Flush Fluid Generated: 9.89 9.89 14.84
Capacity Adjustment: 5.54 5.54 8.31
Total Capacity Required per Day: 27.71 27.71 41.56

Pumpout Labor Cost: \$0.1 \$0.1 \$0.1
Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
Total Pumpout/Cleaning Cost per Day: \$14.2 \$14.2 \$14.2

Days Operated per Year: 255 255 255
Clean-out Cycles per Year: 255 255 128

Waste Disposal Cost per Year: \$96 \$96 \$72

Maximum Continuous Hours of Service: 115.5 115.5 115.5
Total Operating Cost per Service Hour: \$1.15 \$1.15 \$0.93
- Trip Related: \$0.91 \$0.91 \$0.62
- Non-Trip Related: \$0.24 \$0.24 \$0.32

Total per-Car Operating Cost per Year: \$4,690 \$4,690 \$2,858

Total Fleet Operating Cost per Year: \$112,562 \$112,562 \$68,602

Total Fleet Capital Cost: \$475,584

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
8	16	24
2	1	1
12.27	12.27	18.41
7.71	7.71	11.56
5.00	5.00	7.49
24.98	24.98	37.46
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	110
\$74	\$74	\$56
128.1	128.1	128.1
\$1.04	\$1.04	\$0.79
\$0.91	\$0.91	\$0.61
\$0.13	\$0.13	\$0.18
\$3,645	\$3,645	\$2,078
\$87,484	\$87,484	\$49,882
\$475,584		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
8	16	24
2	1	1
12.27	12.27	18.41
12.85	12.85	19.27
6.28	6.28	9.42
31.40	31.40	47.10
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
292	292	292
292	292	146
\$125	\$125	\$94
101.9	101.9	101.9
\$1.23	\$1.23	\$1.04
\$0.92	\$0.92	\$0.62
\$0.31	\$0.31	\$0.42
\$5,745	\$5,745	\$3,646
\$137,890	\$137,890	\$87,510
\$475,584		

Car Type: Met-Srvc Dinette

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 23

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost	\$19,816		
- Equipment:	\$17,800		
- Installation:	\$2,016		
Maintenance Cost:	\$966		
- Labor:	\$432		
- Spare Parts:	\$534		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	3.47	4.16	4.86
Capacity Adjustment:	1.94	2.33	2.72
Total Capacity Required per Day:	9.71	11.66	13.60
Pumpout Labor Cost:	\$0.0	\$0.0	\$0.0
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.1	\$14.1	\$14.1
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$34	\$41	\$47
Maximum Continuous Hours of Service:	205.9	205.9	205.9
Total Operating Cost per Service Hour:	\$1.80	\$1.51	\$1.29
- Trip Related:	\$1.43	\$1.19	\$1.02
- Non-Trip Related:	\$0.38	\$0.32	\$0.27
Total per-Car Operating Cost per Year:	\$4,611	\$4,620	\$4,628
Total Fleet Operating Cost per Year:	\$59,945	\$60,056	\$60,167
Total Fleet Capital Cost:	\$257,608		

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
4.30	5.16	6.02
2.70	3.24	3.78
1.75	2.10	2.45
8.76	10.51	12.26
\$0.0	\$0.0	\$0.0
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.1	\$14.1
219	219	219
219	219	219
\$26	\$31	\$37
228.4	228.4	228.4
\$1.64	\$1.37	\$1.17
\$1.42	\$1.19	\$1.02
\$0.21	\$0.18	\$0.15
\$3,586	\$3,592	\$3,599
\$46,617	\$46,700	\$46,783
\$257,608		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
4.30	5.16	6.02
4.50	5.41	6.31
2.20	2.64	3.08
11.01	13.21	15.41
\$0.0	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.2	\$14.2
292	292	292
292	292	292
\$44	\$52	\$61
181.7	181.7	181.7
\$1.93	\$1.61	\$1.39
\$1.43	\$1.19	\$1.03
\$0.50	\$0.42	\$0.36
\$5,640	\$5,651	\$5,663
\$73,321	\$73,469	\$73,617
\$257,608		

Car Type: Met-Srvc Coach

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 60

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$19,816

\$17,800

\$2,016

Maintenance Cost:

\$966

- Labor:

\$432

- Spare Parts:

\$534

Hours per Trip:

2

12

7

Trips per Day:

5

1

2

Waste Generation Data

Waste Generated:

11.23

13.47

15.72

Flush Fluid Generated:

9.05

10.86

12.67

Capacity Adjustment:

5.07

6.08

7.10

Total Capacity Required per Day:

25.34

30.41

35.48

Pumpout Labor Cost:

\$0.1

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.2

\$14.2

\$14.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$88

\$106

\$123

Maximum Continuous Hours of Service:

78.9

78.9

78.9

Total Operating Cost per Service Hour:

\$1.83

\$1.53

\$1.32

- Trip Related:

\$1.45

\$1.22

\$1.05

- Non-Trip Related:

\$0.38

\$0.32

\$0.27

Total per-Car Operating Cost per Year:

\$4,680

\$4,702

\$4,724

Total Fleet Operating Cost per Year:

\$233,986

\$235,098

\$236,209

Total Fleet Capital Cost:

\$990,800

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
11.23	13.47	15.72
7.05	8.46	9.87
4.57	5.48	6.40
22.84	27.41	31.98
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$68	\$82	\$95
87.6	87.6	87.6
\$1.66	\$1.39	\$1.20
\$1.45	\$1.21	\$1.05
\$0.21	\$0.18	\$0.15
\$3,637	\$3,654	\$3,671
\$181,869	\$182,704	\$183,538
\$990,800		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
11.23	13.47	15.72
11.75	14.10	16.45
5.74	6.89	8.04
28.72	34.46	40.21
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
292	292	292
292	292	292
\$114	\$137	\$160
69.6	69.6	69.6
\$1.96	\$1.64	\$1.42
\$1.46	\$1.23	\$1.06
\$0.50	\$0.42	\$0.36
\$5,732	\$5,761	\$5,791
\$286,578	\$288,061	\$289,545
\$990,800		

Car Type: Met-Srvc Club

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 33

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost

\$19,816

- Equipment:

\$17,800

- Installation:

\$2,016

Maintenance Cost:

\$966

- Labor:

\$432

- Spare Parts:

\$534

Hours per Trip:

2

12

7

Trips per Day:

5

1

2

Waste Generation Data

Waste Generated:

6.17

7.41

8.64

Flush Fluid Generated:

4.98

5.97

6.97

Capacity Adjustment:

2.79

3.34

3.90

Total Capacity Required per Day:

13.94

16.72

19.51

Pumpout Labor Cost:

\$0.0

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.1

\$14.2

\$14.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$48

\$58

\$68

Maximum Continuous Hours of Service:

143.5

143.5

143.5

Total Operating Cost per Service Hour:

\$1.81

\$1.51

\$1.30

- Trip Related:

\$1.43

\$1.20

\$1.03

- Non-Trip Related:

\$0.38

\$0.32

\$0.27

Total per-Car Operating Cost per Year:

\$4,630

\$4,642

\$4,654

Total Fleet Operating Cost per Year:

\$60,186

\$60,345

\$60,504

Total Fleet Capital Cost:

\$257,608

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
6.17	7.41	8.64
3.88	4.65	5.43
2.51	3.02	3.52
12.56	15.08	17.59
\$0.0	\$0.0	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.1	\$14.2
219	219	219
219	219	219
\$37	\$45	\$52
159.2	159.2	159.2
\$1.64	\$1.37	\$1.18
\$1.43	\$1.20	\$1.03
\$0.21	\$0.18	\$0.15
\$3,600	\$3,609	\$3,618
\$46,798	\$46,917	\$47,036
\$257,608		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
6.17	7.41	8.64
6.46	7.76	9.05
3.16	3.79	4.42
15.80	18.95	22.11
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
292	292	292
292	292	292
\$63	\$75	\$88
126.6	126.6	126.6
\$1.94	\$1.62	\$1.39
\$1.44	\$1.20	\$1.04
\$0.50	\$0.42	\$0.36
\$5,665	\$5,681	\$5,697
\$73,642	\$73,855	\$74,067
\$257,608		

Car Type: Ardinette

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 23

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$19,816

\$17,800

\$2,016

Maintenance Cost:

- Labor:

- Spare Parts:

\$966

\$432

\$534

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

4.30

5.16

6.02

Flush Fluid Generated:

3.47

4.16

4.86

Capacity Adjustment:

1.94

2.33

2.72

Total Capacity Required per Day:

9.71

11.66

13.60

Pumpout Labor Cost:

\$0.0

\$0.0

\$0.0

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$14.1

\$14.1

\$14.1

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$34

\$41

\$47

Maximum Continuous Hours of Service:

205.9

205.9

205.9

Total Operating Cost per Service Hour:

\$1.80

\$1.51

\$1.29

- Trip Related:

\$1.43

\$1.19

\$1.02

- Non-Trip Related:

\$0.38

\$0.32

\$0.27

Total per-Car Operating Cost per Year:

\$4,611

\$4,620

\$4,628

Total Fleet Operating Cost per Year:

\$115,279

\$115,492

\$115,705

Total Fleet Capital Cost:

\$495,400

Evac

Favorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
4.30	5.16	6.02
2.70	3.24	3.78
1.75	2.10	2.45
8.76	10.51	12.26
\$0.0	\$0.0	\$0.0
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.1	\$14.1
219	219	219
219	219	219
\$26	\$31	\$37
228.4	228.4	228.4
\$1.64	\$1.37	\$1.17
\$1.42	\$1.19	\$1.02
\$0.21	\$0.18	\$0.15
\$3,586	\$3,592	\$3,599
\$89,647	\$89,807	\$89,967
\$495,400		

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
4.30	5.16	6.02
4.50	5.41	6.31
2.20	2.64	3.08
11.01	13.21	15.41
\$0.0	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.1	\$14.2	\$14.2
292	292	292
292	292	292
\$44	\$52	\$61
181.7	181.7	181.7
\$1.93	\$1.61	\$1.39
\$1.43	\$1.19	\$1.03
\$0.50	\$0.42	\$0.36
\$5,640	\$5,651	\$5,663
\$141,002	\$141,286	\$141,570
\$495,400		

Car Type: Amcoach

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 60

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost	\$19,816		
- Equipment:	\$17,800		
- Installation:	\$2,016		
Maintenance Cost:	\$966		
- Labor:	\$432		
- Spare Parts:	\$534		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	11.23	13.47	15.72
Flush Fluid Generated:	9.05	10.86	12.67
Capacity Adjustment:	5.07	6.08	7.10
Total Capacity Required per Day:	25.34	30.41	35.48
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.1
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$88	\$106	\$123
Maximum Continuous Hours of Service:	78.9	78.9	78.9
Total Operating Cost per Service Hour:	\$1.83	\$1.53	\$1.32
- Trip Related:	\$1.45	\$1.22	\$1.05
- Non-Trip Related:	\$0.38	\$0.32	\$0.27
Total per-Car Operating Cost per Year:	\$4,680	\$4,702	\$4,724
Total Fleet Operating Cost per Year:	\$145,071	\$145,761	\$146,450
Total Fleet Capital Cost:	\$614,296		

Evac

Favorable

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
11.23	13.47	15.72
7.05	8.46	9.87
4.57	5.48	6.40
22.84	27.41	31.98
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$68	\$82	\$95
87.6	87.6	87.6
\$1.66	\$1.39	\$1.20
\$1.45	\$1.21	\$1.05
\$0.21	\$0.18	\$0.15
\$3,637	\$3,654	\$3,671
\$112,759	\$113,276	\$113,794
\$614,296		

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
11.23	13.47	15.72
11.75	14.10	16.45
5.74	6.89	8.04
28.72	34.46	40.21
\$0.1	\$0.1	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.3
292	292	292
292	292	292
\$114	\$137	\$160
69.6	69.6	69.6
\$1.96	\$1.64	\$1.42
\$1.46	\$1.23	\$1.06
\$0.50	\$0.42	\$0.36
\$5,732	\$5,761	\$5,791
\$177,678	\$178,598	\$179,518
\$614,296		

Car Type: Turbo Power Club

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 27

Number of Toilets: 1

Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$16,628

\$14,900

\$1,728

Maintenance Cost:

- Labor:

- Spare Parts:

\$663

\$216

\$447

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

5.05

6.06

7.07

Flush Fluid Generated:

4.07

4.89

5.70

Capacity Adjustment:

2.28

2.74

3.19

Total Capacity Required per Day:

11.40

13.68

15.96

Pumpout Labor Cost:

Connect/Disconnect Labor Cost:

Cleaning Labor Cost:

Total Pumpout/Cleaning Cost per Day:

\$0.0

\$0.0

\$0.1

\$2.1

\$2.1

\$2.1

\$6.0

\$6.0

\$6.0

\$8.1

\$8.1

\$8.2

Days Operated per Year:

Clean-out Cycles per Year:

255

255

255

255

255

255

Waste Disposal Cost per Year:

\$40

\$48

\$55

Maximum Continuous Hours of Service:

Total Operating Cost per Service Hour:

- Trip Related:

- Non-Trip Related:

175.4

175.4

175.4

\$1.09

\$0.91

\$0.78

\$0.83

\$0.69

\$0.60

\$0.26

\$0.22

\$0.19

Total per-Car Operating Cost per Year:

\$2,783

\$2,793

\$2,803

Total Fleet Operating Cost per Year:

\$16,695

\$16,755

\$16,816

Total Fleet Capital Cost:

\$99,768

Evac

Favorable

Unfavorable

\$16,628		
\$14,900		
\$1,728		
\$293		
\$144		
\$149		
2	12	7
5	1	2
5.05	6.06	7.07
3.17	3.81	4.44
2.06	2.47	2.88
10.28	12.34	14.39
\$0.0	\$0.0	\$0.0
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.1	\$8.1	\$8.1
219	219	219
219	219	219
\$31	\$37	\$43
194.6	194.6	194.6
\$0.96	\$0.80	\$0.69
\$0.83	\$0.69	\$0.60
\$0.13	\$0.11	\$0.10
\$2,104	\$2,112	\$2,119
\$12,627	\$12,672	\$12,717
\$99,768		

\$16,628		
\$14,900		
\$1,728		
\$1,033		
\$288		
\$745		
2	12	7
5	1	2
5.05	6.06	7.07
5.29	6.35	7.40
2.58	3.10	3.62
12.92	15.51	18.09
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
292	292	292
292	292	292
\$51	\$62	\$72
154.8	154.8	154.8
\$1.19	\$0.99	\$0.85
\$0.83	\$0.70	\$0.60
\$0.35	\$0.29	\$0.25
\$3,465	\$3,478	\$3,492
\$20,790	\$20,870	\$20,950
\$99,768		

Car Type: Turbo Coach

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 72

Number of Toilets: 2

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost	\$19,816		
- Equipment:	\$17,800		
- Installation:	\$2,016		
Maintenance Cost:	\$966		
- Labor:	\$432		
- Spare Parts:	\$534		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	13.47	16.16	18.86
Flush Fluid Generated:	10.86	13.03	15.20
Capacity Adjustment:	6.08	7.30	8.51
Total Capacity Required per Day:	30.41	36.49	42.57
Pumpout Labor Cost:	\$0.1	\$0.1	\$0.2
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$14.2	\$14.2	\$14.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$106	\$127	\$148
Maximum Continuous Hours of Service:	65.8	65.8	65.8
Total Operating Cost per Service Hour:	\$1.84	\$1.54	\$1.33
- Trip Related:	\$1.46	\$1.23	\$1.06
- Non-Trip Related:	\$0.38	\$0.32	\$0.27
Total per-Car Operating Cost per Year:	\$4,702	\$4,729	\$4,755
Total Fleet Operating Cost per Year:	\$98,741	\$99,301	\$99,862
Total Fleet Capital Cost:	\$416,136		

Evac

Favorable

\$19,816		
\$17,800		
\$2,016		
\$466		
\$288		
\$178		
2	12	7
5	1	2
13.47	16.16	18.86
8.46	10.15	11.84
5.48	6.58	7.68
27.41	32.90	38.38
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.2	\$14.2
219	219	219
219	219	219
\$82	\$98	\$114
73.0	73.0	73.0
\$1.67	\$1.40	\$1.20
\$1.46	\$1.22	\$1.05
\$0.21	\$0.18	\$0.15
\$3,654	\$3,674	\$3,694
\$76,736	\$77,156	\$77,577
\$416,136		

Unfavorable

\$19,816		
\$17,800		
\$2,016		
\$1,466		
\$576		
\$890		
2	12	7
5	1	2
13.47	16.16	18.86
14.10	16.92	19.74
6.89	8.27	9.65
34.46	41.36	48.25
\$0.1	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$12.0	\$12.0	\$12.0
\$14.2	\$14.3	\$14.3
292	292	292
292	292	292
\$137	\$164	\$192
58.0	58.0	58.0
\$1.97	\$1.65	\$1.43
\$1.47	\$1.24	\$1.07
\$0.50	\$0.42	\$0.36
\$5,761	\$5,797	\$5,832
\$120,986	\$121,734	\$122,481
\$416,136		

Car Type: Turbo Cafe

Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 52

Number of Toilets: 1

Total Tank Capacity (gals): 200.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$16,628

\$14,900

\$1,728

Maintenance Cost:

- Labor:

- Spare Parts:

\$663

\$216

\$447

Hours per Trip:

Trips per Day:

2

5

12

1

7

2

Waste Generation Data

Waste Generated:

9.73

11.67

13.62

Flush Fluid Generated:

7.84

9.41

10.98

Capacity Adjustment:

4.39

5.27

6.15

Total Capacity Required per Day:

21.96

26.35

30.75

Pumpout Labor Cost:

\$0.1

\$0.1

\$0.1

Connect/Disconnect Labor Cost:

\$2.1

\$2.1

\$2.1

Cleaning Labor Cost:

\$6.0

\$6.0

\$6.0

Total Pumpout/Cleaning Cost per Day:

\$8.2

\$8.2

\$8.2

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$76

\$92

\$107

Maximum Continuous Hours of Service:

91.1

91.1

91.1

Total Operating Cost per Service Hour:

\$1.11

\$0.93

\$0.80

- Trip Related:

\$0.85

\$0.71

\$0.62

- Non-Trip Related:

\$0.26

\$0.22

\$0.19

Total per-Car Operating Cost per Year:

\$2,829

\$2,848

\$2,867

Total Fleet Operating Cost per Year:

\$8,487

\$8,545

\$8,602

Total Fleet Capital Cost:

\$49,884

Evac

Favorable

Unfavorable

\$16,628		
\$14,900		
\$1,728		
\$293		
\$144		
\$149		
2	12	7
5	1	2
9.73	11.67	13.62
6.11	7.33	8.55
3.96	4.75	5.54
19.80	23.76	27.72
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
219	219	219
219	219	219
\$59	\$71	\$83
101.0	101.0	101.0
\$0.98	\$0.82	\$0.71
\$0.84	\$0.71	\$0.61
\$0.13	\$0.11	\$0.10
\$2,139	\$2,154	\$2,168
\$6,418	\$6,461	\$6,505
\$49,884		

\$16,628		
\$14,900		
\$1,728		
\$1,033		
\$288		
\$745		
2	12	7
5	1	2
9.73	11.67	13.62
10.18	12.22	14.26
4.98	5.97	6.97
24.89	29.87	34.85
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
292	292	292
292	292	292
\$99	\$119	\$138
80.4	80.4	80.4
\$1.21	\$1.01	\$0.88
\$0.85	\$0.72	\$0.62
\$0.35	\$0.29	\$0.25
\$3,527	\$3,552	\$3,578
\$10,580	\$10,657	\$10,735
\$49,884		

Car Type: Turbo Power Coach
 Toilet Type: Ultimate

Manufacturer:

Number of Passengers: 40
 Number of Toilets: 1
 Total Tank Capacity (gals): 200.0

Scenario: Expected

Capital Cost \$16,628
 - Equipment: \$14,900
 - Installation: \$1,728

Maintenance Cost: \$663
 - Labor: \$216
 - Spare Parts: \$447

Hours per Trip: 2 12 7
 Trips per Day: 5 1 2

Waste Generation Data

Waste Generated: 7.48 8.98 10.48
 Flush Fluid Generated: 6.03 7.24 8.44
 Capacity Adjustment: 3.38 4.05 4.73
 Total Capacity Required per Day: 16.89 20.27 23.65

Pumpout Labor Cost: \$0.1 \$0.1 \$0.1
 Connect/Disconnect Labor Cost: \$2.1 \$2.1 \$2.1
 Cleaning Labor Cost: \$6.0 \$6.0 \$6.0
 Total Pumpout/Cleaning Cost per Day: \$8.2 \$8.2 \$8.2

Days Operated per Year: 255 255 255
 Clean-out Cycles per Year: 255 255 255

Waste Disposal Cost per Year: \$59 \$70 \$82

Maximum Continuous Hours of Service: 118.4 118.4 118.4
 Total Operating Cost per Service Hour: \$1.10 \$0.92 \$0.79
 - Trip Related: \$0.84 \$0.70 \$0.61
 - Non-Trip Related: \$0.26 \$0.22 \$0.19

Total per-Car Operating Cost per Year: \$2,807 \$2,821 \$2,836

Total Fleet Operating Cost per Year: \$39,293 \$39,501 \$39,708

Total Fleet Capital Cost: \$232,792

Evac

Favorable

Unfavorable

\$16,628		
\$14,900		
\$1,728		
\$293		
\$144		
\$149		
2	12	7
5	1	2
7.48	8.98	10.48
4.70	5.64	6.58
3.05	3.66	4.26
15.23	18.28	21.32
\$0.0	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.1	\$8.2	\$8.2
219	219	219
219	219	219
\$45	\$54	\$64
131.3	131.3	131.3
\$0.97	\$0.81	\$0.70
\$0.84	\$0.70	\$0.60
\$0.13	\$0.11	\$0.10
\$2,123	\$2,134	\$2,145
\$29,716	\$29,872	\$30,027
\$232,792		

\$16,628		
\$14,900		
\$1,728		
\$1,033		
\$288		
\$745		
2	12	7
5	1	2
7.48	8.98	10.48
7.83	9.40	10.97
3.83	4.60	5.36
19.15	22.98	26.80
\$0.1	\$0.1	\$0.1
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.2	\$8.2	\$8.2
292	292	292
292	292	292
\$76	\$91	\$106
104.5	104.5	104.5
\$1.20	\$1.00	\$0.87
\$0.84	\$0.71	\$0.61
\$0.35	\$0.29	\$0.25
\$3,497	\$3,517	\$3,537
\$48,959	\$49,236	\$49,513
\$232,792		

D5 Railtech WTS 8300

Car Type: Coach-HEP-HLV

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 72

Number of Toilets: 4

Total Tank Capacity (gals): 100.0

Scenario:

Expected

Capital Cost

\$21,728

- Equipment:

\$20,000

- Installation:

\$1,728

Maintenance Cost:

\$1,464

- Labor:

\$864

- Spare Parts:

\$600

Hours per Trip:

24

48

72

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

32.33

64.66

96.98

Flush Fluid Generated:

145.89

291.79

437.68

Capacity Adjustment:

44.56

89.11

133.67

Total Capacity Required per Day:

222.78

445.56

668.34

Pumpout Labor Cost:

\$1.5

\$2.9

\$4.4

Connect/Disconnect Labor Cost:

\$12.6

\$21.0

\$29.4

Cleaning Labor Cost:

\$24.0

\$24.0

\$24.0

Total Pumpout/Cleaning Cost per Day:

\$38.1

\$47.9

\$57.8

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$387

\$516

\$581

Maximum Continuous Hours of Service:

10.8

10.8

10.8

Total Operating Cost per Service Hour:

\$2.19

\$1.48

\$1.25

- Trip Related:

\$1.71

\$1.12

\$0.93

- Non-Trip Related:

\$0.48

\$0.36

\$0.32

Total per-Car Operating Cost per Year:

\$6,713

\$6,061

\$5,735

Total Fleet Operating Cost per Year:

\$140,975

\$127,283

\$120,437

Total Fleet Capital Cost:

\$456,288

Railtech

Favorable

Unfavorable

\$21,728		
\$20,000		
\$1,728		
\$776		
\$576		
\$200		
24	48	72
1	1	1
32.33	64.66	96.98
113.68	227.37	341.05
36.50	73.01	109.51
182.52	365.03	547.55
\$1.1	\$2.3	\$3.4
\$8.4	\$16.8	\$25.2
\$24.0	\$24.0	\$24.0
\$33.5	\$43.1	\$52.6
219	219	219
110	73	55
\$272	\$362	\$408
13.1	13.1	13.1
\$1.80	\$1.22	\$1.03
\$1.50	\$1.00	\$0.83
\$0.30	\$0.22	\$0.20
\$4,720	\$4,283	\$4,064
\$99,122	\$89,938	\$85,347
\$456,288		

\$21,728		
\$20,000		
\$1,728		
\$2,152		
\$1,152		
\$1,000		
24	48	72
1	1	1
32.33	64.66	96.98
189.47	378.95	568.42
55.45	110.90	166.35
277.25	554.50	831.76
\$1.9	\$3.8	\$5.7
\$12.6	\$25.2	\$37.8
\$24.0	\$24.0	\$24.0
\$38.5	\$53.0	\$67.5
292	292	292
146	97	73
\$551	\$734	\$826
8.7	8.7	8.7
\$2.38	\$1.72	\$1.50
\$1.76	\$1.26	\$1.09
\$0.61	\$0.46	\$0.41
\$8,323	\$8,044	\$7,904
\$174,778	\$168,917	\$165,986
\$456,288		

Car Type: Lounge-HEP-HLV
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 86
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost
 - Equipment: \$15,152
 - Installation: \$14,000
 \$1,152

Maintenance Cost: \$852
 - Labor: \$432
 - Spare Parts: \$420

Hours per Trip: 24 48 72
 Trips per Day: 1 1 1

Waste Generation Data

Waste Generated: 38.61 77.23 115.84
 Flush Fluid Generated: 174.26 348.53 522.79
 Capacity Adjustment: 53.22 106.44 159.66
 Total Capacity Required per Day: 266.10 532.19 798.29

Pumpout Labor Cost: \$1.7 \$3.5 \$5.2
 Connect/Disconnect Labor Cost: \$12.6 \$25.2 \$33.6
 Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
 Total Pumpout/Cleaning Cost per Day: \$26.3 \$40.7 \$50.8

Days Operated per Year: 255 255 255
 Clean-out Cycles per Year: 128 85 64

Waste Disposal Cost per Year: \$462 \$616 \$693

Maximum Continuous Hours of Service: 9.0 9.0 9.0
 Total Operating Cost per Service Hour: \$1.53 \$1.21 \$1.04
 - Trip Related: \$1.25 \$1.00 \$0.86
 - Non-Trip Related: \$0.28 \$0.21 \$0.19

Total per-Car Operating Cost per Year: \$4,680 \$4,933 \$4,792

Total Fleet Operating Cost per Year: \$28,078 \$29,601 \$28,753

Total Fleet Capital Cost: \$90,912

Railtech

Favorable

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
24	48	72
1	1	1
38.61	77.23	115.84
135.79	271.58	407.37
43.60	87.20	130.80
218.00	436.01	654.01
\$1.4	\$2.7	\$4.1
\$12.6	\$21.0	\$29.4
\$12.0	\$12.0	\$12.0
\$26.0	\$35.7	\$45.5
219	219	219
110	73	55
\$325	\$433	\$487
11.0	11.0	11.0
\$1.37	\$0.99	\$0.86
\$1.21	\$0.87	\$0.76
\$0.16	\$0.12	\$0.11
\$3,595	\$3,468	\$3,405
\$21,570	\$20,809	\$20,428
\$90,912		

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
24	48	72
1	1	1
38.61	77.23	115.84
226.32	452.63	678.95
66.23	132.46	198.70
331.16	662.32	993.49
\$2.3	\$4.5	\$6.8
\$16.8	\$29.4	\$42.0
\$12.0	\$12.0	\$12.0
\$31.1	\$45.9	\$60.8
292	292	292
146	97	73
\$658	\$877	\$986
7.2	7.2	7.2
\$1.85	\$1.42	\$1.27
\$1.48	\$1.14	\$1.03
\$0.36	\$0.27	\$0.24
\$6,469	\$6,623	\$6,700
\$38,813	\$39,737	\$40,200
\$90,912		

Car Type: Trans Dorm Coach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 40
 Number of Toilets: 4
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$21,728		
- Equipment:	\$20,000		
- Installation:	\$1,728		
Maintenance Cost:	\$1,464		
- Labor:	\$864		
- Spare Parts:	\$600		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	17.96	35.92	53.88
Flush Fluid Generated:	81.05	162.11	243.16
Capacity Adjustment:	24.75	49.51	74.26
Total Capacity Required per Day:	123.77	247.53	371.30
Pumpout Labor Cost:	\$0.8	\$1.6	\$2.4
Connect/Disconnect Labor Cost:	\$8.4	\$12.6	\$16.8
Cleaning Labor Cost:	\$24.0	\$24.0	\$24.0
Total Pumpout/Cleaning Cost per Day:	\$33.2	\$38.2	\$43.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$215	\$287	\$323
Maximum Continuous Hours of Service:	19.4	19.4	19.4
Total Operating Cost per Service Hour:	\$1.93	\$1.22	\$0.99
- Trip Related:	\$1.45	\$0.87	\$0.67
- Non-Trip Related:	\$0.48	\$0.36	\$0.32
Total per-Car Operating Cost per Year:	\$5,922	\$5,006	\$4,548
Total Fleet Operating Cost per Year:	\$213,180	\$180,211	\$163,727
Total Fleet Capital Cost:	\$782,208		

Railtech

Favorable

\$21,728		
\$20,000		
\$1,728		
\$776		
\$576		
\$200		
24	48	72
1	1	1
17.96	35.92	53.88
63.16	126.32	189.47
20.28	40.56	60.84
101.40	202.79	304.19
\$0.6	\$1.3	\$1.9
\$8.4	\$12.6	\$16.8
\$24.0	\$24.0	\$24.0
\$33.0	\$37.9	\$42.7
219	219	219
110	73	55
\$151	\$201	\$227
23.7	23.7	23.7
\$1.73	\$1.07	\$0.85
\$1.43	\$0.85	\$0.65
\$0.30	\$0.22	\$0.20
\$4,544	\$3,741	\$3,340
\$163,583	\$134,688	\$120,241
\$782,208		

Unfavorable

\$21,728		
\$20,000		
\$1,728		
\$2,152		
\$1,152		
\$1,000		
24	48	72
1	1	1
17.96	35.92	53.88
105.26	210.53	315.79
30.81	61.61	92.42
154.03	308.06	462.09
\$1.1	\$2.1	\$3.2
\$8.4	\$16.8	\$21.0
\$24.0	\$24.0	\$24.0
\$33.5	\$42.9	\$48.2
292	292	292
146	97	73
\$306	\$408	\$459
15.6	15.6	15.6
\$2.10	\$1.44	\$1.17
\$1.48	\$0.98	\$0.76
\$0.61	\$0.46	\$0.41
\$7,342	\$6,736	\$6,126
\$264,309	\$242,492	\$220,546
\$782,208		

Car Type: **Sleeper Super**
 Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **44**
 Number of Toilets: **12**
 Total Tank Capacity (gals): **300.0**

Scenario: Expected

Capital Cost **\$65,184**
 - Equipment: **\$60,000**
 - Installation: **\$5,184**

Maintenance Cost: **\$4,392**
 - Labor: **\$2,592**
 - Spare Parts: **\$1,800**

Hours per Trip: **24** **48** **72**
 Trips per Day: **1** **1** **1**

Waste Generation Data

Waste Generated: **19.76** **39.51** **59.27**
 Flush Fluid Generated: **89.16** **178.32** **267.47**
 Capacity Adjustment: **27.23** **54.46** **81.69**
 Total Capacity Required per Day: **136.14** **272.28** **408.43**

Pumpout Labor Cost: **\$0.9** **\$1.8** **\$2.7**
 Connect/Disconnect Labor Cost: **\$12.6** **\$12.6** **\$25.2**
 Cleaning Labor Cost: **\$72.0** **\$72.0** **\$72.0**
 Total Pumpout/Cleaning Cost per Day: **\$85.5** **\$86.4** **\$99.9**

Days Operated per Year: **255** **255** **255**
 Clean-out Cycles per Year: **128** **85** **64**

Waste Disposal Cost per Year: **\$237** **\$315** **\$355**

Maximum Continuous Hours of Service: **52.9** **52.9** **52.9**
 Total Operating Cost per Service Hour: **\$5.07** **\$2.95** **\$2.42**
 - Trip Related: **\$3.64** **\$1.88** **\$1.46**
 - Non-Trip Related: **\$1.43** **\$1.07** **\$0.95**

Total per-Car Operating Cost per Year: **\$15,550** **\$12,064** **\$11,126**

Total Fleet Operating Cost per Year: **\$1,057,406** **\$820,375** **\$753,588**

Total Fleet Capital Cost: **\$4,432,512**

Railtech

Favorable

\$65,184		
\$60,000		
\$5,184		
\$2,328		
\$1,728		
\$600		
24	48	72
1	1	1
19.76	39.51	59.27
69.47	138.95	208.42
22.31	44.61	66.92
111.54	223.07	334.61
\$0.7	\$1.4	\$2.1
\$12.6	\$12.6	\$25.2
\$72.0	\$72.0	\$72.0
\$85.3	\$86.0	\$99.3
219	219	219
110	73	55
\$166	\$221	\$249
64.6	64.6	64.6
\$4.50	\$2.52	\$2.03
\$3.62	\$1.85	\$1.44
\$0.89	\$0.66	\$0.59
\$11,834	\$8,827	\$8,013
\$804,703	\$600,216	\$544,881
\$4,432,512		

Unfavorable

\$65,184		
\$60,000		
\$5,184		
\$6,456		
\$3,456		
\$3,000		
24	48	72
1	1	1
19.76	39.51	59.27
115.79	231.58	347.37
33.89	67.77	101.66
169.43	338.86	508.30
\$1.2	\$2.3	\$3.5
\$12.6	\$25.2	\$25.2
\$72.0	\$72.0	\$72.0
\$85.8	\$99.5	\$100.7
292	292	292
146	97	73
\$336	\$449	\$505
42.5	42.5	42.5
\$5.51	\$3.55	\$2.72
\$3.67	\$2.17	\$1.49
\$1.84	\$1.38	\$1.23
\$19,313	\$16,591	\$14,310
\$1,313,289	\$1,128,172	\$973,067
\$4,432,512		

Car Type: **Bag Coach Super**
 Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **78**
 Number of Toilets: **5**
 Total Tank Capacity (gals): **150.0**

Scenario: **Expected**

Capital Cost	\$29,304		
- Equipment:	\$27,000		
- Installation:	\$2,304		
Maintenance Cost:	\$1,890		
- Labor:	\$1,080		
- Spare Parts:	\$810		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	35.02	70.04	105.07
Flush Fluid Generated:	158.05	316.11	474.16
Capacity Adjustment:	48.27	96.54	144.81
Total Capacity Required per Day:	241.34	482.69	724.03
Pumpout Labor Cost:	\$1.6	\$3.2	\$4.7
Connect/Disconnect Labor Cost:	\$12.6	\$25.2	\$31.5
Cleaning Labor Cost:	\$30.0	\$30.0	\$30.0
Total Pumpout/Cleaning-Cost per Day:	\$44.2	\$58.4	\$66.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$419	\$559	\$629
Maximum Continuous Hours of Service:	14.9	14.9	14.9
Total Operating Cost per Service Hour:	\$2.59	\$1.81	\$1.47
- Trip Related:	\$1.98	\$1.35	\$1.06
- Non-Trip Related:	\$0.62	\$0.46	\$0.41
Total per-Car Operating Cost per Year:	\$7,953	\$7,419	\$6,750
Total Fleet Operating Cost per Year:	\$381,762	\$356,136	\$324,007
Total Fleet Capital Cost:	\$1,406,592		

Railtech

Favorable

\$29,304		
\$27,000		
\$2,304		
\$990		
\$720		
\$270		
24	48	72
1	1	1
35.02	70.04	105.07
123.16	246.32	369.47
39.54	79.09	118.63
197.72	395.45	593.17
\$1.2	\$2.5	\$3.7
\$12.6	\$18.9	\$25.2
\$30.0	\$30.0	\$30.0
\$43.8	\$51.4	\$58.9
219	219	219
110	73	55
\$294	\$393	\$442
18.2	18.2	18.2
\$2.32	\$1.46	\$1.18
\$1.94	\$1.18	\$0.93
\$0.38	\$0.28	\$0.25
\$6,084	\$5,132	\$4,656
\$292,032	\$246,341	\$223,496
\$1,406,592		

Unfavorable

\$29,304		
\$27,000		
\$2,304		
\$2,790		
\$1,440		
\$1,350		
24	48	72
1	1	1
35.02	70.04	105.07
205.26	410.53	615.79
60.07	120.14	180.21
300.36	600.71	901.07
\$2.1	\$4.1	\$6.2
\$18.9	\$31.5	\$44.1
\$30.0	\$30.0	\$30.0
\$51.0	\$65.6	\$80.3
292	292	292
146	97	73
\$596	\$795	\$895
12.0	12.0	12.0
\$3.09	\$2.13	\$1.82
\$2.29	\$1.54	\$1.28
\$0.80	\$0.60	\$0.53
\$10,825	\$9,971	\$9,543
\$519,623	\$478,597	\$458,084
\$1,406,592		

Car Type: Coach Super

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 75

Number of Toilets: 6

Total Tank Capacity (gals): 150.0

Scenario:

Expected

Capital Cost

- Equipment:

- Installation:

\$32,592

\$30,000

\$2,592

Maintenance Cost:

- Labor:

- Spare Parts:

\$2,196

\$1,296

\$900

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

33.68

67.35

101.03

Flush Fluid Generated:

151.97

303.95

455.92

Capacity Adjustment:

46.41

92.82

139.24

Total Capacity Required per Day:

232.06

464.12

696.18

Pumpout Labor Cost:

\$1.5

\$3.0

\$4.6

Connect/Disconnect Labor Cost:

\$12.6

\$25.2

\$31.5

Cleaning Labor Cost:

\$36.0

\$36.0

\$36.0

Total Pumpout/Cleaning Cost per Day:

\$50.1

\$64.2

\$72.1

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$403

\$538

\$605

Maximum Continuous Hours of Service:

15.5

15.5

15.5

Total Operating Cost per Service Hour:

\$2.94

\$2.01

\$1.61

- Trip Related:

\$2.22

\$1.47

\$1.13

- Non-Trip Related:

\$0.72

\$0.54

\$0.48

Total per-Car Operating Cost per Year:

\$9,002

\$8,205

\$7,404

Total Fleet Operating Cost per Year:

\$819,180

\$746,622

\$673,724

Total Fleet Capital Cost:

\$2,965,872

Railtech

Favorable

\$32,592		
\$30,000		
\$2,592		
\$1,164		
\$864		
\$300		
24	48	72
1	1	1
33.68	67.35	101.03
118.42	236.84	355.26
38.02	76.05	114.07
190.12	380.24	570.36
\$1.2	\$2.4	\$3.6
\$12.6	\$18.9	\$25.2
\$36.0	\$36.0	\$36.0
\$49.8	\$57.3	\$64.8
219	219	219
110	73	55
\$283	\$378	\$425
18.9	18.9	18.9
\$2.62	\$1.63	\$1.30
\$2.18	\$1.30	\$1.01
\$0.44	\$0.33	\$0.30
\$6,898	\$5,722	\$5,134
\$627,763	\$520,711	\$467,185
\$2,965,872		

Unfavorable

\$32,592		
\$30,000		
\$2,592		
\$3,228		
\$1,728		
\$1,500		
24	48	72
1	1	1
33.68	67.35	101.03
197.37	394.74	592.11
57.76	115.52	173.28
288.80	577.61	866.41
\$2.0	\$3.9	\$5.9
\$12.6	\$25.2	\$37.8
\$36.0	\$36.0	\$36.0
\$50.6	\$65.1	\$79.7
292	292	292
146	97	73
\$573	\$765	\$860
12.5	12.5	12.5
\$3.19	\$2.21	\$1.89
\$2.27	\$1.52	\$1.27
\$0.92	\$0.69	\$0.61
\$11,185	\$10,334	\$9,908
\$1,017,854	\$940,359	\$901,611
\$2,965,872		

Car Type: **Horizon**
 Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **82**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **100.0**

Scenario: **Expected**

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	18.41	36.82	73.64
Flush Fluid Generated:	83.08	166.16	332.32
Capacity Adjustment:	25.37	50.74	101.49
Total Capacity Required per Day:	126.86	253.72	507.44
Pumpout Labor Cost:	\$0.8	\$1.7	\$3.3
Connect/Disconnect Labor Cost:	\$8.4	\$12.6	\$25.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$21.2	\$26.3	\$40.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$441	\$441	\$588
Maximum Continuous Hours of Service:	9.5	9.5	9.5
Total Operating Cost per Service Hour:	\$2.19	\$1.52	\$1.20
- Trip Related:	\$1.91	\$1.24	\$0.99
- Non-Trip Related:	\$0.28	\$0.28	\$0.21
Total per-Car Operating Cost per Year:	\$6,717	\$4,648	\$4,891
Total Fleet Operating Cost per Year:	\$691,880	\$478,716	\$503,770
Total Fleet Capital Cost:	\$1,560,656		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
12	24	48
1	1	1
18.41	36.82	73.64
64.74	129.47	258.95
20.79	41.57	83.15
103.93	207.86	415.73
\$0.6	\$1.3	\$2.6
\$8.4	\$12.6	\$21.0
\$12.0	\$12.0	\$12.0
\$21.0	\$25.9	\$35.6
219	219	219
219	110	73
\$310	\$310	\$413
11.5	11.5	11.5
\$2.03	\$1.36	\$0.98
\$1.87	\$1.20	\$0.86
\$0.16	\$0.16	\$0.12
\$5,347	\$3,573	\$3,439
\$550,732	\$368,022	\$354,193
\$1,560,656		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
12	24	48
1	1	1
18.41	36.82	73.64
107.89	215.79	431.58
31.58	63.15	126.30
157.88	315.76	631.52
\$1.1	\$2.2	\$4.3
\$8.4	\$16.8	\$29.4
\$12.0	\$12.0	\$12.0
\$21.5	\$31.0	\$45.7
292	292	292
292	146	97
\$627	\$627	\$836
7.6	7.6	7.6
\$2.33	\$1.83	\$1.40
\$1.97	\$1.47	\$1.13
\$0.36	\$0.36	\$0.27
\$8,175	\$6,423	\$6,562
\$842,007	\$661,551	\$675,848
\$1,560,656		

Car Type: Coach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 48
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	10.78	21.55	43.10
Flush Fluid Generated:	48.63	97.26	194.53
Capacity Adjustment:	14.85	29.70	59.41
Total Capacity Required per Day:	74.26	148.52	297.04
Pumpout Labor Cost:	\$0.5	\$1.0	\$1.9
Connect/Disconnect Labor Cost:	\$4.2	\$8.4	\$12.6
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.7	\$21.4	\$26.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$258	\$258	\$344
Maximum Continuous Hours of Service:	16.2	16.2	16.2
Total Operating Cost per Service Hour:	\$1.75	\$1.25	\$0.85
- Trip Related:	\$1.47	\$0.97	\$0.64
- Non-Trip Related:	\$0.28	\$0.28	\$0.21
Total per-Car Operating Cost per Year:	\$5,373	\$3,840	\$3,457
Total Fleet Operating Cost per Year:	\$419,124	\$299,550	\$269,632
Total Fleet Capital Cost:	\$1,181,856		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
12	24	48
1	1	1
10.78	21.55	43.10
37.89	75.79	151.58
12.17	24.34	48.67
60.84	121.68	243.35
\$0.4	\$0.8	\$1.5
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.6	\$21.2	\$26.1
219	219	219
219	110	73
\$181	\$181	\$242
19.7	19.7	19.7
\$1.61	\$1.11	\$0.74
\$1.45	\$0.95	\$0.61
\$0.16	\$0.16	\$0.12
\$4,240	\$2,926	\$2,576
\$330,719	\$228,227	\$200,932
\$1,181,856		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
12	24	48
1	1	1
10.78	21.55	43.10
63.16	126.32	252.63
18.48	36.97	73.93
92.42	184.83	369.67
\$0.6	\$1.3	\$2.5
\$4.2	\$8.4	\$16.8
\$12.0	\$12.0	\$12.0
\$16.8	\$21.7	\$31.3
292	292	292
292	146	97
\$367	\$367	\$489
13.0	13.0	13.0
\$1.87	\$1.37	\$1.03
\$1.51	\$1.01	\$0.76
\$0.36	\$0.36	\$0.27
\$6,558	\$4,806	\$4,814
\$511,511	\$374,855	\$375,526
\$1,181,856		

Car Type: Coach (HDCP)

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 44

Number of Toilets: 3

Total Tank Capacity (gals): 100.0

Scenario:

Expected

Capital Cost

\$18,440

- Equipment:

\$17,000

- Installation:

\$1,440

Maintenance Cost:

\$1,158

- Labor:

\$648

- Spare Parts:

\$510

Hours per Trip:

12

24

48

Trips per Day:

1

1

1

Waste Generation Data

Waste Generated:

9.88

19.76

39.51

Flush Fluid Generated:

44.58

89.16

178.32

Capacity Adjustment:

13.61

27.23

54.46

Total Capacity Required per Day:

68.07

136.14

272.28

Pumpout Labor Cost:

\$0.4

\$0.9

\$1.8

Connect/Disconnect Labor Cost:

\$4.2

\$8.4

\$12.6

Cleaning Labor Cost:

\$18.0

\$18.0

\$18.0

Total Pumpout/Cleaning Cost per Day:

\$22.6

\$27.3

\$32.4

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

128

85

Waste Disposal Cost per Year:

\$237

\$237

\$315

Maximum Continuous Hours of Service:

17.6

17.6

17.6

Total Operating Cost per Service Hour:

\$2.34

\$1.59

\$1.04

- Trip Related:

\$1.96

\$1.21

\$0.75

- Non-Trip Related:

\$0.38

\$0.38

\$0.28

Total per-Car Operating Cost per Year:

\$7,181

\$4,881

\$4,231

Total Fleet Operating Cost per Year:

\$150,791

\$102,502

\$88,858

Total Fleet Capital Cost:

\$387,240

Railtech

Favorable

Unfavorable

\$18,440		
\$17,000		
\$1,440		
\$602		
\$432		
\$170		
12	24	48
1	1	1
9.88	19.76	39.51
34.74	69.47	138.95
11.15	22.31	44.61
55.77	111.54	223.07
\$0.3	\$0.7	\$1.4
\$4.2	\$8.4	\$12.6
\$18.0	\$18.0	\$18.0
\$22.5	\$27.1	\$32.0
219	219	219
219	110	73
\$166	\$166	\$221
21.5	21.5	21.5
\$2.17	\$1.42	\$0.90
\$1.94	\$1.19	\$0.73
\$0.23	\$0.23	\$0.17
\$5,706	\$3,735	\$3,159
\$119,825	\$78,434	\$66,333
\$387,240		

\$18,440		
\$17,000		
\$1,440		
\$1,714		
\$864		
\$850		
12	24	48
1	1	1
9.88	19.76	39.51
57.89	115.79	231.58
16.94	33.89	67.77
84.72	169.43	338.86
\$0.6	\$1.2	\$2.3
\$4.2	\$8.4	\$16.8
\$18.0	\$18.0	\$18.0
\$22.8	\$27.6	\$37.1
292	292	292
292	146	97
\$336	\$336	\$449
14.2	14.2	14.2
\$2.48	\$1.73	\$1.24
\$1.99	\$1.24	\$0.87
\$0.49	\$0.49	\$0.37
\$8,702	\$6,074	\$5,775
\$182,739	\$127,551	\$121,279
\$387,240		

Car Type: Dome Coach

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 46

Number of Toilets: 2

Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	12	24	48
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	10.33	20.65	41.31
Flush Fluid Generated:	46.61	93.21	186.42
Capacity Adjustment:	14.23	28.47	56.93
Total Capacity Required per Day:	71.17	142.33	284.66
Pumpout Labor Cost:	\$0.5	\$0.9	\$1.9
Connect/Disconnect Labor Cost:	\$4.2	\$8.4	\$12.6
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.7	\$21.3	\$26.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85
Waste Disposal Cost per Year:	\$247	\$247	\$330
Maximum Continuous Hours of Service:	16.9	16.9	16.9
Total Operating Cost per Service Hour:	\$1.75	\$1.25	\$0.84
- Trip Related:	\$1.47	\$0.97	\$0.63
- Non-Trip Related:	\$0.28	\$0.28	\$0.21
Total per-Car Operating Cost per Year:	\$5,357	\$3,824	\$3,436
Total Fleet Operating Cost per Year:	\$64,290	\$45,824	\$41,227
Total Fleet Capital Cost:	\$181,824		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
12	24	48
1	1	1
10.33	20.65	41.31
36.32	72.63	145.26
11.66	23.32	46.64
58.30	116.61	233.21
\$0.4	\$0.7	\$1.5
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.6	\$21.1	\$26.1
219	219	219
219	110	73
\$174	\$174	\$232
20.6	20.6	20.6
\$1.61	\$1.11	\$0.73
\$1.45	\$0.95	\$0.61
\$0.16	\$0.16	\$0.12
\$4,229	\$2,915	\$2,561
\$50,748	\$34,980	\$30,737
\$181,824		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
12	24	48
1	1	1
10.33	20.65	41.31
60.53	121.05	242.11
17.71	35.43	70.85
88.57	177.13	354.27
\$0.6	\$1.2	\$2.4
\$4.2	\$8.4	\$16.8
\$12.0	\$12.0	\$12.0
\$16.8	\$21.6	\$31.2
292	292	292
292	146	97
\$352	\$352	\$469
13.5	13.5	13.5
\$1.86	\$1.36	\$1.02
\$1.50	\$1.00	\$0.75
\$0.36	\$0.36	\$0.27
\$6,535	\$4,783	\$4,784
\$78,418	\$57,394	\$57,406
\$181,824		

Car Type:
Toilet Type:

Amlounge II
WTS 8300

Manufacturer:

Number of Passengers: 49
Number of Toilets: 2
Total Tank Capacity (gals): 100.0

Scenario:

Expected

Capital Cost
- Equipment:
- Installation:

\$15,152
\$14,000
\$1,152

Maintenance Cost:
- Labor:
- Spare Parts:

\$852
\$432
\$420

Hours per Trip:
Trips per Day:

12	24	48
1	1	1

Waste Generation Data

Waste Generated:

11.00	22.00	44.00
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Flush Fluid Generated:

49.64	99.29	198.58
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Capacity Adjustment:

15.16	30.32	60.65
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Total Capacity Required per Day:

75.81	151.61	303.23
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Pumpout Labor Cost:

\$0.5	\$1.0	\$2.0
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Connect/Disconnect Labor Cost:

\$4.2	\$8.4	\$16.8
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Cleaning Labor Cost:

\$12.0	\$12.0	\$12.0
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Total Pumpout/Cleaning Cost per Day:

\$16.7	\$21.4	\$30.8
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Days Operated per Year:

255	255	255
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Clean-out Cycles per Year:

255	128	85
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Waste Disposal Cost per Year:

\$263	\$263	\$351
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Maximum Continuous Hours of Service:

15.8	15.8	15.8
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Total Operating Cost per Service Hour:

\$1.76	\$1.26	\$0.94
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- Trip Related:

\$1.48	\$0.98	\$0.73
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- Non-Trip Related:

\$0.28	\$0.28	\$0.21
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Total per-Car Operating Cost per Year:

\$5,381	\$3,848	\$3,825
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Total Fleet Operating Cost per Year:

\$134,534	\$96,209	\$95,628
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Total Fleet Capital Cost:

\$378,800

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
12	24	48
1	1	1
11.00	22.00	44.00
38.68	77.37	154.74
12.42	24.84	49.68
62.11	124.21	248.42
\$0.4	\$0.8	\$1.5
\$4.2	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$16.6	\$21.2	\$26.1
219	219	219
219	110	73
\$185	\$185	\$247
19.3	19.3	19.3
\$1.62	\$1.12	\$0.74
\$1.45	\$0.95	\$0.62
\$0.16	\$0.16	\$0.12
\$4,245	\$2,931	\$2,583
\$106,137	\$73,237	\$64,585
\$378,800		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
12	24	48
1	1	1
11.00	22.00	44.00
64.47	128.95	257.89
18.87	37.74	75.47
94.34	188.69	377.37
\$0.6	\$1.3	\$2.6
\$4.2	\$8.4	\$16.8
\$12.0	\$12.0	\$12.0
\$16.8	\$21.7	\$31.4
292	292	292
292	146	97
\$375	\$375	\$500
12.7	12.7	12.7
\$1.87	\$1.37	\$1.03
\$1.51	\$1.01	\$0.76
\$0.36	\$0.36	\$0.27
\$6,569	\$4,817	\$4,830
\$164,233	\$120,433	\$120,744
\$378,800		

Car Type: **Sleeper 10-6**

Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **22**

Number of Toilets: **17**

Total Tank Capacity (gals): **450.0**

Scenario: **Expected**

Capital Cost **\$94,488**
- Equipment: **\$87,000**
- Installation: **\$7,488**

Maintenance Cost: **\$6,282**
- Labor: **\$3,672**
- Spare Parts: **\$2,610**

Hours per Trip:	12	24	48
Trips per Day:	1	1	1

Waste Generation Data

<u>Waste Generated:</u>	4.94	9.88	19.76
Flush Fluid Generated:	22.29	44.58	89.16
Capacity Adjustment:	6.81	13.61	27.23
Total Capacity Required per Day:	34.04	68.07	136.14

Pumpout Labor Cost:	\$0.2	\$0.4	\$0.9
Connect/Disconnect Labor Cost:	\$18.9	\$18.9	\$18.9
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$121.1	\$121.3	\$121.8

Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	128	85

Waste Disposal Cost per Year:	\$118	\$118	\$158
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Maximum Continuous Hours of Service:	158.7	158.7	158.7
Total Operating Cost per Service Hour:	\$12.18	\$7.14	\$4.11
- Trip Related:	\$10.13	\$5.09	\$2.58
- Non-Trip Related:	\$2.05	\$2.05	\$1.54

Total per-Car Operating Cost per Year:	\$37,347	\$21,902	\$16,812
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Total Fleet Operating Cost per Year:	\$2,062,468	\$1,795,980	\$1,378,606
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Total Fleet Capital Cost:	\$7,748,016
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Railtech

Favorable

Unfavorable

\$94,488		
\$87,000		
\$7,488		
\$3,318		
\$2,448		
\$870		
12	24	48
1	1	1
4.94	9.88	19.76
17.37	34.74	69.47
5.58	11.15	22.31
27.88	55.77	111.54
\$0.2	\$0.3	\$0.7
\$18.9	\$18.9	\$18.9
\$102.0	\$102.0	\$102.0
\$121.1	\$121.2	\$121.6
219	219	219
219	110	73
\$83	\$83	\$111
193.7	193.7	193.7
\$11.38	\$6.35	\$3.51
\$10.12	\$5.08	\$2.56
\$1.26	\$1.26	\$0.95
\$29,916	\$16,678	\$12,305
\$2,453,127	\$1,367,566	\$1,009,022
\$7,748,016		

\$94,488		
\$87,000		
\$7,488		
\$9,246		
\$4,896		
\$4,350		
12	24	48
1	1	1
4.94	9.88	19.76
28.95	57.89	115.79
8.47	16.94	33.89
42.36	84.72	169.43
\$0.3	\$0.6	\$1.2
\$18.9	\$18.9	\$18.9
\$102.0	\$102.0	\$102.0
\$121.2	\$121.5	\$122.1
292	292	292
292	146	97
\$168	\$168	\$224
127.5	127.5	127.5
\$12.79	\$7.75	\$4.57
\$10.15	\$5.11	\$2.59
\$2.64	\$2.64	\$1.98
\$44,802	\$27,150	\$21,351
\$3,673,726	\$2,226,311	\$1,750,748
\$7,748,016		

Car Type: **Amcoach II**
 Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **59**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **100.0**

Scenario: **Expected**

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	26.49	52.98	79.47
Flush Fluid Generated:	119.55	239.11	358.66
Capacity Adjustment:	36.51	73.02	109.53
Total Capacity Required per Day:	182.55	365.11	547.66
Pumpout Labor Cost:	\$1.2	\$2.4	\$3.6
Connect/Disconnect Labor Cost:	\$8.4	\$16.8	\$25.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$21.6	\$31.2	\$40.8
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$317	\$423	\$476
Maximum Continuous Hours of Service:	13.1	13.1	13.1
Total Operating Cost per Service Hour:	\$1.28	\$0.96	\$0.86
- Trip Related:	\$1.00	\$0.75	\$0.67
- Non-Trip Related:	\$0.28	\$0.21	\$0.19
Total per-Car Operating Cost per Year:	\$3,928	\$3,931	\$3,933
Total Fleet Operating Cost per Year:	\$467,432	\$467,828	\$468,027
Total Fleet Capital Cost:	\$1,803,088		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
24	48	72
1	1	1
26.49	52.98	79.47
93.16	186.32	279.47
29.91	59.82	89.74
149.56	299.12	448.68
\$0.9	\$1.9	\$2.8
\$8.4	\$12.6	\$21.0
\$12.0	\$12.0	\$12.0
\$21.3	\$26.5	\$35.8
219	219	219
110	73	55
\$223	\$297	\$334
16.0	16.0	16.0
\$1.14	\$0.76	\$0.69
\$0.97	\$0.64	\$0.58
\$0.16	\$0.12	\$0.11
\$2,987	\$2,657	\$2,722
\$355,398	\$316,157	\$323,900
\$1,803,088		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
24	48	72
1	1	1
26.49	52.98	79.47
155.26	310.53	465.79
45.44	90.88	136.32
227.19	454.39	681.58
\$1.6	\$3.1	\$4.7
\$12.6	\$21.0	\$29.4
\$12.0	\$12.0	\$12.0
\$26.2	\$36.1	\$46.1
292	292	292
146	97	73
\$451	\$601	\$677
10.6	10.6	10.6
\$1.58	\$1.15	\$1.01
\$1.22	\$0.88	\$0.77
\$0.36	\$0.27	\$0.24
\$5,545	\$5,392	\$5,315
\$659,902	\$641,616	\$632,473
\$1,803,088		

Car Type: Slumbercoach 24-8

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 40

Number of Toilets: 32

Total Tank Capacity (gals): 800.0

Scenario: Expected

Capital Cost

- Equipment:

- Installation:

\$173,824

\$160,000

\$13,824

Maintenance Cost:

- Labor:

- Spare Parts:

\$11,712

\$6,912

\$4,800

Hours per Trip:

Trips per Day:

24

1

48

1

72

1

Waste Generation Data

Waste Generated:

17.96

35.92

53.88

Flush Fluid Generated:

81.05

162.11

243.16

Capacity Adjustment:

24.75

49.51

74.26

Total Capacity Required per Day:

123.77

247.53

371.30

Pumpout Labor Cost:

\$0.8

\$1.6

\$2.4

Connect/Disconnect Labor Cost:

\$33.6

\$33.6

\$33.6

Cleaning Labor Cost:

\$192.0

\$192.0

\$192.0

Total Pumpout/Cleaning Cost per Day:

\$226.4

\$227.2

\$228.0

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

128

85

64

Waste Disposal Cost per Year:

\$215

\$287

\$323

Maximum Continuous Hours of Service:

155.1

155.1

155.1

Total Operating Cost per Service Hour:

\$13.32

\$7.67

\$5.78

- Trip Related:

\$9.50

\$4.80

\$3.24

- Non-Trip Related:

\$3.82

\$2.86

\$2.55

Total per-Car Operating Cost per Year:

\$40,851

\$31,350

\$26,600

Total Fleet Operating Cost per Year:

\$653,616

\$501,606

\$425,501

Total Fleet Capital Cost:

\$2,781,184

Railtech

Favorable

Unfavorable

\$173,824		
\$160,000		
\$13,824		
\$6,208		
\$4,608		
\$1,600		
24	48	72
1	1	1
17.96	35.92	53.88
63.16	126.32	189.47
20.28	40.56	60.84
101.40	202.79	304.19
\$0.6	\$1.3	\$1.9
\$33.6	\$33.6	\$33.6
\$192.0	\$192.0	\$192.0
\$226.2	\$226.9	\$227.5
219	219	219
110	73	55
\$151	\$201	\$227
189.4	189.4	189.4
\$11.85	\$6.56	\$4.79
\$9.48	\$4.78	\$3.22
\$2.36	\$1.77	\$1.57
\$31,131	\$22,970	\$18,890
\$498,102	\$367,526	\$302,237
\$2,781,184		

\$173,824		
\$160,000		
\$13,824		
\$17,216		
\$9,216		
\$8,000		
24	48	72
1	1	1
17.96	35.92	53.88
105.26	210.53	315.79
30.81	61.61	92.42
154.03	308.06	462.09
\$1.1	\$2.1	\$3.2
\$33.6	\$33.6	\$33.6
\$192.0	\$192.0	\$192.0
\$226.7	\$227.7	\$228.8
292	292	292
146	97	73
\$306	\$408	\$459
124.7	124.7	124.7
\$14.44	\$8.52	\$6.54
\$9.53	\$4.83	\$3.26
\$4.91	\$3.68	\$3.28
\$50,613	\$39,787	\$34,374
\$809,810	\$636,594	\$549,985
\$2,781,184		

Car Type: Viewliner-Sleeper
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 34
 Number of Toilets: 17
 Total Tank Capacity (gals): 450.0

Scenario: Expected

Capital Cost	\$94,488		
- Equipment:	\$87,000		
- Installation:	\$7,488		
Maintenance Cost:	\$6,282		
- Labor:	\$3,672		
- Spare Parts:	\$2,610		
Hours per Trip:	24	48	72
Trips per Day:	1	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.27	30.53	45.80
Flush Fluid Generated:	68.89	137.79	206.68
Capacity Adjustment:	21.04	42.08	63.12
Total Capacity Required per Day:	105.20	210.40	315.60
Pumpout Labor Cost:	\$0.7	\$1.4	\$2.1
Connect/Disconnect Labor Cost:	\$18.9	\$18.9	\$18.9
Cleaning Labor Cost:	\$102.0	\$102.0	\$102.0
Total Pumpout/Cleaning Cost per Day:	\$121.6	\$122.3	\$123.0
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	128	85	64
Waste Disposal Cost per Year:	\$183	\$244	\$274
Maximum Continuous Hours of Service:	102.7	102.7	102.7
Total Operating Cost per Service Hour:	\$7.17	\$4.14	\$3.13
- Trip Related:	\$5.13	\$2.61	\$1.77
- Non-Trip Related:	\$2.05	\$1.54	\$1.37
Total per-Car Operating Cost per Year:	\$21,998	\$16,940	\$14,411
Total Fleet Operating Cost per Year:	\$43,996	\$33,879	\$28,821
Total Fleet Capital Cost:	\$188,976		

Railtech

Favorable

Unfavorable

\$94,488		
\$87,000		
\$7,488		
\$3,318		
\$2,448		
\$870		
24	48	72
1	1	1
15.27	30.53	45.80
53.68	107.37	161.05
17.24	34.48	51.71
86.19	172.38	258.56
\$0.5	\$1.1	\$1.6
\$18.9	\$18.9	\$18.9
\$102.0	\$102.0	\$102.0
\$121.4	\$122.0	\$122.5
219	219	219
110	73	55
\$128	\$171	\$193
125.3	125.3	125.3
\$6.37	\$3.54	\$2.59
\$5.11	\$2.59	\$1.75
\$1.26	\$0.95	\$0.84
\$16,744	\$12,393	\$10,218
\$33,487	\$24,786	\$20,436
\$188,976		

\$94,488		
\$87,000		
\$7,488		
\$9,246		
\$4,896		
\$4,350		
24	48	72
1	1	1
15.27	30.53	45.80
89.47	178.95	268.42
26.18	52.37	78.55
130.92	261.85	392.77
\$0.9	\$1.8	\$2.7
\$18.9	\$18.9	\$18.9
\$102.0	\$102.0	\$102.0
\$121.8	\$122.7	\$123.6
292	292	292
146	97	73
\$260	\$347	\$390
82.5	82.5	82.5
\$7.79	\$4.61	\$3.55
\$5.15	\$2.63	\$1.79
\$2.64	\$1.98	\$1.76
\$27,288	\$21,534	\$18,658
\$54,576	\$43,069	\$37,315
\$188,976		

Car Type: Amcafe
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 53
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	15.86	15.86	23.80
Flush Fluid Generated:	71.60	71.60	107.39
Capacity Adjustment:	21.87	21.87	32.80
Total Capacity Required per Day:	109.33	109.33	163.99
Pumpout Labor Cost:	\$0.7	\$0.7	\$1.1
Connect/Disconnect Labor Cost:	\$8.4	\$8.4	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$21.1	\$21.1	\$21.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$380	\$380	\$285
Maximum Continuous Hours of Service:	14.6	14.6	14.6
Total Operating Cost per Service Hour:	\$1.62	\$1.62	\$1.27
- Trip Related:	\$1.41	\$1.41	\$0.99
- Non-Trip Related:	\$0.21	\$0.21	\$0.28
Total per-Car Operating Cost per Year:	\$6,627	\$6,627	\$3,880
Total Fleet Operating Cost per Year:	\$298,216	\$298,216	\$174,610
Total Fleet Capital Cost:	\$681,840		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
8	16	24
2	1	1
15.86	15.86	23.80
55.79	55.79	83.68
17.91	17.91	26.87
89.57	89.57	134.35
\$0.6	\$0.6	\$0.8
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.8	\$16.8	\$21.2
219	219	219
219	219	110
\$267	\$267	\$200
17.9	17.9	17.9
\$1.25	\$1.25	\$1.12
\$1.12	\$1.12	\$0.96
\$0.12	\$0.12	\$0.16
\$4,365	\$4,365	\$2,954
\$196,414	\$196,414	\$132,908
\$681,840		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
8	16	24
2	1	1
15.86	15.86	23.80
92.98	92.98	139.47
27.21	27.21	40.82
136.06	136.06	204.09
\$0.9	\$0.9	\$1.4
\$8.4	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$21.3	\$21.3	\$26.0
292	292	292
292	292	146
\$540	\$540	\$405
11.8	11.8	11.8
\$1.72	\$1.72	\$1.56
\$1.45	\$1.45	\$1.20
\$0.27	\$0.27	\$0.36
\$8,045	\$8,045	\$5,476
\$362,008	\$362,008	\$246,441
\$681,840		

Car Type: Amcoach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 84
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	25.14	25.14	37.72
Flush Fluid Generated:	113.47	113.47	170.21
Capacity Adjustment:	34.65	34.65	51.98
Total Capacity Required per Day:	173.27	173.27	259.91
Pumpout Labor Cost:	\$1.1	\$1.1	\$1.7
Connect/Disconnect Labor Cost:	\$8.4	\$8.4	\$12.6
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$21.5	\$21.5	\$26.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$602	\$602	\$452
Maximum Continuous Hours of Service:	9.2	9.2	9.2
Total Operating Cost per Service Hour:	\$1.70	\$1.70	\$1.52
- Trip Related:	\$1.49	\$1.49	\$1.24
- Non-Trip Related:	\$0.21	\$0.21	\$0.28
Total per-Car Operating Cost per Year:	\$6,956	\$6,956	\$4,664
Total Fleet Operating Cost per Year:	\$1,850,352	\$1,850,352	\$1,240,533
Total Fleet Capital Cost:	\$4,030,432		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
8	16	24
2	1	1
25.14	25.14	37.72
88.42	88.42	132.63
28.39	28.39	42.59
141.96	141.96	212.93
\$0.9	\$0.9	\$1.3
\$8.4	\$8.4	\$12.6
\$12.0	\$12.0	\$12.0
\$21.3	\$21.3	\$25.9
219	219	219
219	219	110
\$423	\$423	\$317
11.3	11.3	11.3
\$1.57	\$1.57	\$1.36
\$1.45	\$1.45	\$1.20
\$0.12	\$0.12	\$0.16
\$5,512	\$5,512	\$3,584
\$1,466,204	\$1,466,204	\$953,353
\$4,030,432		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
8	16	24
2	1	1
25.14	25.14	37.72
147.37	147.37	221.05
43.13	43.13	64.69
215.64	215.64	323.46
\$1.5	\$1.5	\$2.2
\$12.6	\$12.6	\$16.8
\$12.0	\$12.0	\$12.0
\$26.1	\$26.1	\$31.0
292	292	292
292	292	146
\$856	\$856	\$642
7.4	7.4	7.4
\$2.09	\$2.09	\$1.84
\$1.81	\$1.81	\$1.48
\$0.27	\$0.27	\$0.36
\$9,746	\$9,746	\$6,446
\$2,592,401	\$2,592,401	\$1,714,583
\$4,030,432		

Car Type: Amclub
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 41
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	8	16	24
Trips per Day:	2	1	1
Waste Generation Data			
<u>Waste Generated:</u>	12.27	12.27	18.41
Flush Fluid Generated:	55.39	55.39	83.08
Capacity Adjustment:	16.91	16.91	25.37
Total Capacity Required per Day:	84.57	84.57	126.86
Pumpout Labor Cost:	\$0.6	\$0.6	\$0.8
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.8	\$16.8	\$21.2
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	128
Waste Disposal Cost per Year:	\$294	\$294	\$220
Maximum Continuous Hours of Service:	18.9	18.9	18.9
Total Operating Cost per Service Hour:	\$1.33	\$1.33	\$1.23
- Trip Related:	\$1.12	\$1.12	\$0.96
- Non-Trip Related:	\$0.21	\$0.21	\$0.28
Total per-Car Operating Cost per Year:	\$5,426	\$5,426	\$3,785
Total Fleet Operating Cost per Year:	\$130,236	\$130,236	\$90,831
Total Fleet Capital Cost:	\$363,648		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
8	16	24
2	1	1
12.27	12.27	18.41
43.16	43.16	64.74
13.86	13.86	20.79
69.29	69.29	103.93
\$0.4	\$0.4	\$0.6
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.6	\$16.6	\$21.0
219	219	219
219	219	110
\$206	\$206	\$155
23.1	23.1	23.1
\$1.22	\$1.22	\$1.10
\$1.10	\$1.10	\$0.94
\$0.12	\$0.12	\$0.16
\$4,277	\$4,277	\$2,887
\$102,640	\$102,640	\$69,299
\$363,648		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
8	16	24
2	1	1
12.27	12.27	18.41
71.93	71.93	107.89
21.05	21.05	31.58
105.25	105.25	157.88
\$0.7	\$0.7	\$1.1
\$8.4	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$21.1	\$21.1	\$21.5
292	292	292
292	292	146
\$418	\$418	\$313
15.2	15.2	15.2
\$1.68	\$1.68	\$1.35
\$1.41	\$1.41	\$0.98
\$0.27	\$0.27	\$0.36
\$7,861	\$7,861	\$4,725
\$188,660	\$188,660	\$113,410
\$363,648		

Car Type: Met-Srvc Dinette
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 23
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	19.42	23.30	27.19
Capacity Adjustment:	5.93	7.12	8.30
Total Capacity Required per Day:	29.65	35.58	41.51
Pumpout Labor Cost:	\$0.2	\$0.2	\$0.3
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.4	\$16.4	\$16.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$103	\$124	\$144
Maximum Continuous Hours of Service:	33.7	33.7	33.7
Total Operating Cost per Service Hour:	\$2.01	\$1.69	\$1.46
- Trip Related:	\$1.68	\$1.41	\$1.22
- Non-Trip Related:	\$0.33	\$0.28	\$0.24
Total per-Car Operating Cost per Year:	\$5,144	\$5,174	\$5,205
Total Fleet Operating Cost per Year:	\$66,869	\$67,266	\$67,663
Total Fleet Capital Cost:	\$196,976		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
4.30	5.16	6.02
15.13	18.16	21.18
4.86	5.83	6.80
24.29	29.15	34.01
\$0.2	\$0.2	\$0.2
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.4	\$16.4	\$16.4
219	219	219
219	219	219
\$72	\$87	\$101
41.2	41.2	41.2
\$1.86	\$1.56	\$1.34
\$1.67	\$1.40	\$1.21
\$0.20	\$0.16	\$0.14
\$4,081	\$4,102	\$4,123
\$53,057	\$53,331	\$53,605
\$196,976		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
4.30	5.16	6.02
25.22	30.26	35.31
7.38	8.86	10.33
36.90	44.28	51.66
\$0.3	\$0.3	\$0.4
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.5	\$16.5	\$16.6
292	292	292
292	292	292
\$147	\$176	\$205
27.1	27.1	27.1
\$2.13	\$1.79	\$1.54
\$1.70	\$1.43	\$1.23
\$0.44	\$0.36	\$0.31
\$6,227	\$6,271	\$6,315
\$80,946	\$81,518	\$82,091
\$196,976		

Car Type: Met-Srvc Coach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 60
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost
 - Equipment: \$15,152
 - Installation: \$14,000
 \$1,152

Maintenance Cost: \$852
 - Labor: \$432
 - Spare Parts: \$420

Hours per Trip: 2 12 7
 Trips per Day: 5 1 2

Waste Generation Data

Waste Generated: 11.23 13.47 15.72
 Flush Fluid Generated: 50.66 60.79 70.92
 Capacity Adjustment: 15.47 18.56 21.66
 Total Capacity Required per Day: 77.35 92.82 108.30

Pumpout Labor Cost: \$0.5 \$0.6 \$0.7
 Connect/Disconnect Labor Cost: \$4.2 \$4.2 \$8.4
 Cleaning Labor Cost: \$12.0 \$12.0 \$12.0
 Total Pumpout/Cleaning Cost per Day: \$16.7 \$16.8 \$21.1

Days Operated per Year: 255 255 255
 Clean-out Cycles per Year: 255 255 255

Waste Disposal Cost per Year: \$269 \$323 \$376

Maximum Continuous Hours of Service: 12.9 12.9 12.9
 Total Operating Cost per Service Hour: \$2.11 \$1.78 \$1.85
 - Trip Related: \$1.78 \$1.51 \$1.61
 - Non-Trip Related: \$0.33 \$0.28 \$0.24

Total per-Car Operating Cost per Year: \$5,389 \$5,469 \$6,622

Total Fleet Operating Cost per Year: \$269,466 \$273,448 \$331,085

Total Fleet Capital Cost: \$757,600

Railtech

Favorable

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
11.23	13.47	15.72
39.47	47.37	55.26
12.67	15.21	17.74
63.37	76.05	88.72
\$0.4	\$0.5	\$0.6
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.6	\$16.7	\$16.8
219	219	219
219	219	219
\$189	\$227	\$264
15.8	15.8	15.8
\$1.94	\$1.64	\$1.42
\$1.75	\$1.48	\$1.28
\$0.20	\$0.16	\$0.14
\$4,251	\$4,306	\$4,361
\$212,550	\$215,302	\$218,054
\$757,600		

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
11.23	13.47	15.72
65.79	78.95	92.11
19.25	23.10	26.96
96.27	115.52	134.78
\$0.7	\$0.8	\$0.9
\$4.2	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$16.9	\$21.2	\$21.3
292	292	292
292	292	292
\$382	\$459	\$535
10.4	10.4	10.4
\$2.25	\$2.26	\$1.97
\$1.82	\$1.90	\$1.65
\$0.44	\$0.36	\$0.31
\$6,581	\$7,922	\$8,037
\$329,040	\$396,104	\$401,848
\$757,600		

Car Type: Met-Srvc Club
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 33
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	6.17	7.41	8.64
Flush Fluid Generated:	27.86	33.43	39.01
Capacity Adjustment:	8.51	10.21	11.91
Total Capacity Required per Day:	42.54	51.05	59.56
Pumpout Labor Cost:	\$0.3	\$0.3	\$0.4
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.5	\$16.5	\$16.6
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$148	\$177	\$207
Maximum Continuous Hours of Service:	23.5	23.5	23.5
Total Operating Cost per Service Hour:	\$2.04	\$1.71	\$1.48
- Trip Related:	\$1.71	\$1.44	\$1.24
- Non-Trip Related:	\$0.33	\$0.28	\$0.24
Total per-Car Operating Cost per Year:	\$5,210	\$5,254	\$5,298
Total Fleet Operating Cost per Year:	\$67,732	\$68,301	\$68,870
Total Fleet Capital Cost:	\$196,976		

Railtech

Favorable

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
6.17	7.41	8.64
21.71	26.05	30.39
6.97	8.37	9.76
34.86	41.83	48.80
\$0.2	\$0.3	\$0.3
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.4	\$16.5	\$16.5
219	219	219
219	219	219
\$104	\$125	\$145
28.7	28.7	28.7
\$1.88	\$1.58	\$1.37
\$1.69	\$1.42	\$1.23
\$0.20	\$0.16	\$0.14
\$4,127	\$4,157	\$4,188
\$53,653	\$54,047	\$54,440
\$196,976		

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
6.17	7.41	8.64
36.18	43.42	50.66
10.59	12.71	14.83
52.95	63.54	74.13
\$0.4	\$0.4	\$0.5
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.6	\$16.6	\$16.7
292	292	292
292	292	292
\$210	\$252	\$294
18.9	18.9	18.9
\$2.17	\$1.82	\$1.58
\$1.73	\$1.46	\$1.27
\$0.44	\$0.36	\$0.31
\$6,322	\$6,386	\$6,449
\$82,190	\$83,012	\$83,833
\$196,976		

Car Type: **Amdinette**
 Toilet Type: **WTS 8300**

Manufacturer:

Number of Passengers: **23**
 Number of Toilets: **2**
 Total Tank Capacity (gals): **100.0**

Scenario: **Expected**

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	4.30	5.16	6.02
Flush Fluid Generated:	19.42	23.30	27.19
Capacity Adjustment:	5.93	7.12	8.30
Total Capacity Required per Day:	29.65	35.58	41.51
Pumpout Labor Cost:	\$0.2	\$0.2	\$0.3
Connect/Disconnect Labor Cost:	\$4.2	\$4.2	\$4.2
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.4	\$16.4	\$16.5
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$103	\$124	\$144
Maximum Continuous Hours of Service:	33.7	33.7	33.7
Total Operating Cost per Service Hour:	\$2.01	\$1.69	\$1.46
- Trip Related:	\$1.68	\$1.41	\$1.22
- Non-Trip Related:	\$0.33	\$0.28	\$0.24
Total per-Car Operating Cost per Year:	\$5,144	\$5,174	\$5,205
Total Fleet Operating Cost per Year:	\$127,594	\$129,357	\$130,120
Total Fleet Capital Cost:	\$378,800		

Favorable

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
4.30	5.16	6.02
15.13	18.16	21.18
4.86	5.83	6.80
24.29	29.15	34.01
\$0.2	\$0.2	\$0.2
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.4	\$16.4	\$16.4
219	219	219
219	219	219
\$72	\$87	\$101
41.2	41.2	41.2
\$1.86	\$1.56	\$1.34
\$1.67	\$1.40	\$1.21
\$0.20	\$0.16	\$0.14
\$4,081	\$4,102	\$4,123
\$102,032	\$102,560	\$103,087
\$378,800		

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
4.30	5.16	6.02
25.22	30.26	35.31
7.38	8.86	10.33
36.90	44.28	51.66
\$0.3	\$0.3	\$0.4
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.5	\$16.5	\$16.6
292	292	292
292	292	292
\$147	\$176	\$205
27.1	27.1	27.1
\$2.13	\$1.79	\$1.54
\$1.70	\$1.43	\$1.23
\$0.44	\$0.36	\$0.31
\$6,227	\$6,271	\$6,315
\$155,665	\$156,766	\$157,867
\$378,800		

Car Type: Amcoach

Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 60

Number of Toilets: 2

Total Tank Capacity (gals): 100.0

Scenario:

Expected

Capital Cost

\$15,152

- Equipment:

\$14,000

- Installation:

\$1,152

Maintenance Cost:

\$852

- Labor:

\$432

- Spare Parts:

\$420

Hours per Trip:

2

12

7

Trips per Day:

5

1

2

Waste Generation Data

Waste Generated:

11.23

13.47

15.72

Flush Fluid Generated:

50.66

60.79

70.92

Capacity Adjustment:

15.47

18.56

21.66

Total Capacity Required per Day:

77.35

92.82

108.30

Pumpout Labor Cost:

\$0.5

\$0.6

\$0.7

Connect/Disconnect Labor Cost:

\$4.2

\$4.2

\$8.4

Cleaning Labor Cost:

\$12.0

\$12.0

\$12.0

Total Pumpout/Cleaning Cost per Day:

\$16.7

\$16.8

\$21.1

Days Operated per Year:

255

255

255

Clean-out Cycles per Year:

255

255

255

Waste Disposal Cost per Year:

\$269

\$323

\$376

Maximum Continuous Hours of Service:

12.9

12.9

12.9

Total Operating Cost per Service Hour:

\$2.11

\$1.78

\$1.85

- Trip Related:

\$1.78

\$1.51

\$1.61

- Non-Trip Related:

\$0.33

\$0.28

\$0.24

Total per-Car Operating Cost per Year:

\$5,389

\$5,469

\$6,622

Total Fleet Operating Cost per Year:

\$167,069

\$169,538

\$205,273

Total Fleet Capital Cost:

\$469,712

Railtech

Favorable

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
11.23	13.47	15.72
39.47	47.37	55.26
12.67	15.21	17.74
63.37	76.05	88.72
\$0.4	\$0.5	\$0.6
\$4.2	\$4.2	\$4.2
\$12.0	\$12.0	\$12.0
\$16.6	\$16.7	\$16.8
219	219	219
219	219	219
\$189	\$227	\$264
15.8	15.8	15.8
\$1.94	\$1.64	\$1.42
\$1.75	\$1.48	\$1.28
\$0.20	\$0.16	\$0.14
\$4,251	\$4,306	\$4,361
\$131,781	\$133,487	\$135,193
\$469,712		

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
11.23	13.47	15.72
65.79	78.95	92.11
19.25	23.10	26.96
96.27	115.52	134.78
\$0.7	\$0.8	\$0.9
\$4.2	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$16.9	\$21.2	\$21.3
292	292	292
292	292	292
\$382	\$459	\$535
10.4	10.4	10.4
\$2.25	\$2.26	\$1.97
\$1.82	\$1.90	\$1.65
\$0.44	\$0.36	\$0.31
\$6,581	\$7,922	\$8,037
\$204,005	\$245,585	\$249,146
\$469,712		

Car Type: Turbo Power Club
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 27
 Number of Toilets: 1
 Total Tank Capacity (gals): 50.0

Scenario: Expected

Capital Cost	\$7,576		
- Equipment:	\$7,000		
- Installation:	\$576		
Maintenance Cost:	\$426		
- Labor:	\$216		
- Spare Parts:	\$210		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	5.05	6.06	7.07
Flush Fluid Generated:	22.80	27.36	31.91
Capacity Adjustment:	6.96	8.35	9.75
Total Capacity Required per Day:	34.81	41.77	48.73
Pumpout Labor Cost:	\$0.2	\$0.3	\$0.3
Connect/Disconnect Labor Cost:	\$2.1	\$2.1	\$2.1
Cleaning Labor Cost:	\$6.0	\$6.0	\$6.0
Total Pumpout/Cleaning Cost per Day:	\$8.3	\$8.4	\$8.4
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$121	\$145	\$169
Maximum Continuous Hours of Service:	14.4	14.4	14.4
Total Operating Cost per Service Hour:	\$1.05	\$0.88	\$0.77
- Trip Related:	\$0.88	\$0.75	\$0.65
- Non-Trip Related:	\$0.17	\$0.14	\$0.12
Total per-Car Operating Cost per Year:	\$2,675	\$2,711	\$2,746
Total Fleet Operating Cost per Year:	\$16,048	\$16,264	\$16,479
Total Fleet Capital Cost:	\$45,456		

Railtech

Favorable

Unfavorable

\$7,576		
\$7,000		
\$576		
\$214		
\$144		
\$70		
2	12	7
5	1	2
5.05	6.06	7.07
17.76	21.32	24.87
5.70	6.84	7.99
28.52	34.22	39.93
\$0.2	\$0.2	\$0.2
\$2.1	\$2.1	\$2.1
\$6.0	\$6.0	\$6.0
\$8.3	\$8.3	\$8.3
219	219	219
219	219	219
\$85	\$102	\$119
17.5	17.5	17.5
\$0.96	\$0.81	\$0.70
\$0.87	\$0.73	\$0.64
\$0.10	\$0.08	\$0.07
\$2,112	\$2,137	\$2,161
\$12,670	\$12,819	\$12,968
\$45,456		

\$7,576		
\$7,000		
\$576		
\$638		
\$288		
\$350		
2	12	7
5	1	2
5.05	6.06	7.07
29.61	35.53	41.45
8.66	10.40	12.13
43.32	51.98	60.65
\$0.3	\$0.4	\$0.4
\$2.1	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$8.4	\$10.6	\$10.6
292	292	292
292	292	292
\$172	\$206	\$241
11.5	11.5	11.5
\$1.12	\$1.12	\$0.97
\$0.90	\$0.94	\$0.82
\$0.22	\$0.18	\$0.16
\$3,262	\$3,927	\$3,978
\$19,570	\$23,559	\$23,870
\$45,456		

Car Type: Turbo Coach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 72
 Number of Toilets: 2
 Total Tank Capacity (gals): 100.0

Scenario: Expected

Capital Cost	\$15,152		
- Equipment:	\$14,000		
- Installation:	\$1,152		
Maintenance Cost:	\$852		
- Labor:	\$432		
- Spare Parts:	\$420		
Hours per Trip:	2	12	7
Trips per Day:	5	1	2
Waste Generation Data			
<u>Waste Generated:</u>	13.47	16.16	18.86
Flush Fluid Generated:	60.79	72.95	85.11
Capacity Adjustment:	18.56	22.28	25.99
Total Capacity Required per Day:	92.82	111.39	129.95
Pumpout Labor Cost:	\$0.6	\$0.7	\$0.9
Connect/Disconnect Labor Cost:	\$4.2	\$8.4	\$8.4
Cleaning Labor Cost:	\$12.0	\$12.0	\$12.0
Total Pumpout/Cleaning Cost per Day:	\$16.8	\$21.1	\$21.3
Days Operated per Year:	255	255	255
Clean-out Cycles per Year:	255	255	255
Waste Disposal Cost per Year:	\$323	\$387	\$452
Maximum Continuous Hours of Service:	10.8	10.8	10.8
Total Operating Cost per Service Hour:	\$2.14	\$2.16	\$1.88
- Trip Related:	\$1.81	\$1.89	\$1.64
- Non-Trip Related:	\$0.33	\$0.28	\$0.24
Total per-Car Operating Cost per Year:	\$5,469	\$6,638	\$6,733
Total Fleet Operating Cost per Year:	\$114,848	\$139,390	\$141,397
Total Fleet Capital Cost:	\$318,192		

Railtech

Favorable

\$15,152		
\$14,000		
\$1,152		
\$428		
\$288		
\$140		
2	12	7
5	1	2
13.47	16.16	18.86
47.37	56.84	66.32
15.21	18.25	21.29
76.05	91.26	106.47
\$0.5	\$0.6	\$0.7
\$4.2	\$4.2	\$8.4
\$12.0	\$12.0	\$12.0
\$16.7	\$16.8	\$21.1
219	219	219
219	219	219
\$227	\$272	\$317
13.1	13.1	13.1
\$1.97	\$1.66	\$1.75
\$1.77	\$1.50	\$1.61
\$0.20	\$0.16	\$0.14
\$4,306	\$4,372	\$5,358
\$90,427	\$91,814	\$112,517
\$318,192		

Unfavorable

\$15,152		
\$14,000		
\$1,152		
\$1,276		
\$576		
\$700		
2	12	7
5	1	2
13.47	16.16	18.86
78.95	94.74	110.53
23.10	27.73	32.35
115.52	138.63	161.73
\$0.8	\$0.9	\$1.1
\$8.4	\$8.4	\$8.4
\$12.0	\$12.0	\$12.0
\$21.2	\$21.3	\$21.5
292	292	292
292	292	292
\$459	\$551	\$642
8.7	8.7	8.7
\$2.71	\$2.30	\$2.01
\$2.28	\$1.94	\$1.69
\$0.44	\$0.36	\$0.31
\$7,922	\$8,060	\$8,198
\$166,364	\$169,259	\$172,154
\$318,192		

Car Type: Turbo Power Coach
 Toilet Type: WTS 8300

Manufacturer:

Number of Passengers: 40

Number of Toilets: 1

Total Tank Capacity (gals): 50.0

Scenario: Expected

Capital Cost

- Equipment: \$7,000
- Installation: \$576

Maintenance Cost:

- Labor: \$426
- Spare Parts: \$216

Hours per Trip: 2

Trips per Day: 5

Waste Generation Data

Waste Generated:

Flush Fluid Generated:

Capacity Adjustment:

Total Capacity Required per Day:

Pumpout Labor Cost:

Connect/Disconnect Labor Cost:

Cleaning Labor Cost:

Total Pumpout/Cleaning Cost per Day:

Days Operated per Year:

Clean-out Cycles per Year:

Waste Disposal Cost per Year:

Maximum Continuous Hours of Service:

Total Operating Cost per Service Hour:

- Trip Related:

- Non-Trip Related:

Total per-Car Operating Cost per Year:

Total Fleet Operating Cost per Year:

Total Fleet Capital Cost:

\$7,576

\$7,000

\$576

\$426

\$216

\$210

2

5

7.48

33.77

10.31

51.57

\$0.3

\$4.2

\$6.0

\$10.5

255

255

\$175

9.7

\$1.29

\$1.12

\$0.17

\$3,298

\$46,166

\$106,064

\$7,576

\$7,000

\$576

\$426

\$216

\$210

2

5

8.98

40.53

12.38

61.88

\$0.4

\$4.2

\$6.0

\$10.6

255

255

\$215

9.7

\$1.09

\$0.95

\$0.14

\$3,351

\$46,909

\$106,064

10.48

47.28

14.44

72.20

\$0.5

\$4.2

\$6.0

\$10.7

255

255

\$251

9.7

\$0.95

\$0.83

\$0.12

\$3,404

\$47,653

Railtech

Favorable

\$7,576		
\$7,000		
\$576		
\$214		
\$144		
\$70		
2	12	7
5	1	2
7.48	8.98	10.48
26.32	31.58	36.84
8.45	10.14	11.83
42.25	50.70	59.15
\$0.3	\$0.3	\$0.4
\$2.1	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$8.4	\$10.5	\$10.6
219	219	219
219	219	219
\$126	\$151	\$176
11.8	11.8	11.8
\$0.99	\$1.02	\$0.88
\$0.89	\$0.93	\$0.81
\$0.10	\$0.08	\$0.07
\$2,171	\$2,668	\$2,705
\$30,399	\$37,351	\$37,865
\$106,064		

Unfavorable

\$7,576		
\$7,000		
\$576		
\$638		
\$288		
\$350		
2	12	7
5	1	2
7.48	8.98	10.48
43.86	52.63	61.40
12.84	15.40	17.97
64.18	77.01	89.85
\$0.4	\$0.5	\$0.6
\$4.2	\$4.2	\$4.2
\$6.0	\$6.0	\$6.0
\$10.6	\$10.7	\$10.8
292	292	292
292	292	292
\$255	\$306	\$357
7.8	7.8	7.8
\$1.37	\$1.16	\$1.02
\$1.15	\$0.98	\$0.86
\$0.22	\$0.18	\$0.16
\$3,999	\$4,076	\$4,153
\$55,991	\$57,063	\$58,135
\$106,064		

APPENDIX E

EXPLANATION OF COST MODELS IN APPENDICES C AND D

Review and Analysis of Railroad Passenger Car
Waste Retention Systems, Volume II: Appendices
C, D and E, US DOT, FRA, Arthur D Little, 1991 -
23-Passenger Operations