CHAPTER 3

EPA SURVEY

EPA used the *Collection of 1997 Iron and Steel Industry Data* (hereinafter referred to as the "EPA Survey") to obtain detailed technical and financial information from a sample of iron and steel facilities potentially affected by the rule. EPA used its authority under Section 308 of the Clean Water Act to collect information not available otherwise, such as:

- site-specific data
- financial information for privately-held firms and joint entities.

EPA could not use Census or industry data, such as the American Iron and Steel Institute's annual statistics because both sources contain data for a mix of sites in two EPA categories: (1) iron and steel and (2) metal products and machinery. Hence, the survey is the only source for information crucial to the rulemaking process. EPA sent out two versions of the survey, a "detailed" and a "short (so-called because of their relative lengths and complexity). Section 3.1 summarizes the site-level information while Section 3.2 reviews the company-level information.

3.1 SITE-LEVEL INFORMATION

The EPA Survey collected information on site-level and company-level bases for a sample of the iron and steel industry. The site-level information forms the basis for the economic impact analysis for the site closure and direct impact analysis. The EPA Survey is the only source for this information. The company information forms the basis of the corporate financial distress analysis. The EPA Survey is the only source of information for privately-held firms and joint entities. (See Chapter 4 for more details on the economic impact methodology.)

EPA developed a sampling frame of 822 sites divided into 12 strata. Of these, 402 sites were drawn in the sample to receive a survey. Some strata were censused (i.e., all sites in the stratum were sent a survey) while others were randomly sampled. On investigation of the data, many of the sites were determined to be more appropriately covered by the proposed MP & M rulemaking (See Technical Development Document for more detailed discussion). The national estimates are:

- 254 iron and steel sites
- 127 direct dischargers
- 65 indirect dischargers
- 6 sites with both direct and indirect discharges
- 56 zero dischargers (includes sites that do not discharge process wastewater as well as sites that are completely dry).

The sum of direct, indirect, and zero dischargers does not equal the total number of sites because sites may both directly and indirectly discharge wastewater. (See U.S. EPA, 2000 for more details on the survey.)

3.1.1 Geographic Distribution

Figure 3-1 shows the location of the 25 sites with cokemaking operations. The map is divided into EPA regions. All but one of the sites occur east of the Mississippi River in EPA regions 2 through 5. Due to the cost of transportation, the sites are clustered around the Great Lakes, along river systems or near the coal beds of West Virginia/Western Pennsylvania. The exception is Geneva Steel in Utah in EPA region 8.

The integrated steel sites follow a geographical pattern similar to that for cokemaking sites, see Figure 3-2. The sites occur in EPA Regions 3, 4, 8, and the heaviest concentration in Region 5. The latter is also a major location of the automobile manufacturing industry, one of the steel industry's largest clients.

The non-integrated sites have a much wider distribution across the United States (Figure 3-3). Because the major raw materials are scrap and electricity, the sites are less reliant on water transport. All EPA regions but Region 1 have at least one non-integrated steel manufacturing site. The stand-alone sites—such as cold-forming and pipe and tube operations—are more numerous than the non-integrated sites and are dispersed throughout the United States (not shown).

Figure 3-1
Cokemaking Sites

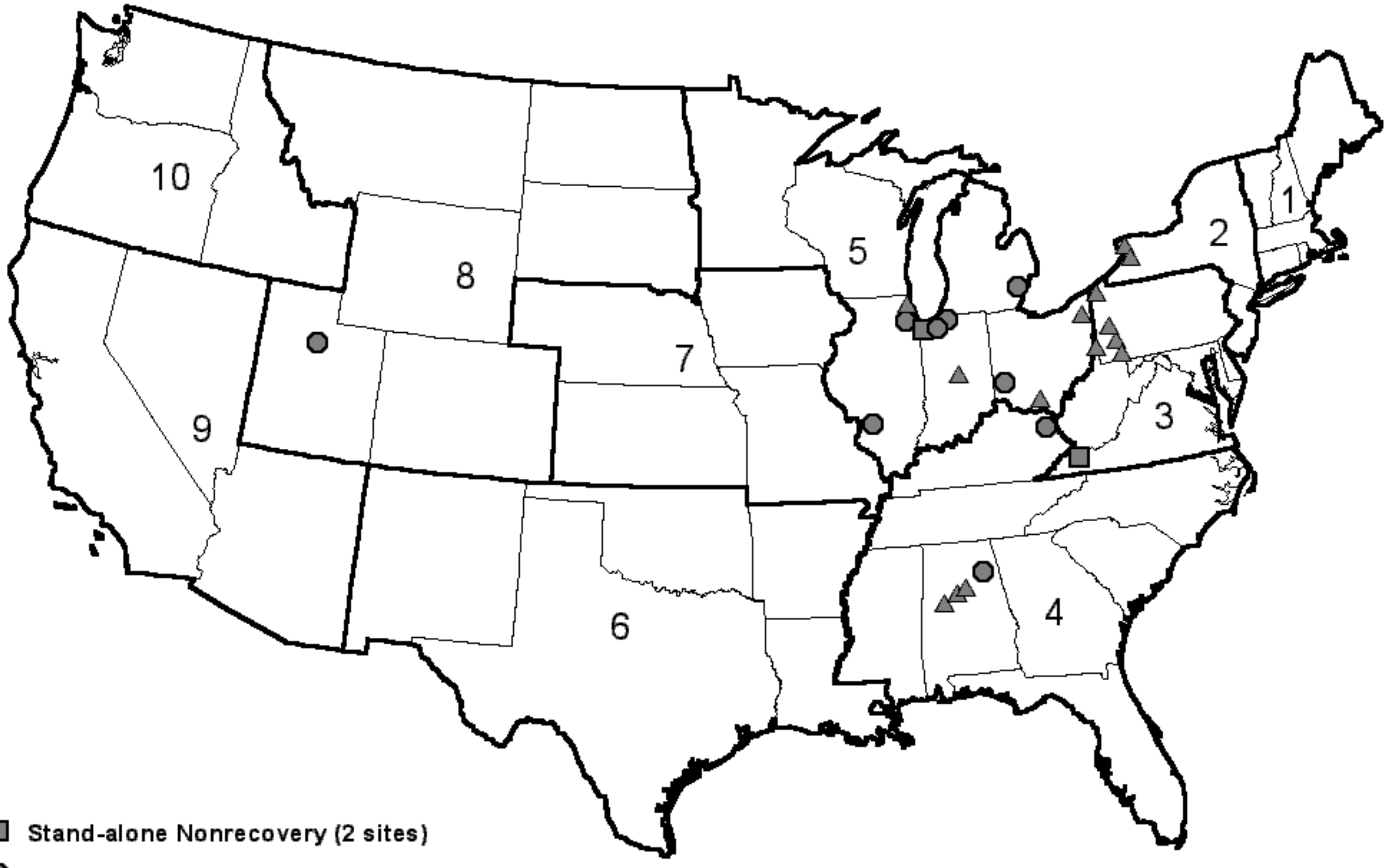


Figure 3-2
Integrated Steel Manufacturing Sites

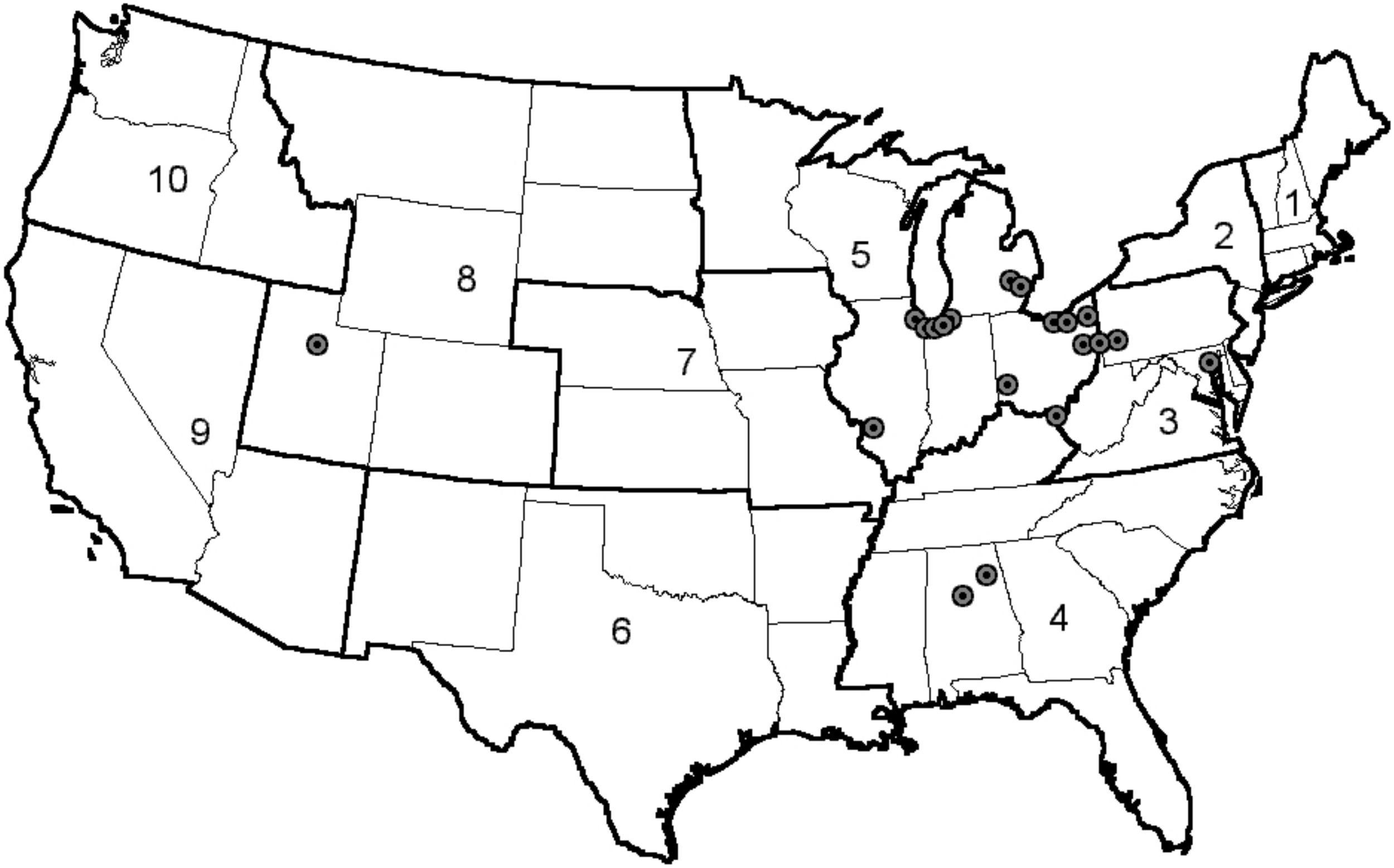
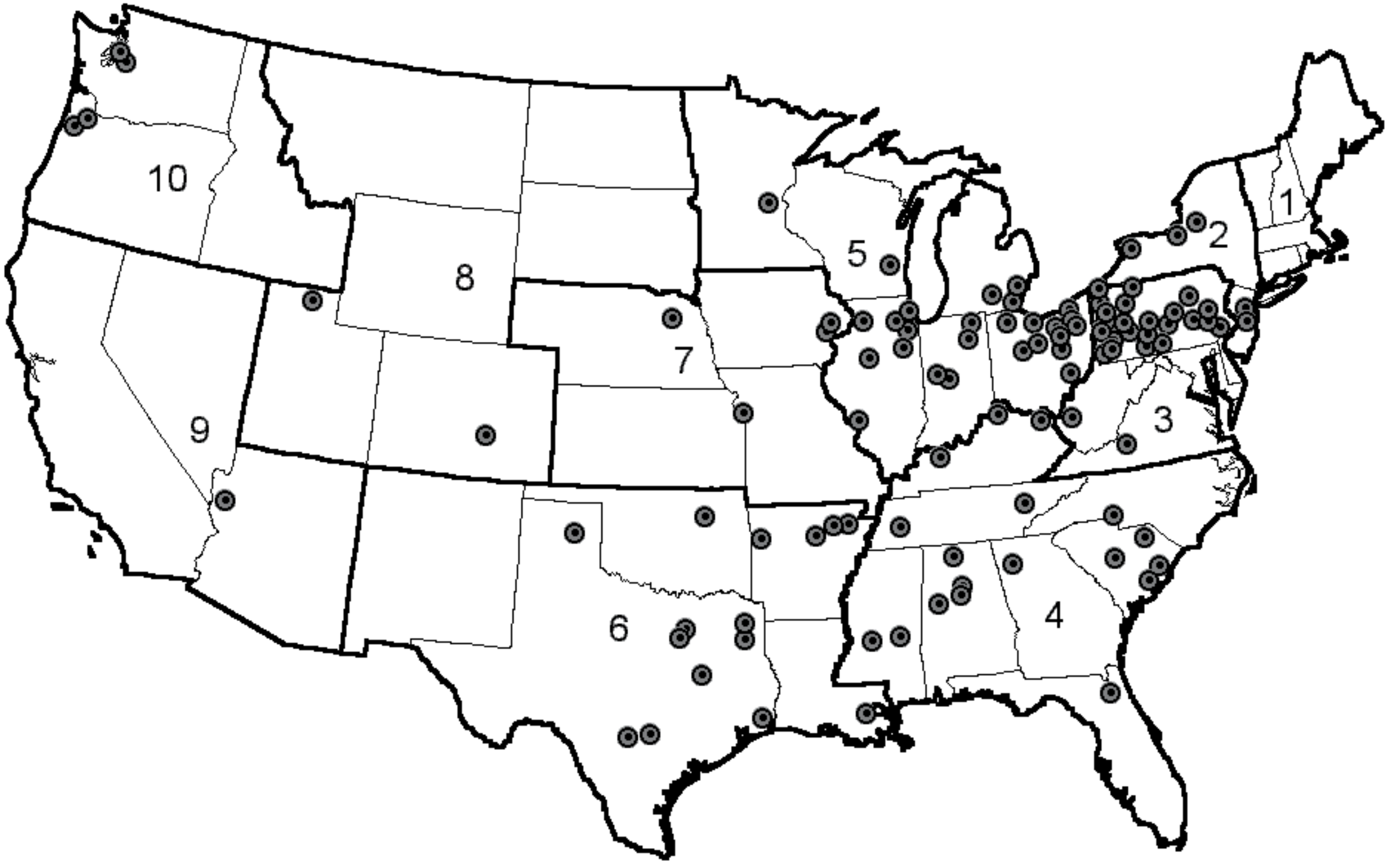


Figure 3-3
Non-integrated Steel Manufacturing Sites



3.1.2 Assets

EPA collected facility-level and company-level asset data for 190 iron and steel producing sites. A site may not have facility-level information for several reasons, including: the company may not record assets at the facility level, the company may keep records for some facilities on a combined basis, or the mill may have changed ownership. Table 3-1 summarizes the minimum, maximum, average and total facility-level assets in 1997 for those sites that do record such data at this level. The differences among the site types is evident. Integrated, non-integrated, and stand-alone sites average $423, $162, and $69 million in non-current assets respectively. In the aggregate, cash forms roughly 5, 21, and 22 percent of non-current assets.

3.1.3 Capital Investment

To examine capital investment, EPA determined capital intensity at the site-level for each facility surveyed in the iron and steel industry for the year 1997. Capital intensity is calculated by dividing the net value of fixed assets at the site by the number of employees at the site. The average capital intensity for facilities belonging to sites classified as integrated is $151,682, while facilities classified as non-integrated show an average capital intensity of $328,387 (Table 3-2). Facilities classified as stand-alone exhibit an average capital intensity of $427,415. The maximum capital intensity for non-integrated sites is $3,068,880. EPA found that the higher the capital intensity, the newer the facility. Fixed assets are greater for new facilities than for older facilities because newer facilities show less depreciation. Larger fixed assets per employee convey a larger capital intensity.

3.1.4 Value of Shipments

EPA collected facility-level data for value of shipments for iron and steel producing sites for the years 1995, 1996, and 1997. Tables 3-3 through 3-5 describe the product codes in the EPA survey as well as Census and American Iron and Steel Institute product codes for reference. Table 3-6 illustrates this data by EPA Survey product code. Product codes forty-four through forty-six exceed all other values for shipments by far for each year. Hot-rolled sheet and strip and cold-rolled sheet and strip are represented by

Table 3-1

1997 Assets by Site ($ Millions)

	Integrated Iron and Steel Producers			
	Minimum	Maximum	Average	Total
Current Assets (Cash):	($1,412.34)	$856.32	$28.53	$941.34
Inventories:	$0.04	$485.57	$113.70	$4,320.59
Non-Current Assets:	$0.02	$3,108.81	$422.72	$16,063.33
	Non-Integrated Iron and Steel Producers			
	Minimum	Maximum	Average	Total
Current Assets (Cash):	$0.38	$253.76	$36.17	$2,242.43
Inventories:	$0.93	$129.74	$38.74	$2,517.94
Non-Current Assets:	$1.39	$1,294.29	$161.62	$10,828.26
	Stand-Alone Iron and Steel Producers			
	Minimum	Maximum	Average	Total
Current Assets (Cash):	($0.28)	$101.77	$16.73	$1,003.56
Inventories:	$0.06	$119.43	$17.69	$1,167.31
Non-Current Assets:	$1.03	$435.52	$69.06	$4,627.01

Table 3-2

1997 Capital Intensity for Sites in the Iron and Steel Industry
(Value of Fixed Assets per Employee)

Site Classification	Capital Intensity		
	Minimum	Maximum	Average
Integrated	$36	$557,594	$151,682
Non-Integrated	$8,984	$3,068,880	$328,387
Stand-Alone	$22,234	$8,460,500	$427,415

Table 3-3

Carbon Steel Product Groups by EPA Survey Code

EPA Survey Code	Census Code	Census and Survey, Appendix A (Product Categories) Description	AISI Product Description
30	33122 11	Ingots	Ingots and steel for casting *
	33122 13	Blooms, billets, sheet bars, tin mill bars, tube rounds, and skelp	Blooms, slabs, billets
	33122 20	Slabs	
31	33122 19	Wire rods	Wire Rods
32		Structural shapes:	Structural shapes (3" & over) *
	33124 15	Wide flange	
	33124 17	Standard (heavy)	
	33124 18	Sheet piling and bearing piles	Steel piling *
33	33124 13	Plates (cut lengths)	Plates - Cut Lengths
	33124 14	Plates (in coils)	Plates - In Coils
34	3312C --	Rails, wheels, and track accessories	Total Rails and Accessories * (Standard, All other and Railroad accesories)
35		Bars:	Bars -
	33124 22	Hot rolled, except concrete reinforcing	- Hot rolled
	33124 24	Light structurals, under 3 inches	- Size light shapes
36	33124 26	Bars (Concrete reinforcing)	Bars - Reinforcing
37	33168 11	Bars (Cold rolled)	Bars - Cold finished
38		Pipe:	Pipe and Tubing - *
	33170 27	Structurals	- Structural
	33170 29	Miscellaneous, including standard pipe	- Standard Pipe
			- Pipe for piling
39	33170 19	Pipe (Oil country goods)	Pipe - Oil country goods
40	33170 14	Pipe (Line)	Pipe and tubing - Line *
	33170 15		
41		Pipe (Mechanical and Pressure)	Pipe and tubing - *
	33170 21		- Mechanical
	33170 22		- Pressure
	33170 23		
	33170 24		

Table 3-3 (Continued)

Carbon Steel Product Groups by EPA Survey Code

EPA Survey Code	Census Code	Census and Survey, Appendix A (Product Categories) Description	AISI Product Description
42		Wire:	Wire-Drawn and/or Rolled *
	33155 01	Flat wire	
	33155 02	Under 1.5 mm in diameter	
	33155 03	1.5 mm or above in diameter	
	33155 04	Under 1.5 mm in diameter	
	33155 05	1.5 mm or above in diameter	
	33155 06	Other shape wire	
		Plated or coated with zinc:	
		Round wire:	
	33155 13	Under 1.5 mm in diameter	
	33155 14	1.5mm or above in diameter	
	33155 15	Other shape wire, including flat	
		Other coated wire:	
	33155 17	Flat wire	
	33155 18	Round wire	
	33155 21	Other shape wire	
		Wire products:	
	33152 21	Nails and staples	
	33159 51	Barbed and twisted wire	
	33156 21	Wire fence, woven and welded	
	33159 55	Bale ties	
	33151 13	Wire rope and cable	
		Wire strand:	
	33151 33	For prestressed concrete	
	33151 35	Other	
	33157 71	Woven wire netting	
43		Tin mill products:	Tin mill products - *
	33123 24	Black plate	Black plate
	33123 26	Electrolytic and hot dipped tin plate	Tin plate
	33123 28	Tin free steel	Tin free steel
	33123 29	All other tin mill products, including short ternes and foil	Tin coated sheets
44	33123 11	Sheet and strip (Hot rolled)	Sheets - Hot Rolled
	33123 19		Strip - Hot rolled
45	33167 11	Sheet and strip (Cold rolled)	Sheets - Cold Rolled
	33167 15		Strip - Cold rolled
46	33123 13	Sheet and strip (Galvanized - hot dipped)	Sheets & Strip - Galvanized - Hot dipped
47	33123 15	Sheet and strip (galvanized - electrolytic)	Sheets & Strip - Galvanized - Electrolytic
48	33123 18	Sheet and strip (All other metallic coated, including long ternes)	Sheet & Strip - All other metallic coated *
49	33123 17	Sheet and strip (Electrical)	Sheets & Strip - Electrical

* Variation may exist in Survey code product group(s) because of differences in product descriptions from Census and AISI data.

Table 3-4

Alloy Steel Product Groups by EPA Survey Code

EPA Survey Code	Census Code	Census and Survey, Appendix A (Product Categories) Description	AISI Product Description
50	33122 31 33122 37 33122 41	Ingots Blooms, billets, sheet bars, rounds, and skelp Slabs	Ingots and steel for casting * Blooms, slabs, billets
51	33122 39	Wire rods	Wire Rods
52	33124 33 33124 36 33124 38	Plates, cut lengths Plates, in coils Structural shapes, 3 inches and under	Plates - Cut Lengths Plates - In Coils
53	33124 41	Bars (Hot rolled)	Bars - Hot rolled
54	33168 31	Bars (Cold finished)	Bars - Cold finished
55	33124 48 33124 49	Tool steel	Tool Steel
56	33170 48	Pipe (miscellaneous, including standard and stru	Pipe and tubing - Standard Pipe, Structural *
57	33170 32	Pipe (oil country goods)	Pipe and tubing - Oil country goods
58	33170 43 33170 45	Pipe (mechanical and pressure)	Pipe and tubing - Pressure Pipe and tubing - Mechanical
59	33155 37	Wire	Wire-Drawn and/or Rolled *
60	33123 31 33123 39	Sheet and strip (hot rolled)	Sheets - Hot rolled Strip - Hot rolled
61	33167 31 33167 35	Sheet and strip (cold rolled and finished)	Sheets - Cold rolled Strip - Cold rolled
62	33123 35	Sheet and strip (galvanized, hot dipped)	Sheets & Strip - Galvanized - Hot dipp
63	33123 37	Sheet and strip (all other metallic coated, includi electrolytic)	Sheets & Strip - - All other metallic coated - Electrolytic

* Variation may exist in Survey code product group(s) because of differences in product descriptions from Census and AISI data.

Table 3-5

Stainless Steel Product Groups by EPA Survey Code

EPA Survey Code	Census Code	Census and Survey, Appendix A (Product Categories) Description	AISI Product Description
70	33122 51	Ingots	Ingots and steel for casting *
70	33122 56	Blooms, billets, slabs, sheet bars, tube rounds, and skelp	Blooms, slabs, billets
71	33122 59	Wire rods	Wire Rods
		Finished products:	
72	33124 53	Plates and structurals	Total Shapes and Plates *
		Bars:	
73	33124 61	Hot rolled	Bars - Hot rolled
74	33168 51	Cold finished	Bars - Cold finished
		Pipe and tubes:	
		Pressure tubing:	Pipe and tubing - Pressure *
75	33170 61	Seamless	
75	33170 62	Welded	
		Mechanical tubing:	Pipe and tubing - Mechanical *
75	33170 63	Seamless	
75	33170 64	Welded	
75	33170 65	Other pipe and tubes	
		Wire:	Wire - Drawn and/or Rolled *
		Round wire:	
76	33155 52	Under 0.75 mm in diameter	
76	33155 53	0.75 mm to under 1.5 mm in diameter	
76	33155 54	1.5 mm and above in diameter	
76	33155 57	Other shape wire, including flat wire	
		Sheet and strip:	
77	33123 57	Hot rolled	Sheets and Strip - Hot rolled *
78	33167 57	Cold rolled	Sheets and Strip - Cold rolled *

* Variation may exist in Survey code product group(s) because of differences in product descriptions from Census and AISI data.

Table 3-6

Value of Shipments by Product Code ($ Millions)

Product Code	1995	1996	1997
Coke and Coke Byproduct			
10	$1,212	$1,209	$1,120
20	$48	$48	$44
21	$52	$46	$40
22	$53	$65	$55
23	$12	$16	$21
24	$7	$8	$7
25	$13	$13	$15
Carbon Steel Products			
30	$1,410	$1,449	$1,477
31	$1,478	$1,391	$1,521
32	$2,295	$2,544	$2,601
33	$2,019	$1,932	$1,977
34	$318	$346	$404
35	$2,190	$2,060	$2,435
36	$1,026	$1,096	$1,279
37	$37	$34	$37
38	$271	$313	$282
39	$388	$523	$639
40	$330	$293	$343
41	$540	$517	$597
42	$361	$336	$297
43	$2,200	$2,294	$2,340
44	$9,689	$9,423	$9,579
45	$7,006	$7,339	$7,672
46	$5,621	$5,981	$6,404
47	$2,245	$2,325	$2,364
48	$1,192	$1,141	$1,146
49	$263	$641	$613
Alloy Steel Products			
50	$877	$1,002	$1,043
51	$85	$90	$117
52	$629	$671	$679
53	$826	$817	$931
54	$152	$135	$150
55	$46	$39	$45
56	$17	$20	$23
57	$423	$373	$554
58	$469	$549	$506
59	$22	$25	$34
60	$203	$194	$323
61	$130	$138	$147
62	$52	$67	$231
63	$176	$185	$185

Table 3-6 (Continued)

Value of Shipments by Product Code ($ Millions)

Stainless Steel Products			
70	$159	$296	$351
71	$82	$68	$80
72	$381	$243	$255
73	$268	$259	$224
74	$288	$271	$289
75	$11	$13	$10
76	$77	$73	$77
77	$498	$341	$350
78	$2,477	$2,774	$2,806
Other Products			
90 Sinter	$22	$18	$2
92 Pig Iron/ Hot Metal	$39	$46	$44
93 Scrap	$12	$14	$14
94 Conversion Costs	$12	$14	$10
98 Aggregate Costs	$26	$26	$30
99 Miscellaneous	$236	$252	$24
Total:	$50,973	$52,395	$54,841

product codes forty-four and forty-five respectively. Product code forty-six is galvanized hot-dipped sheet and strip. From 1995 to 1997, the total value of shipments increased by approximately $2 million each year. Additionally, Table 3-7 compares shipment data among integrated, non-integrated, and stand-alone sites. Again, the relative scale of integrated, non-integrated, and stand-alone sites is apparent.

3.1.5 Exports

Table 3-8 displays the value of shipments classified as exports from 152 iron and steel producing sites (only the detailed survey asks about exports). The total value of shipments exported by integrated sites decreases dramatically from 1995 to 1996 by over 640 million dollars. From 1996 to 1997, the value of exports increase to over 1,000 million dollars. Non-integrated sites illustrate a different perspective. While the average value of shipments exported by non-integrated sites increases by over a million dollars, the total value of exports increases by almost 150 million dollars. Stand-alone facilities were more stable than integrated and non-integrated sites. For stand-alone facilities, 1996 was the lowest surveyed year for exports with approximately 146 million dollars and 1997 was the high point with 156 million dollars.

3.1.6 "Captive Facilities"

A site is classified as "captive" when a certain percentage of its production is shipped to other sites under the same ownership. EPA collected production data for 1995, 1996 and 1997 for 152 sites (only the detailed survey asks the applicable questions, see Table 3-9). For these years, between seven and nine sites shipped all of their products to sites under the same ownership, i.e., approximately one percent of total industry production. These sites exist solely to provide products to other sites owned by the same company. Sites that shipped more than fifty percent of their production to sites under the same ownership account for approximately four percent of total industry production. There were 16 sites that shipped more than half of their production to sites under the same ownership in 1995, 18 sites in 1996, and 19 sites in 1997. Generally, however, production at most sites is not dependent on other sites under the same ownership in the iron and steel industry. For the most part, sites producing iron and steel output are independent producers even though they may be owned by the same company.

Table 3-7

Value of Shipments ($ Millions)

	1995	1996	1997
Integrated Sites			
Average:	$728	$707	$704
Total:	$28,386	$28,262	$28,874
Non-Integrated Sites			
Average:	$221	$242	$246
Total:	$13,249	$15,015	$16,704
Stand-Alone Sites			
Average:	$141	$134	$134
Total:	$9,338	$9,118	$9,263
Total of All Sites:	$50,973	$52,395	$54,841

Table 3-8

Value of Shipments Exported (Partial data)
($ Millions)

	1995	1996	1997
Integrated Sites			
Average:	$77	$45	$51
Total:	$1,534	$892	$1,024
Non-Integrated Sites			
Average:	$11	$10	$12
Total:	$467	$460	$615
Stand-Alone Sites			
Average:	$9	$9	$10
Total:	$150	$146	$156
Total of All Sites:	$2,150	$1,498	$1,796

Note: Data includes only "Detailed" survey information. The pertinent questions were not asked in the "Short" survey.

Table 3-9

Percentage and Value of Industry Production Shipped to Sites Under the Same Ownership (Partial Data)
($ Millions)

Percentage of Site Production Shipped to Sites Under Same Ownership	Number of Sites			Value of Total Industry Production Shipped to Sites Under Same Ownership			Percentage of Total Industry Production Shipped to Sites Under Same Ownership		
	1995	1996	1997	1995	1996	1997	1995	1996	1997
100%	7	8	9	$527	$515	$588	1.03%	0.98%	1.06%
>90%	10	11	12	$978	$896	$982	1.91%	1.70%	1.78%
>75%	12	14	15	$1,659	$1,678	$1,797	3.25%	3.18%	3.25%
>50%	16	18	19	$2,239	$2,148	$1,971	4.38%	4.07%	3.57%

Note: Data includes only "Detailed" survey information. The pertinent questions were not asked in the "Short" survey.

3.1.7 Employment

The total number of employees at iron and steel producing sites surveyed by EPA for the year 1997 is 144,981. Integrated facilities employ the most workers with 79,802 people. Non-integrated and stand-alone facilities employ 44,825 and 20,354, respectively for a total of 145,000 employees in the regulated community. The average number of employees at integrated sites exceed the average number of employees at stand-alone sites by more than a factor of six. See Table 3-10 for a detailed look at employment data for sites surveyed by EPA.

3.2 COMPANY-LEVEL INFORMATION

3.2.1 Companies in the Sample

The companies in the iron and steel industry fall into three coarse categories, similar to those used for classifying the sites (Section 2.2):

- Integrated. Traditionally, integrated steel companies performed all basic steelmaking operations from cokemaking through finishing. Today, the term refers companies owning blast furnaces or BOFs, many of the companies having closed their cokemaking and sintering operations.

- Non-integrated. Also known as "minimills," these companies have EAFs and do not have blast furnaces or BOFs. Note that the reverse is not true. For example, Bethlehem Steel—an integrated producer—owns EAF based plants in Coatsville, PA and Steelton, PA.

- Stand-alone. Companies with stand-alone sites have no melting capability. This category of companies is more heterogeneous than the first two categories because stand-alone sites cover a wide range in operations from cokemaking to tube and pipe manufacture.

Table 3-10

Number of Employees in 1997

	Minimum	Maximum	Average	Total
Integrated Sites	54	8,426	1,900	79,802
Non-Integrated Sites	20	3,099	650	44,825
Stand-Alone Sites	16	1,652	283	20,354

3.2.2 Type of Ownership

The 188 sites in the iron and steel database are owned by 115 companies. The global nature of the industry is illustrated by 21 sites with foreign ownership; four of these sites are joint entities with U.S. partners. Thirteen other sites are joint entities with only U.S. partners. Excluding joint entities and foreign ownership, the data base contains 85 U.S. companies. Among these 85 U.S. companies,

- 73 are C corporations
- 8 are S/limited liability corporations
- 3 are limited partnerships
- 1 is a utility, public charitable trust

Approximately 55 percent of these 88 U.S. companies are privately owned; the EPA Survey is the only source of financial information for these privately-held firms.

3.2.3 Number of Sites per Company

The public may believe the "Steel Industry" consists only of big multi-site firms, however, the vast majority of the surveyed population are single site firms. In the surveyed population, only 3 firms have 10 or more sites and 10 firms have from 5 to 9 sites. Not including joint entities, the most common arrangement is a one site company (i.e., both the median and mode firms have one site).

3.2.4 Financial Characteristics

EPA examined three data sources for financial characteristics for the iron and steel industry:

- Industry (AISI)
- Census (Quarterly Report for Manufacturing, Mining, and Trade Corporations)
- EPA Survey

Figure 3-4 and Table 3-11 summarize the net cash flow and depreciation from 1986 to 1998 from AISI data. These data represent companies that account for about two-thirds of the raw steel production in the U.S. Depreciation is relatively stable, ranging from $1.3 billion to $1.8 billion per year. Net cash flow, on the other hand, swings widely from a loss of $2.8 billion in 1986 to a profit of $3.4 billion in 1993. A comparison of 1992 and 1993, when the industry went from a loss of $2.6 billion to a profit of $3.4 billion illustrates how rapidly conditions can change. Figure 3-5 overlays capacity utilization rate (Figure 2-4) with cash flow from Figure 3-4. There is a general concordance between the time series, with the exception of 1992 when cash flow continued to decline while capacity utilization rate recovered. The increasing capacity utilization rate, however, is a factor in the sharp increase in cash flow seen in 1993. The years 1986 and 1992 are nadirs in the series. A six-year earnings cycle seems too short, however, given the 1992 to 1998 data. The forecasting method used to project facility earnings, then, needs to address this cyclicality and the cycle should be no shorter than six years and possibly seven to eight years in length (see Section 4).

Table 3-12 presents income statement data from the Quarterly Financial Report (QFR) for SIC Industry Groups 331, 332, and 339. It therefore includes more industry operations than those covered in the EPA Survey but excludes nonferrous industries included in Primary Metal Industries (SIC 33). The cash flow information for the four quarters of 1998 shows information consistent with that in Figure 3-5, i.e, a steady decline. The drop in net income retained in business seen in the first half of 1999 actually began with a loss in the 4Q 1998. The separation of the data into companies with assets under $25 million or $25 million or more highlights some differences between the two groups. The smaller companies show higher rates of return on assets and equity than the larger companies.

The data in Table 3-12 do not show a dramatic effect on financial conditions. This is because the data include businesses that use semi-finished products as an input. That is, the increase in lower priced imports would improve their financial condition by lowering input costs. This mix of companies indicates that the QFR data are too aggregated to use in the forecasting models (see Adams, 1999; Bagsarian, 1999).

Table 3-13 presents balance sheet data for the same set of companies. The smaller companies show higher current ratios than the larger companies but lower absolute amounts of working capital. (The first variable—current ratio—is current assets divided by current liabilities. The second variable—working capital—is current assets minus current liabilities.) Financial analysts sometimes use a combination of

Figure 3-4

Net Cash Flow and Depreciation for the Steel Industry in the United States: 1986-1998

Source: AISI, 1998, 1995

Table 3-11

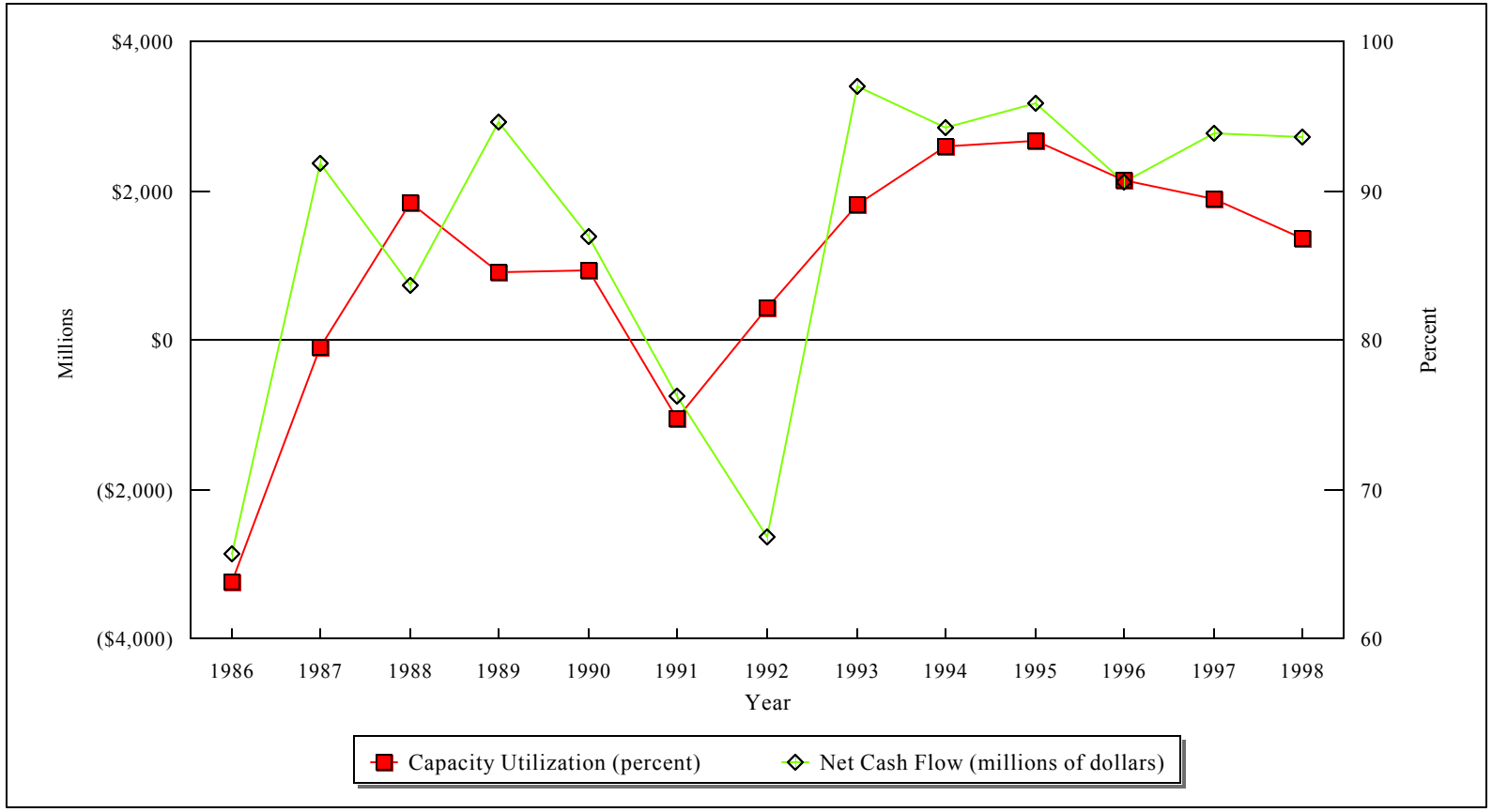
Industry Cash Flow (in Millions)

Year	Depreciation, Depletion & Amortization	Net Income	Cash Flow (Net Income Plus Depreciation)
1986	$1,301	($4,150)	($2,849)
1987	$1,294	$1,077	$2,371
1988	$1,311	($567)	$744
1989	$1,320	$1,597	$2,916
1990	$1,337	$54	$1,391
1991	$1,286	($2,042)	($756)
1992	$1,435	($4,068)	($2,633)
1993	$1,532	$1,870	$3,402
1994	$1,564	$1,285	$2,849
1995	$1,636	$1,534	$3,170
1996	$1,664	$442	$2,106
1997	$1,681	$1,078	$2,759
1998	$1,755	$960	$2,714

Source: AISI 1998, 1995

Figure 3-5

Steelmaking Capacity Utilization and Cash Flow in the United States: 1986-1998



Source: AISI, 1998, 1995

Table 3-12

Income Statement Data for Corporations Included in SIC Industry Groups 331, 2, 9, and 333-6: Iron and Steel (in Millions)

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	1998 Total	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	1999 Total
Iron and Steel										
Income (or loss) from operations	$17,929	$18,563	$16,813	$15,879	$69,184	$415	$853	$607	$555	$2,430
Income(or loss) before taxes	$934	$1,067	$723	$409	$3,133	$47	$573	$283	$195	$1,098
Income(or loss) after taxes	$652	$696	$440	$112	$1,900	($36)	$361	$99	$31	$455
Net income retained in business	$385	$517	$315	($67)	$1,150	($164)	$180	($65)	($122)	($171)
Retained earnings at end of quarter	$8,158	$8,246	$8,214	$7,770	$32,388	$7,376	$7,462	$7,450	$8,359	$30,647
Iron & Steel Assets Under $25 Mil										
Income (or loss) from operations	$1,616	$1,542	$1,361	$1,259	$5,778	$63	$136	$63	$92	$354
Income(or loss) before taxes	$5	$30	$1	($22)	$14	$46	$124	$46	$72	$288
Income(or loss) after taxes	$20	$12	$7	$2	$41	$42	$117	$39	$56	$254
Net income retained in business	$108	$38	$12	$53	$211	$28	$65	($16)	$30	$107
Retained earnings at end of quarter	$1,708	$1,398	$1,483	$1,355	$5,944	$1,538	$1,399	$963	$1,441	$5,341
Iron & Steel 331, 2 and 9 Assets Over $25 Mil										
Income (or loss) from operations	$16,313	$17,021	$15,452	$14,619	$63,405	$351	$716	$544	$463	$2,074
Income(or loss) before taxes	$798	$922	$641	$406	$2,767	$1	$449	$238	$123	$811
Income(or loss) after taxes	$536	$563	$366	$111	$1,576	($78)	$244	$60	($25)	$201
Net income retained in business	$628	$419	$253	($14)	$1,286	($195)	$104	$37	($142)	($196)
Retained earnings at end of quarter	$6,450	$6,848	$6,730	$6,414	$26,442	$5,838	$6,063	$6,486	$6,918	$25,305

Source: Quarterly Financial Report on Manufacturing, Mining and Trade Corporations, US Census

Table 3-13

Balance Sheet Data for Corporations Included in SIC Industry Groups 331, 2, 9, and 333-6: Iron and Steel (in Million $)

	1998: 1Q	2Q	3Q	4Q	1999: 1Q	2Q	3Q	4Q
Iron and Steel								
Total cash on hand and in U.S. banks	$1,161	$1,446	$1,151	$1,240	$1,316	$1,316	$1,378	$1,283
Total cash	$3,645	$3,195	$2,579	$2,811	$3,044	$3,053	$3,183	$2,801
Total current assets	$26,935	$27,477	$26,937	$25,638	$26,376	$26,378	$27,644	$28,309
Net property, plant, and equipment	$30,753	$32,170	$33,296	$33,524	$33,819	$33,767	$35,036	$37,165
Total Assets	$68,280	$72,675	$73,187	$72,321	$73,170	$72,680	$76,270	$81,352
Total current liabilities	$14,915	$15,799	$15,508	$14,905	$14,899	$14,463	$15,506	$16,800
Total liabilities	$44,262	$47,417	$48,145	$48,104	$49,240	$48,890	$51,677	$55,632
Stockholders' equity	$24,017	$25,258	$25,041	$24,217	$23,930	$23,790	$24,592	$25,720
Total Liabilities and Stockholders' Equity	$68,280	$72,675	$73,187	$72,321	$73,170	$72,680	$76,270	$81,352
Current Assets	1.81	1.74	1.74	1.72	1.77	1.82	1.78	1.69
Working Capital	$12,020	$11,678	$11,429	$10,733	$11,477	$11,915	$12,138	$11,509
Iron & Steel Assets Under $25 Mil								
Total cash on hand and in U.S. banks	$166	$167	$158	$183	$247	$248	$158	$252
Total cash	$235	$227	$185	$205	$277	$291	$230	$354
Total current assets	$2,125	$1,785	$1,877	$1,666	$1,697	$1,698	$1,574	$1,916
Net property, plant, and equipment	$1,284	$1,157	$1,338	$1,163	$1,285	$1,131	$1,087	$1,160
Total Assets	$3,471	$3,010	$3,284	$2,914	$3,183	$2,996	$2,918	$3,207
Total current liabilities	$1,082	$935	$1,032	$874	$790	$730	$937	$906
Total liabilities	$1,619	$1,428	$1,553	$1,325	$1,312	$1,351	$1,613	$1,555
Stockholders' equity	$1,851	$1,583	$1,732	$1,589	$1,871	$1,645	$1,305	$1,653
Total Liabilities and Stockholders' Equity	$3,471	$3,010	$3,284	$2,914	$3,183	$2,996	$2,918	$3,207
Current Assets	1.96	1.91	1.82	1.91	2.15	2.33	1.68	2.11
Working Capital	$1,043	$850	$845	$792	$907	$968	$637	$1,010
Iron & Steel 331, 2 and 9 Assets Over $25 Mil								
Total cash on hand and in U.S. banks	$1,013	$1,281	$995	$1,058	$1,072	$1,069	$1,222	$1,031
Total cash	$3,410	$2,968	$2,394	$2,606	$2,768	$2,763	$2,953	$2,447
Total Receivables	$8,535	$9,015	$8,396	$7,655	$8,160	$8,185	$8,752	$8,750
Total current assets	$24,810	$25,692	$25,060	$23,972	$24,679	$24,680	$26,070	$26,392
Net property, plant, and equipment	$29,470	$31,013	$31,958	$32,361	$32,533	$32,635	$33,949	$36,005
Total Assets	$64,809	$69,665	$69,902	$69,407	$69,987	$69,684	$73,352	$78,145
Total current liabilities	$13,833	$14,864	$14,477	$14,031	$14,109	$13,733	$14,569	$15,894
Total liabilities	$42,643	$45,990	$46,592	$46,779	$47,928	$47,538	$50,064	$54,077
Stockholders' equity	$22,166	$23,675	$23,310	$22,628	$22,059	$22,146	$23,287	$24,068
Total Liabilities and Stockholders' Equity	$64,809	$69,665	$69,902	$69,407	$69,987	$69,684	$73,352	$78,145
Current Assets	1.79	1.73	1.73	1.71	1.75	1.80	1.79	1.66
Working Capital	$10,977	$10,828	$10,583	$9,941	$10,570	$10,947	$11,501	$10,498

Source: Quarterly Financial Report on Manufacturing, Mining and Trade Corporations, US Census

financial ratios to gauge the health of a company. The baseline condition of the industry is discussed in more detail in the economic methodology, Section 4.

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