
Appendix H

Wetland Mitigation Plans

- **November 8, 2006**
- **December 18, 2006**



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December 18, 2006

Mr. Jon Ahlness
Corps of Engineers
Department of the Army
190 East Fifth Street
St. Paul, MN 55101-1638

Mr. Steve Dewar
Minnesota Department of Natural Resources
Division of Lands and Minerals
1525 East Third Street
Hibbing, MN 55746

Re: Revised Wetland Impacts and Mitigation Plan – Minnesota Steel Industries, LLC

Dear Messrs. Ahlness and Dewar:

On behalf of Minnesota Steel Industries, LLC, we are hereby submitting an updated wetland impact summary and a revised 5-year wetland mitigation plan for Sites 229 and 248 in Aitkin County.

Wetland Impacts

The proposed project areas have been finalized for inclusion in the Environmental Impact Statement and to update the state and federal wetland permit applications (Table 2, Figure 5). Minor adjustments have been made to the mine, stockpile, and plant areas as shown on Figures 1-3. The tailings pipeline and reclaim line routes have been modified as shown on Figure 4. Stormwater and water supply management project features have been added as shown on Figure 4. The preferred, Stage I tailings basin project area has not changed from that shown in the January 25, 2006, *Wetland Delineation and Functional Assessment* report. The primary change to the project since completion of the *Wetland Delineation and Functional Assessment* report has been the addition of stormwater management and water supply features.

The proposed project includes a total of 765 acres of impacts to wetlands and 327.7 acres of impacts to deepwater mine pits (Tables 5-8). It is expected that 542 acres of wetlands and all 327.7 acres of deepwater mine pits will be impacted during the first 5 years of the project (Table 1).

Wetland Mitigation

The proposed 5-year wetland mitigation plan has been developed to provide compensatory mitigation for wetland impacts expected during the first 5 years of the project. The revised plans include:

1. Restoration of 553 acres of wetland on a wild rice farm near Aitkin (Sites 229 and 248),
2. Wetland restoration focused along the Little Willow River,

3. Wetland restoration with sustainable, natural hydrology,
4. Approximately 72 acres of Type 2 wetlands, 92 acres of Type 3 wetlands, 196 acres of Type 4 wetlands, 123 acres of Type 5 wetlands and 69 acres of Type 6 wetlands (Table 3),
5. Topographic survey data for the entire mitigation site,

The wetland restoration areas are shown by predominant Circular 39 wetland type on Figure 6 and the plan sheets are attached. The expected acreage of each wetland type is tabulated in Table 3 and the proportion of wetland types within each restoration cell is provided in Table 9. The planned hydrology for the various wetland types follows the ranges provided in Table 4.

Assuming that the wetland restoration can be completed at least one year ahead of the impacts, the 553 acres of wetland mitigation is expected to compensate for 527 acres of wetland impacts (Table 10). It is assumed that wetlands replaced in-kind will be compensated at a 1:1 ratio and wetlands that are replaced with different wetland types will be compensated at a 1.25:1 ratio, in accordance with Corps guidelines. The only out-of-kind wetland replacement proposed includes a total of 196 acres of Type 4 wetland mitigation planned, but only 66 acres of Type 4 impacts. Therefore, at a compensation ratio of 1.25:1, the excess 130 acres of restored Type 4 wetland will provide compensation for 104 acres of impacts to other wetland types. The wetland mitigation activities planned for Sites 229 and 248 are expected to adequately compensate for the 542 acres of planned impacts during the first 5 years of the project (Table 1).

The wetland mitigation plans for Sites 229 and 248 have been revised based on the recent completion of the topographic site survey. When reviewing the wetland mitigation plans, please note that the cross-sections represent the planned elevations for the primary overflows and the general areas in which interior ditches will be filled. The precise location of the overflow from each wetland restoration cell has not been determined yet. Nor has the extent of complete dike removal and ditch filling been shown on the plans. These details will be provided in subsequent plan revisions.

We hope this information will help you in meeting the project timeline. If you or other Corps/DNR staff have any questions concerning this information, please contact either myself at 952-832-2781 or Deb McGovern at 651-209-7707.

Sincerely,



Len Kremer, P.E.
On Behalf of Minnesota Steel Industries, L.L.C.

Enclosure

c: Deb McGovern
Jim Payne
Scott Ek
Steve Menden
Jeff Udd
Howard Hilshorst

Table 1
Wetland Mitigation Summary - 5 Year Plan and Total Project
Minnesota Steel Industries
December 11, 2006

WETLANDS		
Impacts	First 5 Years (acres)	Total Project (acres)
Mine Area	11	32
Plant Area	108	108
Stockpile Area	150	214
Tailings Basin Pipeline, Stormwater, and Water Supply	16	16
Stage I Tailings Basin	257	395
Total	542	765
Mitigation		
Aitkin Sod Farm	553	553
Aitkin Farm Site	0	140
Chippewa Forest Road Removals	0	88
Tribal Wetland Restorations	0	50
Tailings Basin Wetlands	0	60
Reclaim Water Wetlands	0	90
Total	553	981
DEEPWATER HABITATS		
Impacts	First 5 Years (acres)	Total Project (acres)
Pits 1 and 2	111.5	111.5
Pit 5	204.3	204
Other Pits	11.9	11.9
Total	327.7	327.4
Mitigation		
Pits 1 and 2	0	111.5
Pit 5	0	408
Pit 6	0	236
Total	0	755.5

Table 2: Summary of Project Areas
Minnesota Steel Industries
Nashwauk, Minnesota
Revised December 11, 2006

Project Area	Area (acres)
Stage I Tailings Basin and Reclaim Pond	1,580
Alternative Tailings Basin	1,118
Stockpile Area	818
Mine Area	767
Plant Area	477
Plant Area Stormwater and Water Supply	74
Tailings Pipeline and Reclaim Line	24
Total of all Potential Project Areas	4,858

Table 3
 Summary of Wetland Impacts and Mitigation by Circular 39 Wetland Type
 20-Year Wetland Mitigation Plan
 December 1, 2006
 Minnesota Steel Industries

Project Area	Circular 39 Type									Wetland Total
	1	2	3	4	5	6	7	8	Deepwater	
	Impact Area (acres)									
Mine Area	1.59	5.48	0.42	2.76	11.67	6.49	3.17	0.00	315.8	31.6
Plant Area	0.21	24.15	0.00	17.51	0.71	56.85	8.80	0.00	0.00	108.2
Stockpile Area	8.71	11.20	0.70	38.90	73.35	65.87	15.09	0.00	0.06	213.8
Tailings Basin Pipeline, Stormwater and Water	0.00	0.11	0.00	0.58	13.17	0.70	1.73	0.00	11.88	16.3
Stage I Tailings Basin	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	0.00	395.0
Total with Stage I Tailings Basin	10.5	107.7	93.4	66.1	222.1	231.8	32.1	1.2	327.7	765
	Mitigation Area Goal (acres)									
Mitigation Project										
Sites 229 & 248	0	72	92	197	123.0	69.0	0	0	0	553.0
Site 1981-NW	0	47	0	0	0	47	46	0	0	140.0
On-site Wetland Restoration	0	0	20	40	90	0	0	0	0.0	150.0
On-site Deepwater Habitat Development	0	0	0	0	0	0	0	0	755.5	0.0
Chippewa Forest Road Decommissioning	10	10	20	3	0	35	10	0	0.0	88.0
Tribal Land Wetland Restorations	0	25	0	0	0	15	10	0	0.0	50.0
Project Total	10	154	132	240	213.0	166.0	66.0	0.0	755.5	981
In-Kind Replacement Difference¹	-0.5	46.3	38.6	173.9	-9.1	-65.8	33.9	-1.2	427.8	216

¹ Positive values represent more than 1:1 replacement of that wetland type, negative values represent less than 1:1 replacement of that type.

Table 4
Planned Wetland Hydrology by Wetland Type - Sites 229 and 248
November 29, 2006
Minnesota Steel Industries
Aitkin, Minnesota

Circ 39 Wetland Type	Planned Surface Water Depths (inches)
Type 2	None, with occasional inundation of 2-3 inches
Type 3	0-6 with occasional inundation to 12 inches
Type 4	6-30
Type 5	30-48
Type 6	None, with occasional inundation of 2-3 inches

Table 5: Delineated Wetland and Deepwater Habitat Types
 Minnesota Steel Industries [1]
 Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Mine Area	Pits 1 & 2	433.62	111.50	DW					
Mine Area	330 (Pit 5)	163.53	163.53	DW					
Mine Area	493	15.84	0.05	3			PEMC		
Mine Area	524	1.13	0.03	6	2		PSSB	PEMB	
Mine Area	529	16.88	16.88	DW			PUBH		
Mine Area	530	4.92	1.54	6	1	4	PSSB	PFOA	PEMF
Mine Area	532	0.30	0.01	2			PEMB		
Mine Area	536	0.24	0.24	1			PFOA		
Mine Area	546	0.46	0.46	1			PFOA		
Mine Area	551	0.28	0.28	4			PUB/EMF		
Mine Area	553	5.98	3.80	5	4	2	PUBF	PEMF	PEMB
Mine Area	556	0.32	0.04	4			PEMG		
Mine Area	557	13.55	3.35	5			PUBH		
Mine Area	573	0.31	0.31	7	6		PFOB	PSSB	
Mine Area	584	2.76	2.76	6	2		PSSB	PEMB	
Mine Area	585	12.39	0.11	7			PFOB		
Mine Area	586	0.17	0.17	6			PSSC		
Mine Area	596	0.04	0.04	3			PEMC		
Mine Area	599	0.15	0.15	3			PEMC		
Mine Area	600	0.10	0.10	3			PEMC		
Mine Area	601	0.46	0.46	7			PFOB		
Mine Area	602	0.65	0.65	7			PFOB		
Mine Area	604	0.56	0.56	7	6		PFOB	PSSB	
Mine Area	609	0.72	0.72	4	7		PEMF	PFOB	
Mine Area	615	0.06	0.06	2			PEMB		
Mine Area	617	0.38	0.38	7			PFOB		
Mine Area	625	0.36	0.11	7			PFOB		
Mine Area	641	1.99	1.99	6			PSSB		
Mine Area	645	0.33	0.12	7			PFOB		
Mine Area	649	0.08	0.08	3			PEMC		
Mine Area	691	23.88	23.88	DW					
Mine Area	705	4.53	4.53	5	2	7	PABG	PEMB	PFOB
Mine Area	718	2.10	0.66	1	6		PEMA	PSSA	
Mine Area	736	0.18	0.18	7	2		PFOB	PEMB	
Mine Area	739	0.28	0.28	7	2		PFOB	PEMB	
Mine Area	760	19.26	5.42	2	3		PEMB	PEMC	
Mine Area	770	1.04	0.05	4			PABF		
Mine Area	777	130.44	1.68	4			PABF		
Mine Area	2001	0.23	0.23	1			PFOA		
Mine Area Subtotal	39	426.9	347.4						
Plant Area	287	2.80	2.80	6			PSSB		
Plant Area	294	3.51	3.51	2	6	4	PEMB	PSSB	PEMF
Plant Area	307	0.07	0.06	2			PEMB		
Plant Area	309	2.59	1.82	2			PEMB		
Plant Area	313	1.46	1.46	2			PEMB		
Plant Area	316	2.37	2.37	6			PSSB		
Plant Area	317	1.15	1.15	2	4		PEMB	PEMF	
Plant Area	318	0.68	0.68	2	4		PEMB	PEMF	
Plant Area	319	3.18	3.18	7			PFOB		
Plant Area	320	1.11	1.11	2	6		PEMB	PSSB	
Plant Area	331	27.86	14.22	4	6		PEMF	PSSB	
Plant Area	345	6.76	6.66	6			PSSB		
Plant Area	350	2.08	2.08	6			PSSC		
Plant Area	358	7.73	2.89	2	6		PEMB	PSSB	
Plant Area	359	1.29	1.29	6			PSSC		
Plant Area	362	3.91	3.28	4			PEMF		
Plant Area	368	2.45	2.08	2			PEMB		
Plant Area	369	13.88	0.71	5	4		PUB/ABG	PEMF	
Plant Area	372	12.74	6.62	2	3		PEMB	PEMC	
Plant Area	476	51.55	13.32	6			PSSB		
Plant Area	534	0.64	0.44	7			PFOB		
Plant Area	542	0.62	0.37	2			PEMB		
Plant Area	549	2.68	1.10	6			PSSB		
Plant Area	568	2.44	1.30	7			PFOB		
Plant Area	585	12.39	3.88	7			PFOB		
Plant Area	2003	1.21	1.21	2	6		PEMB	PSSB	
Plant Area	2004	0.21	0.21	1			PEMA		
Plant Area	2005	0.85	0.19	6	7		PSSB	PFOB	
Plant Area	2006	27.04	27.04	6			PSSA		
Plant Area	2020	2.90	1.20	2	6		PEMB	PSSB	
Plant Area Subtotal	30	200.1	108.2						
Stockpile Area	425	71.16	71.16	5	4	6	PUBH	PEMF	PSSB
Stockpile Area	455	4.26	4.26	6	0	0	PSSB		
Stockpile Area	457	0.31	0.31	6	0	0	PSSB		
Stockpile Area	462	0.46	0.46	1	0	0	PFOA		
Stockpile Area	476	51.55	38.23	6			PSSB		
Stockpile Area	482	0.34	0.34	3			PEMF		
Stockpile Area	485	3.29	3.29	4			PUBF		
Stockpile Area	499	0.15	0.15	6			PSSB		
Stockpile Area	504	3.07	3.07	7			PFOB		
Stockpile Area	506	0.81	0.81	6			PSSA		
Stockpile Area	510	0.17	0.17	6			PSSA		
Stockpile Area	516	0.13	0.13	6			PSSA		
Stockpile Area	523	4.45	4.45	6	1		PSSB	PFOA	
Stockpile Area	524	1.13	1.10	6	2		PSSB	PEMB	

Table 5: Delineated Wetland and Deepwater Habitat Types
 Minnesota Steel Industries [1]
 Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Stockpile Area	526	0.54	0.54	1	2		PFOA	PEMB	
Stockpile Area	530	4.92	3.38	6	1	4	PSSB	PFOA	PEMF
Stockpile Area	532	0.30	0.29	2			PEMB		
Stockpile Area	536	0.24	0.01	1			PFOA		
Stockpile Area	539	0.37	0.37	6			PSSB		
Stockpile Area	549	2.68	1.58	6			PSSB		
Stockpile Area	552	2.22	1.85	2			PEMB		
Stockpile Area	553	5.98	2.19	5	4	2	PUBF	PEMF	PEMB
Stockpile Area	568	2.44	1.14	7			PFOB		
Stockpile Area	572	0.99	0.99	6			PSSB		
Stockpile Area	585	12.39	8.39	7			PFOB		
Stockpile Area	591	143.18	7.74	4			PUBG		
Stockpile Area	606	7.17	7.17	2	6		PEMB	PSSB	
Stockpile Area	621	2.28	2.28	7	6		PFOB	PSSC	
Stockpile Area	626	5.14	5.14	6			PSSC		
Stockpile Area	645	0.33	0.21	7			PFOB		
Stockpile Area	646	2.32	2.32	6			PSSA		
Stockpile Area	658	0.13	0.13	6			PSSB		
Stockpile Area	675	2.36	2.36	6			PSSB		
Stockpile Area	676	3.40	3.40	4	6		PUBG	PSSB	
Stockpile Area	704	3.50	3.41	4	6		PUBG	PSSB	
Stockpile Area	718	2.10	1.44	1	6		PEMA	PSSA	
Stockpile Area	2008	6.27	6.27	1			PFOA		
Stockpile Area	2009	0.36	0.36	3			PEMC		
Stockpile Area	2010	21.07	21.07	4	3		PEMF	PEMC	
Stockpile Area	2020	2.90	1.71	2	6		PEMB	PSSB	
Stockpile Area	2021	0.19	0.19	2			PEMB		
Stockpile Area Subtotal	41	377.0	213.8						
Plant Area Stormwater and Water Supply	362	3.91	0.58	4			PEMF		
Plant Area Stormwater and Water Supply	369	13.88	13.17	5	4		PUB/ABG	PEMF	
Plant Area Stormwater and Water Supply	387	0.29	0.29	7			PFOB		
Plant Area Stormwater and Water Supply	403	4.51	4.51	DW					
Plant Area Stormwater and Water Supply	408	0.19	0.01	6			PSSB		
Plant Area Stormwater and Water Supply	415	1.43	1.42	7			PFOB		
Plant Area Stormwater and Water Supply	429	7.37	7.37	DW					
Plant Area Stormwater and Water Supply	441	0.31	0.02	7			PFOB		
Stage I TB Tailings Pipeline	558	2.34	0.11	2			PEMB		
Stage I TB Tailings Pipeline	562	0.56	0.28	6	7		PSSB	PFOB	
Stage I TB Tailings Pipeline	566	1.22	0.40	6	2		PSSB	PEMB	
Plant Area Stormwater and Water Supply	2005	0.85	0.02	6	7		PSSB	PFOB	
Tailings Pipeline and Stormwater Subtotal	12	36.9	28.2						
Stage I Tailings Basin	438	46.56	9.77	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	445	6.78	1.19	4	2	0	PEMF	PEMB	
Stage I Tailings Basin	475	0.63	0.44	3	4	6	PEMC	PEMG	PSSB
Stage I Tailings Basin	488	5.05	5.05	4	6	3	PEMG	PSSB	PEMC
Stage I Tailings Basin	519	2.97	2.97	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	545	1.92	1.92	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	618	3.28	3.28	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	634	6.46	6.46	6	7	0	PSSB	PFOB	
Stage I Tailings Basin	651	2.38	2.38	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	665	0.98	0.98	2	0	0	PEMB		
Stage I Tailings Basin	678	8.09	8.09	3	0	0	PEMC		
Stage I Tailings Basin	679	0.22	0.22	2	3	0	PEMB	PEMC	
Stage I Tailings Basin	680	3.24	3.24	2	0	0	PEMB		
Stage I Tailings Basin	689	3.38	3.38	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	744	14.23	13.09	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	748	16.88	16.88	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	771	0.24	0.24	3	0	0	PEMC		
Stage I Tailings Basin	773	5.67	3.29	5	0	0	PUBG		
Stage I Tailings Basin	779	50.80	50.80	5	2	6	PUBH	PEMB	PSSB
Stage I Tailings Basin	782	8.61	8.61	3	6	0	PEMC	PSSB	
Stage I Tailings Basin	784	69.15	69.15	5	3	0	PUBH	PEMC	
Stage I Tailings Basin	787	2.92	2.92	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	794	1.27	1.27	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	797	1.27	1.27	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	798	0.35	0.35	3	2	0	PEMC	PEMB	
Stage I Tailings Basin	805	3.06	3.06	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	817	0.42	0.42	3	0	0	PEMC		
Stage I Tailings Basin	823	0.22	0.20	7	0	0	PFOB		
Stage I Tailings Basin	831	6.64	0.10	4	3	2	PABG	PEMC	PEMB
Stage I Tailings Basin	834	22.88	22.88	3	2	6	PEMC	PEMB	PSSB
Stage I Tailings Basin	838	0.18	0.18	3	0	0	PEMC		
Stage I Tailings Basin	844	2.33	2.33	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	847	1.16	1.16	8	0	0	PFOB		
Stage I Tailings Basin	849	10.33	1.82	7	6	0	PFOB	PSSB	
Stage I Tailings Basin	855	3.66	1.28	6	3	0	PSSB	PEMC	
Stage I Tailings Basin	982	93.44	93.44	6	3	0	PSSB	PEMF	
Stage I Tailings Basin	983	2.39	2.39	3	0	0	PEMC		
Stage I Tailings Basin	984	0.70	0.70	2	3	0	PEMB	PEMC	
Stage I Tailings Basin	985	0.67	0.67	6	0	0	PSSB		
Stage I Tailings Basin	1033	0.69	0.69	2	0	0	PEMB		
Stage I Tailings Basin	1034	4.32	4.32	2	0	0	PEMB		
Stage I Tailings Basin	1035	3.37	3.37	2	0	0	PEMB		
Stage I Tailings Basin	1037	5.57	5.57	2	0	0	PEMB		

Table 5: Delineated Wetland and Deepwater Habitat Types
 Minnesota Steel Industries [1]
 Revised December 11, 2006

Project Area	Wetland ID	Total Wetland Area (acres)	Impact Area (acres)	Dominant Circular 39 Type	Secondary Circular 39 Type	Additional Circular 39 Type	Dominant Cowardin Type	Secondary Cowardin Type	Additional Cowardin Type
Stage I Tailings Basin	1038	0.84	0.84	3	0	0	PEMF		
Stage I Tailings Basin	1039	24.81	24.81	2	0	0	PEMB		
Stage I Tailings Basin	1044	0.18	0.18	2	0	0	PEMB		
Stage I Tailings Basin	1046	1.30	1.30	2	0	0	PEMB		
Stage I Tailings Basin	1047	0.39	0.39	2	0	0	PEMB		
Stage I Tailings Basin	1048	0.14	0.14	3	0	0	PEMC		
Stage I Tailings Basin	1052	3.01	3.01	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	1055	0.03	0.03	2	0	0	PEMB		
Stage I Tailings Basin	1056	1.32	1.32	7	0	0	PFOB		
Stage I Tailings Basin	1057	0.71	0.71	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	1059	0.04	0.04	2	0	0	PEMB		
Stage I Tailings Basin	1060	0.09	0.09	2	6	0	PEMB	PSSB	
Stage I Tailings Basin	1061	0.24	0.24	3	7	0	PEMC	PFOB	
Stage I Tailings Basin	1062	0.70	0.10	3	7	0	PEMC	PFOB	
Stage I Tailings Basin Subtotal	57	459.2	395.0						
Alternative Tailings Basin	4	0.82	0.82	7			PFOB		
Alternative Tailings Basin	8	3.34	3.34	6			PSSB		
Alternative Tailings Basin	10	0.12	0.12	5			PUBHx		
Alternative Tailings Basin	11	0.35	0.35	2	6		PEMB	PSSB	
Alternative Tailings Basin	16	5.18	5.18	8	6		PFOB	PSSB	
Alternative Tailings Basin	18	0.68	0.68	2	3		PEMB	PEMC	
Alternative Tailings Basin	19	34.20	0.71	4	3	2	PEMG	PEMC	PEMB
Alternative Tailings Basin	22	0.68	0.68	7			PFOB		
Alternative Tailings Basin	23	0.64	0.64	2	7		PEMB	PFOB	
Alternative Tailings Basin	24	0.82	0.82	2			PEMB		
Alternative Tailings Basin	25	6.14	6.14	4	3		PEMG	PEMC	
Alternative Tailings Basin	26	6.31	6.31	2	5		PEMB	PUBH	
Alternative Tailings Basin	30	18.43	0.83	7			PFOC		
Alternative Tailings Basin	31	20.62	20.62	2	3		PEMB	PEMF	
Alternative Tailings Basin	32	1.39	1.39	2	6		PEMB	PSSB	
Alternative Tailings Basin	33	22.93	22.93	6	7	2	PSSB	PFOB	PEMB
Alternative Tailings Basin	34	1.20	1.20	8			PFOB		
Alternative Tailings Basin	35	0.97	0.97	6	7		PSSB	PFOB	
Alternative Tailings Basin	37	13.76	13.76	7	6		PFOB	PSSB	
Alternative Tailings Basin	39	2.65	2.43	8			PFOB		
Alternative Tailings Basin	42	22.51	14.01	6			PSSB		
Alternative Tailings Basin	43	32.92	32.92	6	7	4	PSSB	PFOB	PEMG
Alternative Tailings Basin	44	11.30	9.32	7			PFOB		
Alternative Tailings Basin	45	31.89	31.89	7			PFOB		
Alternative Tailings Basin	46	10.10	10.10	7	6		PFOB	PSSB	
Alternative Tailings Basin	48	8.15	3.07	7			PFOB		
Alternative Tailings Basin	1007	25.59	0.39	2			PEMB		
Alternative Tailings Basin	1010	22.95	0.28	6			PSSB		
Alternative Tailings Basin	1021	55.68	5.39	7	6		PFOB	PSSB	
Alternative Tailings Basin	1026	21.15	7.67	2	6		PEMB	PSSB	
Alternative Tailings Basin	1027	1.70	1.70	8			PFOB		
Alternative Tailings Basin	1028	0.93	0.93	8			PFOB		
Alternative Tailings Basin	1029	0.94	0.94	6			PSSB		
Alternative Tailings Basin	1030	0.68	0.68	6	7	2	PSSB	PFOB	PEMB
Alternative Tailings Basin	1040	0.63	0.63	2	3		PEMB	PEMC	
Alternative Tailings Basin	1041	0.96	0.96	7			PFOB		
Alternative Tailings Basin	1042	0.14	0.14	2			PEMB		
Alternative Tailings Basin	1043	1.49	1.49	7			PFOB		
Alternative Tailings Basin	1050	0.19	0.02	2	7		PEMB	PFOB	
Alternative Tailings Basin Subtotal	39	391.1	212.5						
Total with Stage I Tailings Basin	179	1,500	1,093						
Total with Alternative Tailings Basin	161	1432	910						

Table 6: Projected Wetland and Deepwater Habitat Impacts
 Minnesota Steel Industries
 Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Mine Area	Pits 1 & 2	Deepwater	433.62	111.50	Low	Low	High	Mine Pit	Artificial	No
Mine Area	330 (Pit 5)	Deepwater	163.53	163.53	Low	Low	High	Mine Pit	Artificial	Yes
Mine Area	493	3	15.84	0.05	Low	Low	High	Ditch	Artificial	Yes
Mine Area	524	6	1.13	0.03	Low	Medium	Low	None	Natural	Yes
Mine Area	529	Deepwater	16.88	16.88	Low	Low	High	Pit	Artificial	Yes
Mine Area	530	6	4.92	1.54	High	High	Low	None	Natural	Yes
Mine Area	532	2	0.30	0.01	High	High	Low	None	Natural	Yes
Mine Area	536	1	0.24	0.24	Medium	Medium	Low	None	Natural	Yes
Mine Area	546	1	0.46	0.46	High	High	Low	None	Natural	Yes
Mine Area	551	4	0.28	0.28	Low	Medium	High	Excavated	Artificial	Yes
Mine Area	553	5	5.98	3.80	Medium	Medium	High	Excavated	Artificial	Yes
Mine Area	556	4	0.32	0.04	High	High	Medium	Road	Natural	No
Mine Area	557	5	13.55	3.35	Low	Low	Low	Pit	Artificial	Yes
Mine Area	573	7	0.31	0.31	Medium	Medium	High	Impounded	Natural	Yes
Mine Area	584	6	2.76	2.76	High	High	Medium	Logged	Natural	Yes
Mine Area	585	7	12.39	0.11	High	Medium	Low	None	Natural	Yes
Mine Area	586	6	0.17	0.17	High	Medium	Low	None	Natural	Yes
Mine Area	596	3	0.04	0.04	Medium	Medium	Low	None	Natural	Yes
Mine Area	599	3	0.15	0.15	Medium	Medium	Low	None	Natural	Yes
Mine Area	600	3	0.10	0.10	Medium	Medium	Low	None	Natural	Yes
Mine Area	601	7	0.46	0.46	High	Medium	Low	None	Natural	Yes
Mine Area	602	7	0.65	0.65	High	Medium	Low	None	Natural	Yes
Mine Area	604	7	0.56	0.56	High	Medium	Low	None	Natural	Yes
Mine Area	609	4	0.72	0.72	High	Medium	Low	None	Natural	Yes
Mine Area	615	2	0.06	0.06	Medium	Medium	Medium	Road	Natural	Yes
Mine Area	617	7	0.38	0.38	High	Medium	Low	None	Natural	Yes
Mine Area	625	7	0.36	0.11	High	Medium	Low	None	Natural	Yes
Mine Area	641	6	1.99	1.99	High	Medium	Low	None	Natural	Yes
Mine Area	645	7	0.33	0.12	High	Medium	High	Road	Natural	Yes
Mine Area	649	3	0.08	0.08	High	High	Low	None	Natural	Yes
Mine Area	691	Deepwater	23.88	23.88	Low	Low	High	Mine Pit	Artificial	Yes
Mine Area	705	5	4.53	4.53	High	Medium	Medium	Pit	Natural	Yes
Mine Area	718	1	2.10	0.660	Low	Medium	High	Pit	Artificial	Yes
Mine Area	736	7	0.18	0.18	High	Medium	Low	None	Natural	Yes
Mine Area	739	7	0.28	0.28	Medium	Medium	Low	None	Natural	Yes
Mine Area	760	2	19.26	5.42	Medium	Medium	Low	None	Natural	Yes
Mine Area	770	4	1.04	0.05	High	Medium	Low	None	Natural	Yes
Mine Area	777	4	130.44	1.68	High	Medium	Low	None	Natural	Yes
Mine Area	2001	1	0.23	0.23	Medium	Medium	Medium	Road	Artificial	Yes
Mine Area Subtotal	39		426.9	347.4	20/39 High 10/39 Medium 9/39 Low	6/39 High 27/39 Medium 6/39 Low				
Plant Area	287	6	2.80	2.80	Medium	Medium	Low	Road	Natural	Yes
Plant Area	294	2	3.51	3.51	High	Medium	Low	None	Natural	Yes
Plant Area	307	2	0.07	0.06	Low	Medium	Medium	Road	Natural	Yes
Plant Area	309	2	2.59	1.82	Medium	Medium	Low	None	Natural	Yes
Plant Area	313	2	1.46	1.46	Low	Medium	Low	None	Natural	Yes
Plant Area	316	6	2.37	2.37	High	High	Low	None	Natural	Yes
Plant Area	317	2	1.15	1.15	Medium	Medium	Low	None	Natural	Yes

Table 6: Projected Wetland and Deepwater Habitat Impacts
 Minnesota Steel Industries
 Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Plant Area	318	2	0.68	0.68	Medium	Medium	Low	None	Natural	Yes
Plant Area	319	7	3.18	3.18	High	High	Low	None	Natural	Yes
Plant Area	320	2	1.11	1.11	High	High	Low	None	Natural	Yes
Plant Area	331	4	27.86	14.22	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area	345	6	6.76	6.66	High	Medium	Low	None	Natural	Yes
Plant Area	350	6	2.08	2.08	High	Medium	Medium	Flooded	Natural	Yes
Plant Area	358	2	7.73	2.89	High	Medium	Low	None	Natural	Yes
Plant Area	359	6	1.29	1.29	High	Medium	Medium	Flooded	Natural	Yes
Plant Area	362	4	3.91	3.28	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area	368	2	2.45	2.08	High	Medium	Low	None	Natural	Yes
Plant Area	369	5	13.88	0.71	Medium	Medium	High	Flooded	Natural	Yes
Plant Area	372	2	12.74	6.62	High	Medium	Low	None	Natural	Yes
Plant Area	476	6	51.55	13.32	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Plant Area	534	7	0.64	0.44	High	High	Low	None	Natural	Yes
Plant Area	542	2	0.62	0.37	High	High	Low	None	Natural	Yes
Plant Area	549	6	2.68	1.10	High	High	Low	None	Natural	Yes
Plant Area	568	7	2.44	1.30	High	High	Medium	Road	Natural	Yes
Plant Area	585	7	12.39	3.88	High	Medium	Low	None	Natural	Yes
Plant Area	2003	2	1.21	1.21	High	Medium	Medium	None	Natural	Yes
Plant Area	2004	1	0.21	0.21	High	Medium	Low	None	Natural	Yes
Plant Area	2005	6	0.85	0.19	High	Medium	Low	None	Natural	Yes
Plant Area	2006	6	27.04	27.04	High	Medium	Low	None	Natural	Yes
Plant Area	2020	2	2.90	1.20	High	High	Low	None	Natural	Yes
Plant Area Subtotal	30		200.1	108.2	20/30 High 8/30 Medium 2/30 Low	8/30 High 22/30 Medium 0/30 Low				
Stockpile Area	425	5	71.16	71.16	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	455	6	4.26	4.26	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	457	6	0.31	0.31	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	462	1	0.46	0.46	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	476	6	51.55	38.23	Medium	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	482	3	0.34	0.34	Medium	Medium	Medium	Stockpile	Natural	No
Stockpile Area	485	4	3.29	3.29	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	499	6	0.15	0.15	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stockpile Area	504	7	3.07	3.07	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	506	6	0.81	0.81	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	510	6	0.17	0.17	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	516	6	0.13	0.13	Medium	Medium	High	Stockpile	Artificial	Yes
Stockpile Area	523	6	4.45	4.45	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	524	6	1.13	1.10	Low	Medium	Low	None	Natural	Yes
Stockpile Area	526	1	0.54	0.54	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	530	6	4.92	3.38	High	High	Low	None	Natural	Yes
Stockpile Area	532	2	0.30	0.29	High	High	Low	None	Natural	Yes
Stockpile Area	536	1	0.24	0.01	Medium	Medium	Low	None	Natural	Yes
Stockpile Area	539	6	0.37	0.37	High	High	Low	None	Natural	Yes
Stockpile Area	549	6	2.68	1.58	High	High	Low	None	Natural	Yes
Stockpile Area	552	2	2.22	1.85	Exceptional	High	Low	Power line adjacent	Natural	Yes
Stockpile Area	553	5	5.98	2.19	Medium	Medium	High	Excavated	Artificial	Yes
Stockpile Area	568	7	2.44	1.14	High	High	Medium	Road	Natural	Yes
Stockpile Area	572	6	0.99	0.99	High	High	Low	None	Natural	Yes

Table 6: Projected Wetland and Deepwater Habitat Impacts
 Minnesota Steel Industries
 Revised December 11, 2006

Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Stockpile Area	585	7	12.39	8.39	High	Medium	Low	None	Natural	Yes
Stockpile Area	591	4	143.18	7.74	Medium	Medium	High	Tailings Basin	Natural	Yes
Stockpile Area	606	2	7.17	7.17	High	High	Low	None	Natural	Yes
Stockpile Area	621	7	2.28	2.28	High	High	Low	None	Natural	Yes
Stockpile Area	626	6	5.14	5.14	High	High	Low	None	Natural	Yes
Stockpile Area	645	7	0.33	0.21	High	Medium	High	Road	Natural	Yes
Stockpile Area	646	6	2.32	2.32	High	High	Low	None	Natural	Yes
Stockpile Area	658	6	0.13	0.13	High	High	Low	None	Natural	Yes
Stockpile Area	675	6	2.36	2.36	High	High	Low	None	Natural	Yes
Stockpile Area	676	4	3.40	3.40	High	High	Low	None	Natural	Yes
Stockpile Area	704	4	3.50	3.41	High	Medium	Medium	Tailings Dam	Natural	Yes
Stockpile Area	718	1	2.10	1.44	Low	Medium	High	Pit	Artificial	Yes
Stockpile Area	2008	1	6.27	6.27	Low	Medium	Low	Tailings Basin	Artificial	Yes
Stockpile Area	2009	3	0.36	0.36	Medium	Medium	Medium	Road	Artificial	Yes
Stockpile Area	2010	4	21.07	21.07	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stockpile Area	2020	2	2.90	1.71	High	High	Low	None	Natural	Yes
Stockpile Area	2021	2	0.19	0.19	High	High	Low	None	Natural	Yes
Stockpile Area Subtotal	41		377.0	213.8	22/41 High 16/41 Medium 3/41 Low	16/41 High 25/41 Medium 0/41 Low				
Plant Area Stormwater and Water Supply	362	4	3.91	0.58	Medium	Medium	Medium	Flooded	Natural	Yes
Plant Area Stormwater and Water Supply	369	5	13.88	13.17	Medium	Medium	High	Flooded	Natural	Yes
Plant Area Stormwater and Water Supply	387	7	0.29	0.29	High	High	Medium	Road	Natural	No
Plant Area Stormwater and Water Supply	403	Deepwater	4.51	4.51	Low	Low	High	Pit	Artificial	No
Plant Area Stormwater and Water Supply	408	6	0.19	0.01	Medium	Medium	Medium	Stockpile	Natural	No
Plant Area Stormwater and Water Supply	415	7	1.43	1.42	High	High	Medium	Pits	Natural	No
Plant Area Stormwater and Water Supply	429	Deepwater	7.37	7.37	Low	Low	High	Pit	Artificial	No
Plant Area Stormwater and Water Supply	441	7	0.31	0.02	High	High	Medium	Road	Natural	No
Stage I TB Tailings Pipeline	558	2	2.34	0.11	Low	Low	High	Stockpile	Artificial	No
Stage I TB Tailings Pipeline	562	6	0.56	0.28	Medium	Medium	Medium	Roads	Natural	No
Stage I TB Tailings Pipeline	566	6	1.22	0.40	Medium	Medium	Medium	Roads, Stockpile	Natural	No
Plant Area Stormwater and Water Supply	2005	6	0.85	0.02	High	Medium	Low	None	Natural	Yes
Tailings Pipeline Corridor Subtotal	12		36.9	28.2	4/12 High 5/12 Medium 3/12 Low	3/12 High 6/12 Medium 3/12 Low				
Stage I Tailings Basin	438	3	46.56	9.77	Low	Low	High	Tailings Basin/ATV	Artificial	Yes
Stage I Tailings Basin	445	4	6.78	1.19	Medium	Medium	Medium	Excavation/Tailings	Natural	Yes
Stage I Tailings Basin	475	3	0.63	0.44	High	Medium	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	488	4	5.05	5.05	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	519	3	2.97	2.97	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	545	3	1.92	1.92	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	618	2	3.28	3.28	Low	Low	High	Tailings Basin	Artificial	No
Stage I Tailings Basin	634	6	6.46	6.46	High	High	Medium	Impounded	Natural	No
Stage I Tailings Basin	651	3	2.38	2.38	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	665	2	0.98	0.98	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	678	3	8.09	8.09	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	679	2	0.22	0.22	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	680	2	3.24	3.24	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	689	3	3.38	3.38	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	744	3	14.23	13.09	Low	Low	High	Tailings Basin	Artificial	No

Table 6: Projected Wetland and Deepwater Habitat Impacts
 Minnesota Steel Industries
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Project Area	Wetland ID	Dominant Circular 39 Type	Total Wetland Area (acres)	Impact Area (acres)	Vegetative Diversity/ Integrity	Overall Wetland Quality	Disturbance Level	Disturbance Type	Wetland Origin	Field Delineated
Stage I Tailings Basin	748	2	16.88	16.88	Medium	High	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	771	3	0.24	0.24	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	773	5	5.67	3.29	High	High	Low	None	Natural	No
Stage I Tailings Basin	779	5	50.80	50.80	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	782	3	8.61	8.61	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	784	5	69.15	69.15	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	787	3	2.92	2.92	Low	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	794	3	1.27	1.27	High	High	Medium	Tailings Basin	Natural	Yes
Stage I Tailings Basin	797	3	1.27	1.27	Medium	Medium	Medium	Tailings Basin	Natural	Yes
Stage I Tailings Basin	798	3	0.35	0.35	High	Medium	Medium	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	805	3	3.06	3.06	High	High	Low	None	Natural	No
Stage I Tailings Basin	817	3	0.42	0.42	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	823	7	0.22	0.20	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	831	4	6.64	0.10	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	834	3	22.88	22.88	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	838	3	0.18	0.18	High	High	Low	None	Natural	No
Stage I Tailings Basin	844	3	2.33	2.33	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	847	8	1.16	1.16	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	849	7	10.33	1.82	High	High	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	855	6	3.66	1.28	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	982	6	93.44	93.44	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	983	3	2.39	2.39	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	984	2	0.70	0.70	Medium	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	985	6	0.67	0.67	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1033	2	0.69	0.69	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1034	2	4.32	4.32	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1035	2	3.37	3.37	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1037	2	5.57	5.57	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1038	3	0.84	0.84	Low	Medium	Low	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1039	2	24.81	24.81	High	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1044	2	0.18	0.18	Medium	Medium	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1046	2	1.30	1.30	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1047	2	0.39	0.39	Low	Low	High	Tailings Basin	Artificial	Yes
Stage I Tailings Basin	1048	3	0.14	0.14	Medium	Medium	Medium	Tailings Dam	Natural	No
Stage I Tailings Basin	1052	3	3.01	3.01	Medium	Medium	High	Tailings Basin	Natural	No
Stage I Tailings Basin	1055	2	0.03	0.03	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1056	7	1.32	1.32	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1057	2	0.71	0.71	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1059	2	0.04	0.04	High	High	Low	None	Natural	Yes
Stage I Tailings Basin	1060	2	0.09	0.09	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1061	3	0.24	0.24	High	High	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin	1062	3	0.70	0.10	Medium	Medium	Medium	Tailings Dam	Natural	Yes
Stage I Tailings Basin Subtotal	57		459.2	395.0	20/57 High 21/57 Medium 16/57 Low	18/57 High 20/57 Medium 19/57 Low				
Alternative Tailings Basin	4	7	0.82	0.82	High	High	Low	Forest Harvest	Natural	No
Alternative Tailings Basin	8	6	3.34	3.34	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	10	5	0.12	0.12	Medium	Medium	High	Excavation/Forest	Artificial	No
Alternative Tailings Basin	11	2	0.35	0.35	High	High	Low	Forest Harvest	Natural	No

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Alternative Tailings Basin	16	8	5.18	5.18	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	18	2	0.68	0.68	High	High	Low	Forest Harvest	Natural	No
Alternative Tailings Basin	19	4	34.20	0.71	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	22	7	0.68	0.68	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	23	2	0.64	0.64	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	24	2	0.82	0.82	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	25	4	6.14	6.14	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	26	2	6.31	6.31	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	30	7	18.43	0.83	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	31	2	20.62	20.63	High	High	Low	None	Natural	Yes
Alternative Tailings Basin	32	2	1.39	1.39	High	High	Low	None	Natural	No
Alternative Tailings Basin	33	6	22.93	22.91	High	Medium	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	34	8	1.20	1.20	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	35	6	0.97	0.97	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	37	7	13.76	13.77	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	39	8	2.65	2.43	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	42	6	22.51	14.02	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	43	6	32.92	32.93	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	44	7	11.30	9.33	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	45	7	31.89	31.91	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	46	7	10.10	10.10	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	48	7	8.15	3.07	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1007	2	25.59	0.39	High	High	Low	None	Natural	No
Alternative Tailings Basin	1010	6	22.95	0.28	High	High	Low	None	Natural	No
Alternative Tailings Basin	1021	7	55.68	5.40	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1026	2	21.15	7.68	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1027	8	1.70	1.70	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1028	8	0.93	0.93	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1029	6	0.94	0.94	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1030	6	0.68	0.68	High	Medium	Medium	Tailings Basin	Natural	Yes
Alternative Tailings Basin	1040	2	0.63	0.63	High	Medium	Medium	Impounded	Natural	Yes
Alternative Tailings Basin	1041	7	0.96	0.96	High	High	Low	Road Adjacent	Natural	Yes
Alternative Tailings Basin	1042	2	0.14	0.14	High	High	Low	Power line	Natural	Yes
Alternative Tailings Basin	1043	7	1.49	1.49	High	High	Low	Forest Harvest	Natural	Yes
Alternative Tailings Basin	1050	2	0.19	0.02	High	High	Low	None	Natural	Yes
Alternative Tailings Basin Subtotal	39		391.1	212.5	38/39 High 1/39 Medium	35/39 High 4/39 Medium				
Total with Stage I Tailings Basin	179		1,500	1,093						
Total with Alternative Tailings Basin	161		1432	910						

Table 7: Summary of Projected Wetland Impacts by Circular 39 Type
 Minnesota Steel Industries
 Revised December 12, 2006

Project Area		Circular 39 Type								Wetland Total	Deepwater
		1	2	3	4	5	6	7	8		
Mine Area	(acres)	1.59	5.48	0.42	2.76	11.67	6.49	3.17	0.00	31.6	315.79
	% of impact area	0.5%	1.6%	0.1%	0.8%	3.4%	1.9%	0.9%	0.0%		90.9%
	# wetlands	4	3	5	5	3	5	10	0	35	3
Plant Area	(acres)	0.21	24.15	0.00	17.51	0.71	56.85	8.80	0.00	108.2	0.00
	% of impact area	0.2%	22.3%	0.0%	16.2%	0.7%	52.5%	8.1%	0.0%		0.0%
	# wetlands	1	13	0	2	1	9	4	0	30	0
Stockpile Area	(acres)	8.71	11.20	0.70	38.90	73.35	65.87	15.09	0.00	213.8	0.00
	% of impact area	4.1%	5.2%	0.3%	18.2%	34.3%	30.8%	7.1%	0.0%		0.0%
	# wetlands	5	5	2	5	2	17	5	0	41	0
Tailings Basin Pipeline, Stormwater and Water Supply	(acres)	0.00	0.11	0.00	0.58	13.17	0.70	1.73	0.00	16.3	11.88
	% of impact area	0.0%	0.4%	0.0%	2.1%	46.8%	2.5%	6.2%	0.0%		42.2%
	# wetlands	0	1	0	1	1	4	3	0	10	2
Stage I Tailings Basin	(acres)	0.00	66.80	92.29	6.34	123.24	101.85	3.35	1.16	395.0	0.00
	% of impact area	0.0%	16.9%	23.4%	1.6%	31.2%	25.8%	0.8%	0.3%		0.0%
	# wetlands	0	18	25	3	3	4	3	1	57	0
Alternative Tailings Basin	(acres)	0.00	39.66	0.00	6.85	0.12	76.07	78.31	11.44	212.5	0.00
	% of impact area	0.0%	18.7%	0.0%	3.2%	0.1%	35.8%	36.9%	5.4%		0.0%
	# wetlands	0	12	0	2	1	8	11	5	39	0
Total with Stage I Tailings Basin	(acres)	10.51	107.74	93.41	66.09	222.13	231.75	32.14	1.16	764.9	327.7
	% of impact area	1.4%	14.1%	12.2%	8.6%	29.0%	30.3%	4.2%	0.2%		
	# wetlands	10	40	32	16	10	39	25	1	173	5
Total with Alternative Tailings Basin	(acres)	10.51	80.60	1.12	66.60	99.02	205.98	107.10	11.44	582.4	327.7
	% of impact area	1.8%	13.8%	0.2%	11.4%	17.0%	35.4%	18.4%	2.0%		
	# wetlands	10	34	7	15	8	43	33	5	155	5

Table 8: Summary of Projected Wetland and Deepwater Impacts by Quality
 Minnesota Steel Industries
 Revised December 12, 2006

Project Area		Overall Wetland Quality			Total
		High	Medium	Low	
Mine Area	(acres)	4.88	23.31	319.19	347.4
	% of impact Area	1%	7%	92%	
	# wetlands	6	27	6	39
Plant Area	(acres)	11.05	97.17	0.00	108.2
	% of impact Area	10%	90%	0%	
	# wetlands	8	22	0	30
Stockpile Area	(acres)	34.28	179.54	0.00	213.8
	% of impact Area	16%	84%	0%	
	# wetlands	16	25	0	41
Tailings Pipeline, Stormwater and Water Supply	(acres)	1.73	14.44	11.99	28.2
	% of impact Area	6%	51%	43%	
	# wetlands	3	6	3	12
Stage I Tailings Basin	(acres)	113.84	214.80	66.38	395.0
	% of impact Area	29%	54%	17%	
	# wetlands	18	20	19	57
Alternative Tailings Basin	(acres)	188.16	24.35	0.00	212.5
	% of impact Area	89%	11%	0%	
	# wetlands	35	4	0	39
Total with Stage I Tailings Basin	(acres)	165.8	529.3	397.6	1093
	% of impact Area	15%	48%	36%	
Total with Alternative Tailings Basin	(acres)	240.1	338.8	331.2	910
	% of impact Area	26%	37%	36%	

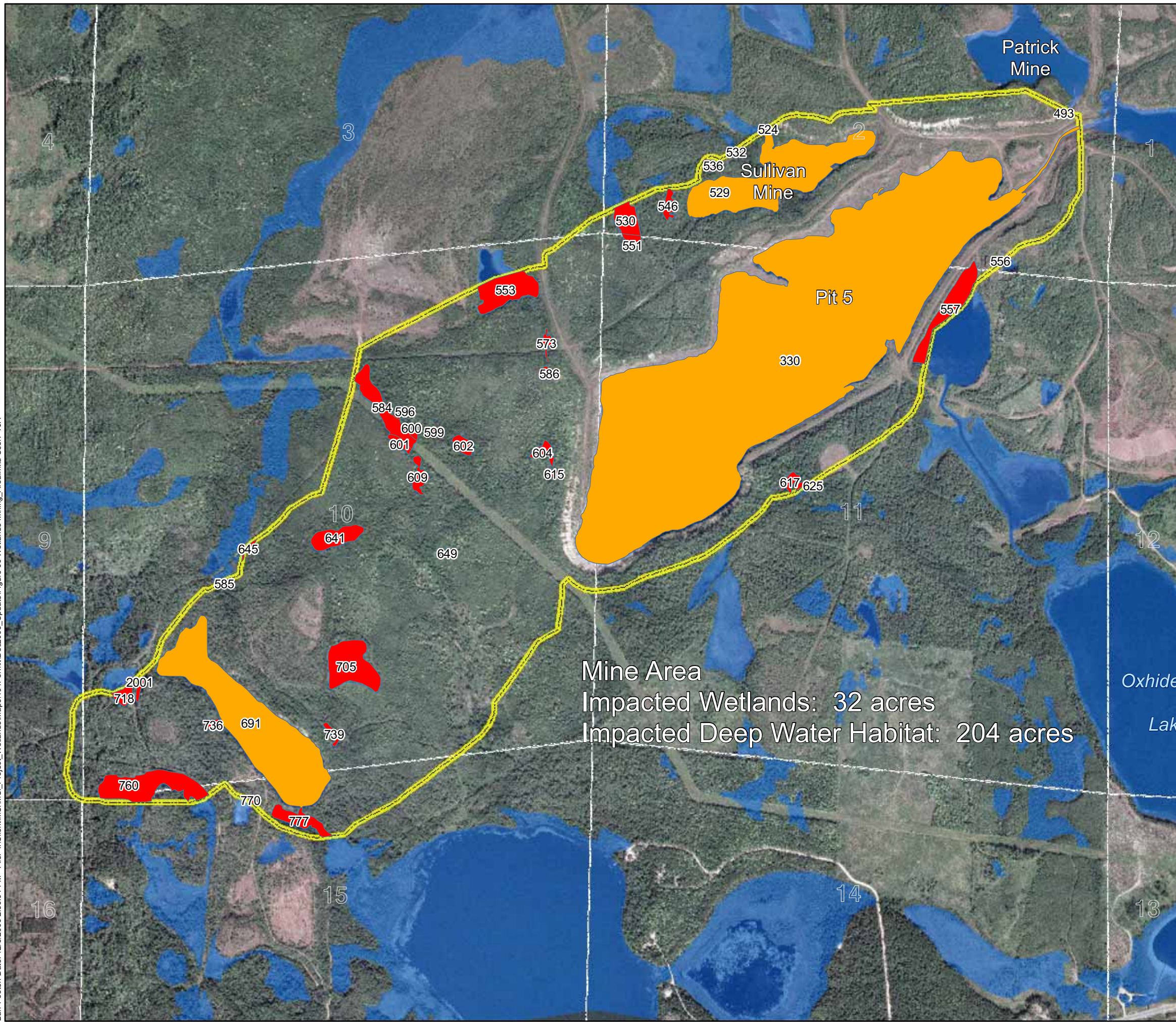
Table 9
Wetland Mitigation Summary - Sites 229 and 248
November 29, 2006
Minnesota Steel Industries
Aitkin, Minnesota



Field ID	Area (acres)	Circ 39 Wetland Type	Planned Water Depths (inches)	Primary Type	Percent	Subdominant Type	Percent	Subdominant Type	Percent
5	26.8	Type 3/4	6-18	4	75%	3	25%		
6	10.9	Type 2	0	2	100%				
7	43.5	Type 2	0	2	100%				
11	12.4	Type 3/4	6-30	4	50%	3	50%		
13	21.7	Type 2/3	0-12	3	75%	2	25%		
14	17.3	Type 4/5	24-36	4	50%	5	50%		
15	21.3	Type 4/5	24-30	4	50%	5	50%		
16	13.3	Type 4/5	24-30	4	50%	5	50%		
17	8.6	Type 4/5	30-36	5	75%	4	25%		
18	6.0	Type 4/5	30-36	5	75%	4	25%		
19	4.2	Type 4/5	30-36	5	75%	4	25%		
20	11.5	Type 6	0	6	100%				
21	37.7	Type 3/4	0-24	4	75%	3	25%		
22	19.3	Type 4/5	36-48	5	75%	4	25%		
23	21.2	Type 4/5	24-48	5	75%	4	25%		
24	25.7	Type 3/4	6-12	3	50%	4	50%		
25	24.0	Type 3/6	0-12	6	75%	3	25%		
26	25.2	Type 3/6	0-18	6	75%	3	25%		
27	10.1	Type 3/4	6-18	3	75%	4	25%		
28	17.0	Type 3/4	12-30	4	75%	3	25%		
31	30.9	Type 4/5	18-30	4	50%	5	50%		
37	28.7	Type 3/4	6-24	4	75%	3	25%		
40	20.8	Type 6	0-6	6	100%				
41	12.0	Type 3/4	12-24	4	75%	3	25%		
44	11.5	Type 4/5	18-30	4	50%	5	50%		
46	25.4	Type 3/4/5	6-36	4	50%	3	25%	5	25%
47	33.6	Type 4/5	6-42	5	75%	4	25%		
48	12.4	Type 2	0	2	100%				
Total	553.0	Total Project Wetland Impacts (ac)							
Type 2 Total	72.2	110							
Type 3 Total	92.1	94							
Type 4 Total	196.3	66							
Type 5 Total	123.2	206							
Type 6 Total	69.2	232							

Table 10
Wetland Impact and Mitigation Summary - First 5 Years
Sites 229 and 248
Minnesota Steel Industries
Aitkin, Minnesota

Wetland Type	Wetland Mitigation Area (acres)	Proposed Wetland Impacts (acres)	Wetland Impacts Compensated¹ (ac)
Type 2 (wet/sedge meadow wetlands)	72.2	108	72.2
Type 3 (0-12 inches water)	92.1	94	92.1
Type 4 (1-3 ft water)	196.3	66	170.2
Type 5 (>3 ft water)	123.2	222	123.2
Type 6 (shrub wetlands)	69.2	232	69.2
Total	553	722	527

¹ Assumes 1:1 replacement for the same wetland types and 1.25:1 for different types.



-  Mine Area
-  Wetland Delineation
-  Impacted Wetland
-  Impacted Deep Water Habitat

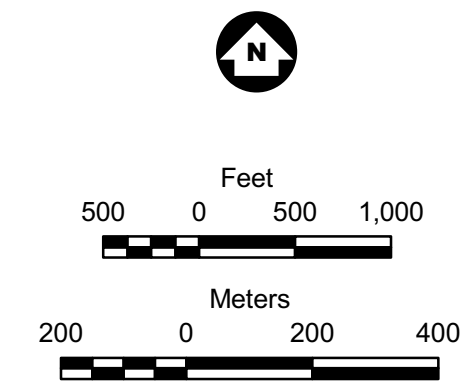
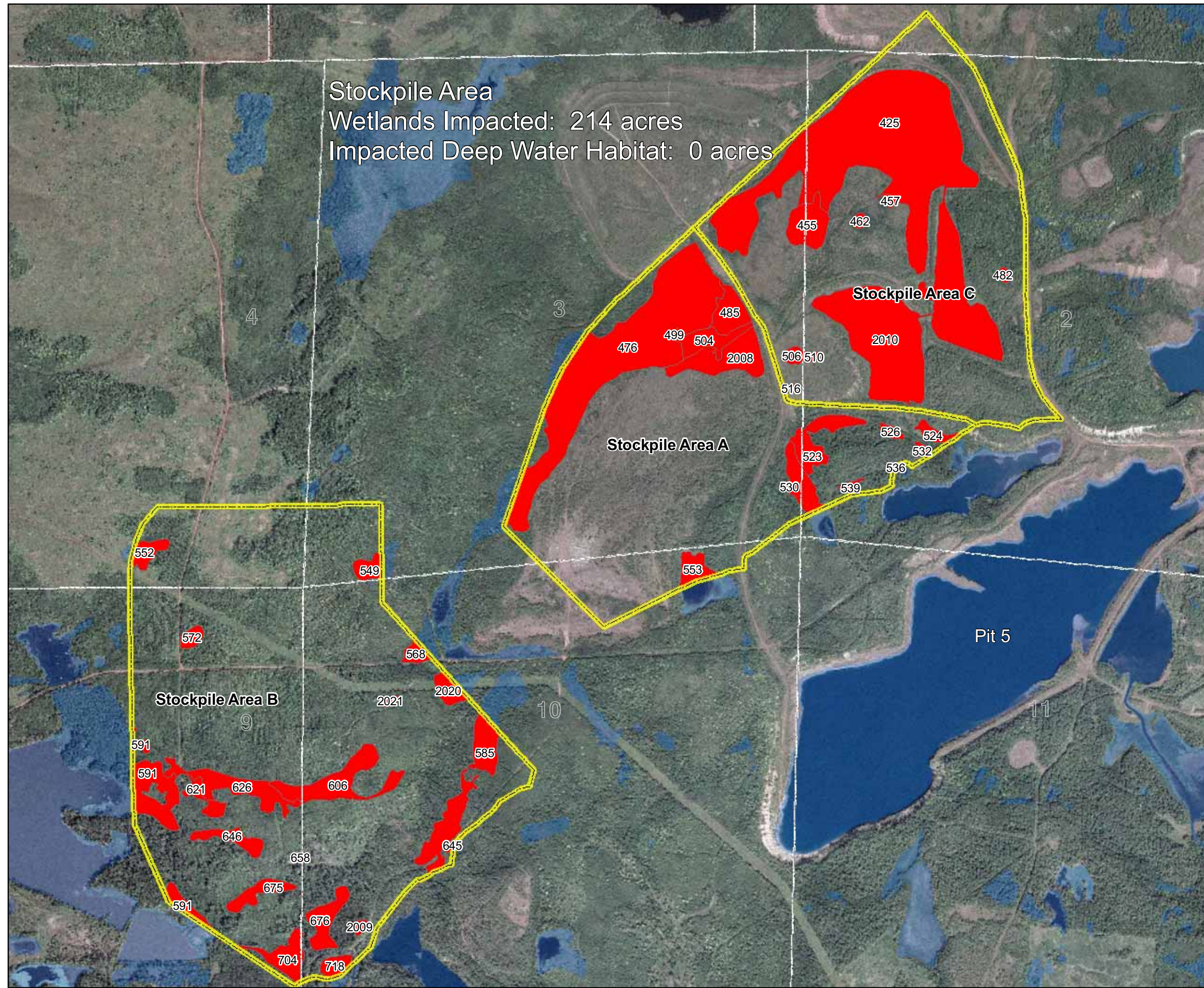


Figure 1
MINE AREA WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota

Stockpile Area
Wetlands Impacted: 214 acres
Impacted Deep Water Habitat: 0 acres



- Stockpile Area
- Wetland Delineation
- Impacted Wetland
- Impacted Deep Water Habitat

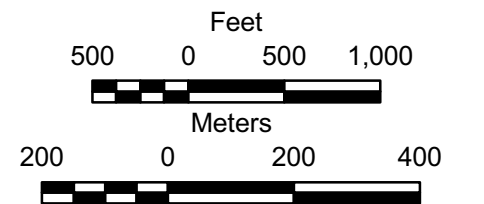
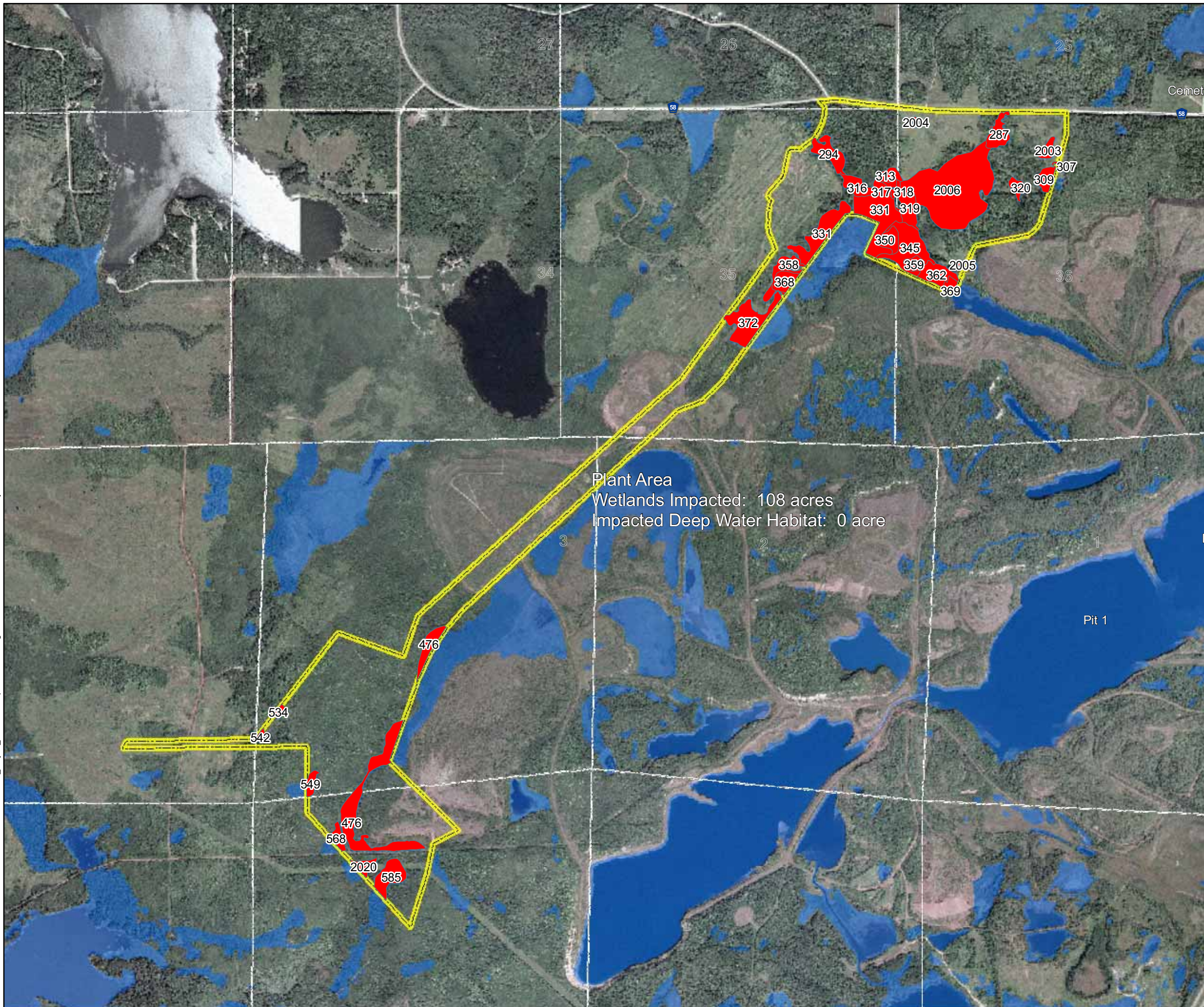






Figure 2

STOCKPILE WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota



-  Plant Site
-  Wetland Delineation
-  Impacted Wetland
-  Impacted Deep Water Habitat

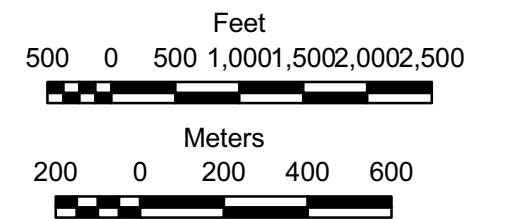
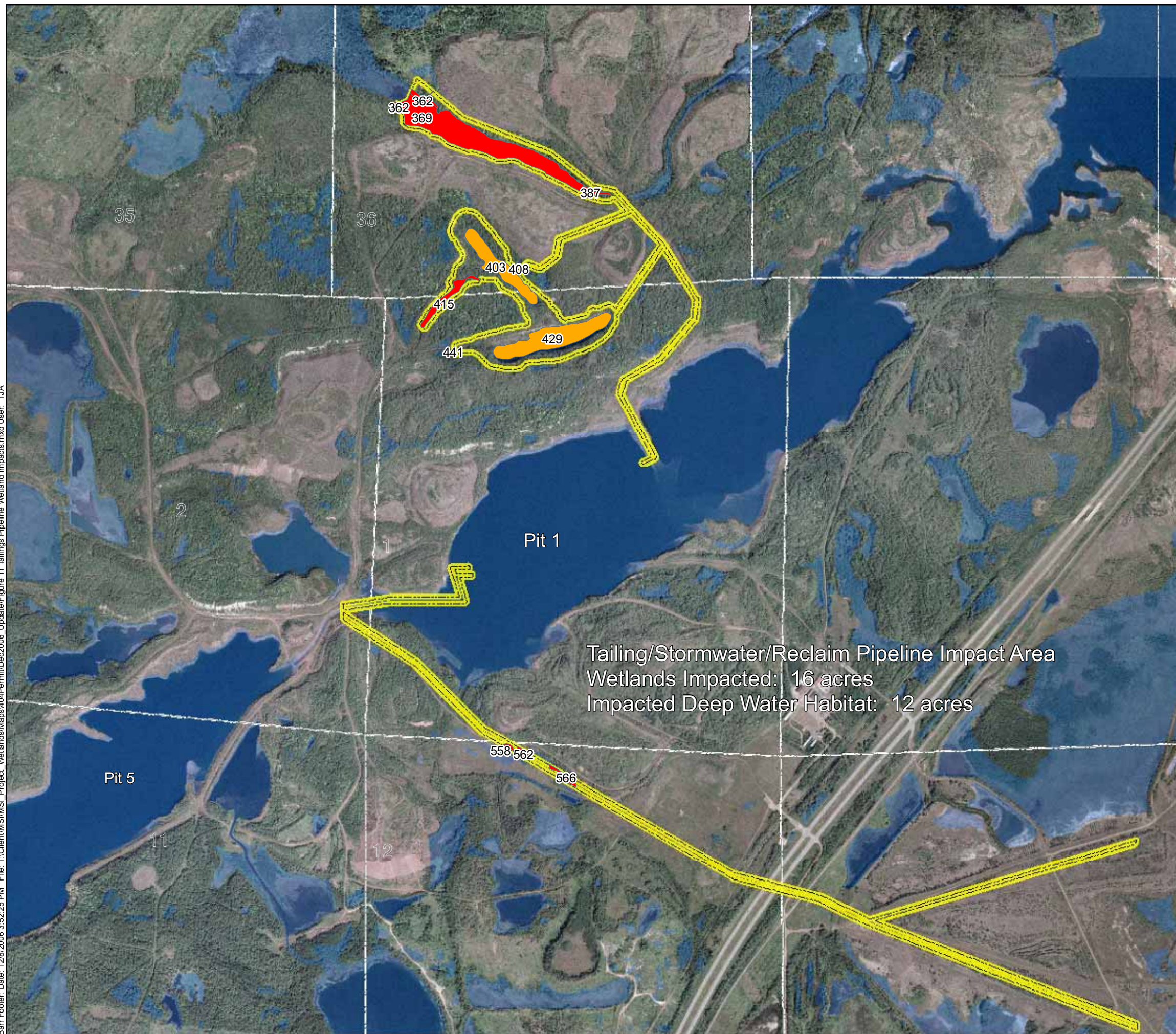






Figure 3
PLANT SITE WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota



-  Wetland Inventory
-  Tailings/Reclaim/Water Supply/Stormwater Project Area
-  Impacted Wetland
-  Impacted Deep Water Habitat

Tailing/Stormwater/Reclaim Pipeline Impact Area
Wetlands Impacted: 16 acres
Impacted Deep Water Habitat: 12 acres

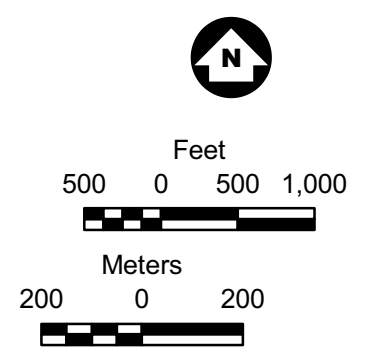
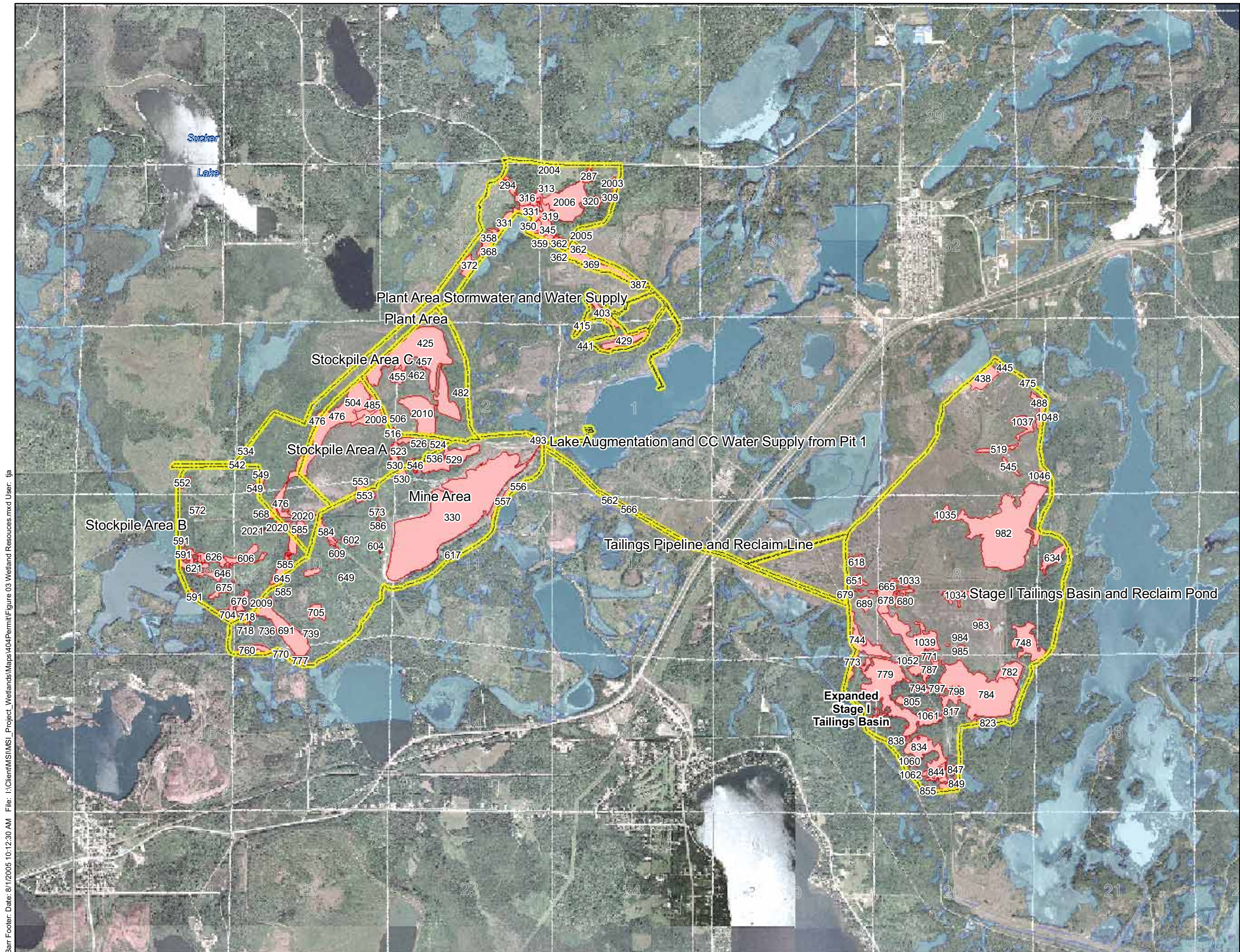


Figure 4
TAILINGS PIPELINE/RECLAIM LINE/
WATER SUPPLY AND STORMWATER
WETLAND IMPACTS
December 11, 2006
Minnesota Steel Industries
Nashwauk, Minnesota



- Project Areas
- Wetland Inventory
- Wetland Impact Areas

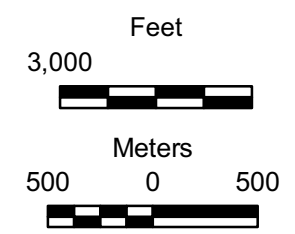
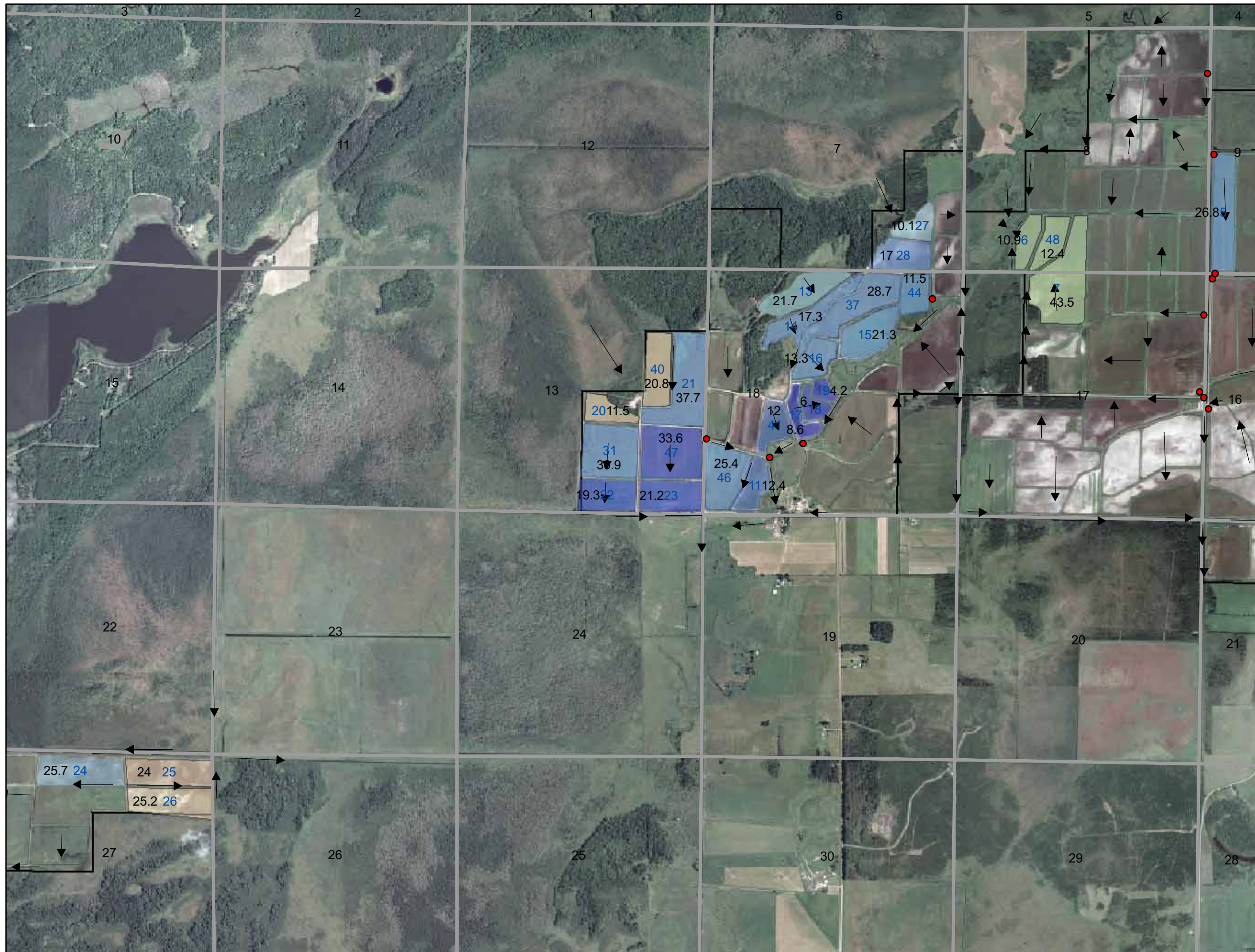


Figure 5

WETLAND RESOURCES
December 11, 2006
Minnesota Steel Industries
Nashauk, Minnesota

Barr Footer: Date: 8/1/2005 10:12:30 AM File: I:\Client\MS\MSI_Project_Wetlands\Maps\404\Permit\Figure 03 Wetland Resources.mxd User: jja



Legend

- ▶ Surface Flow Directions
- Pump Stations
- ▭ Public Land Survey

Dominant Wetland Restoration Types

- Type 2
- Type 3
- Type 4
- Type 5
- Type 6
- ▭ Site 248

Total Wetland Restoration Area
553 acres

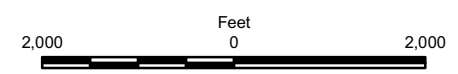
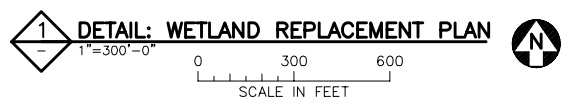
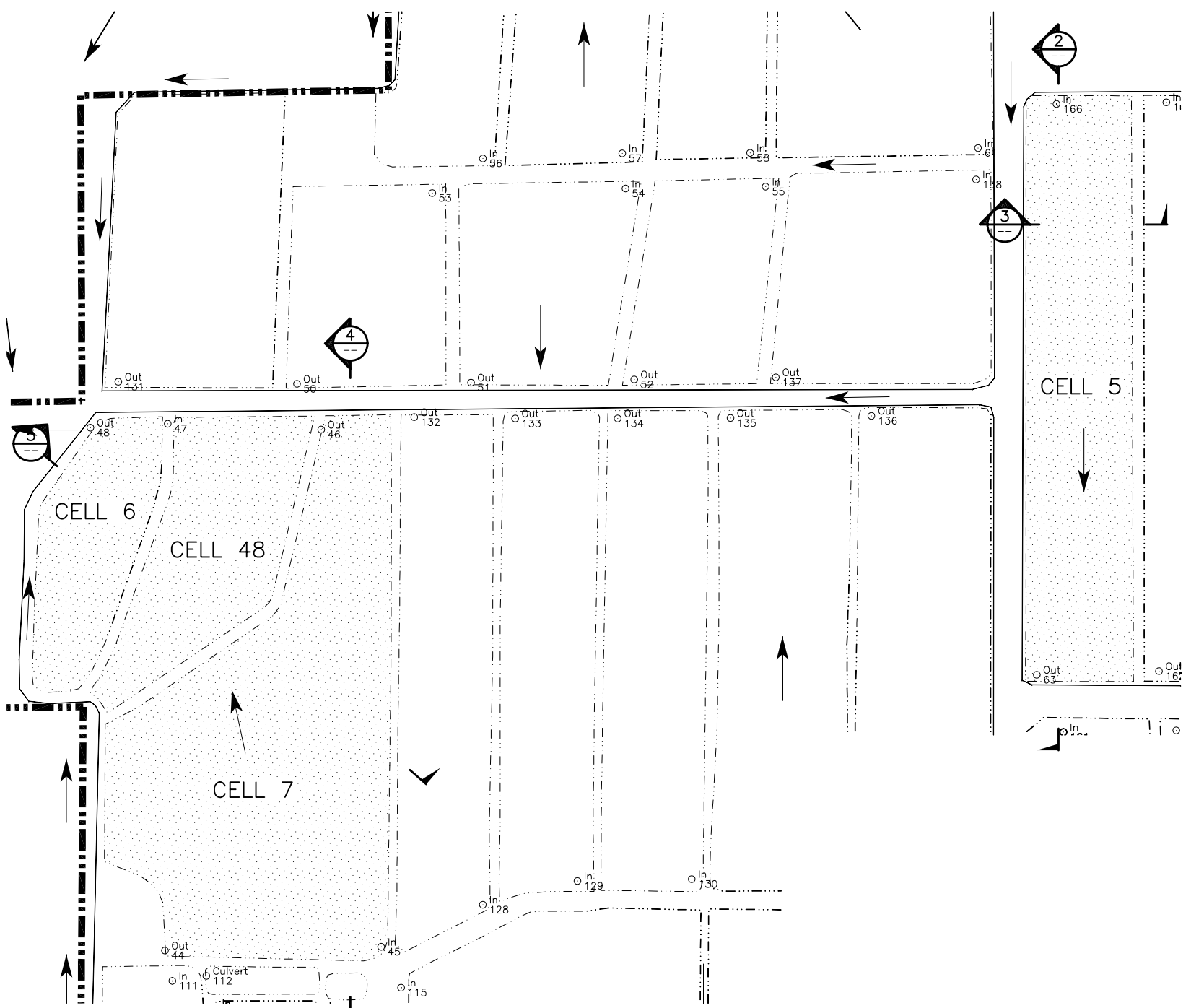
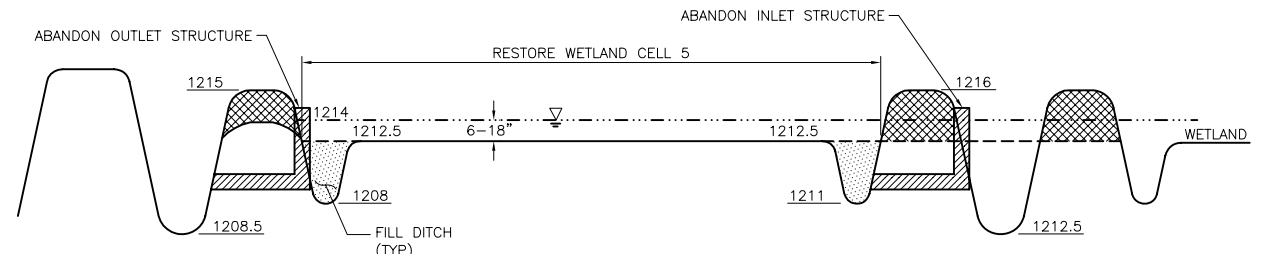


Figure 6
WETLAND RESTORATION PLAN
 Wetland Mitigation Sites 229 & 248
 Minnesota Steel Industries
 Aitkin County, Minnesota

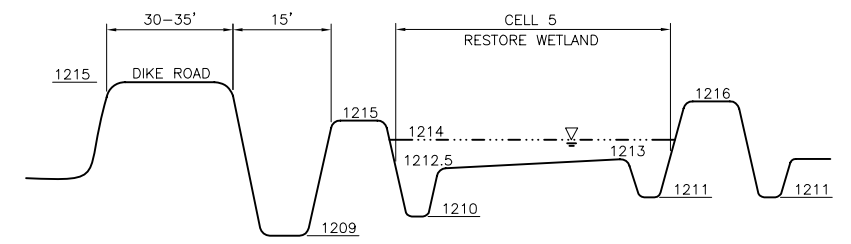
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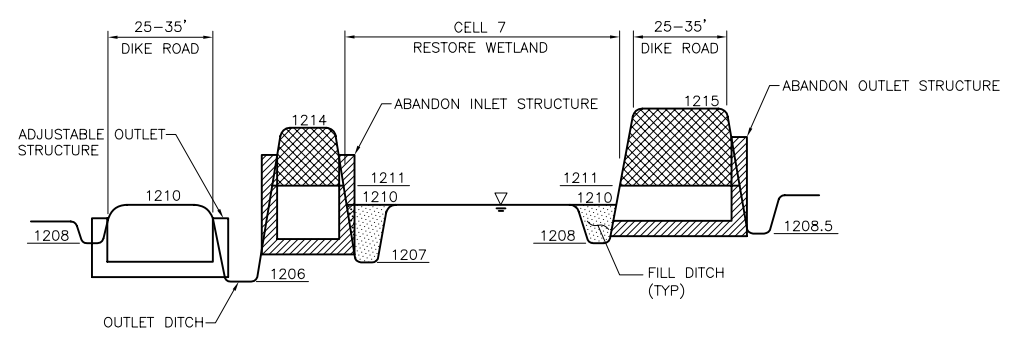
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- FILL DITCH
 - ABANDON STRUCTURE
 - REMOVE DIKE/LOWER OVERFLOW
 - RESTORE WETLAND



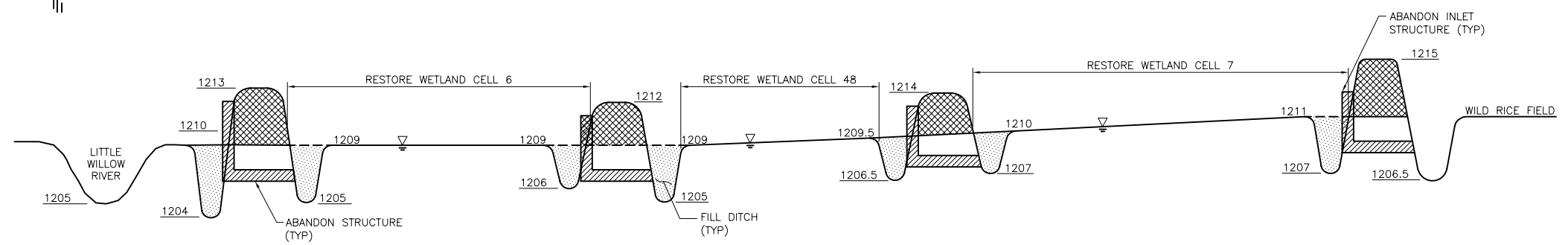
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5 TYPICAL CROSS SECTION - CELLS 6, 48 & 7
 NOT TO SCALE

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				10/31/06

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BARR ENGINEERING CO.
 4700 WEST 77TH STREET
 MINNEAPOLIS, MN.
 55435-4803
 Corporate Headquarters:
 Minneapolis, Minnesota
 Ph: 1-800-632-2277
 Fax: (952) 832-2601
 www.barr.com

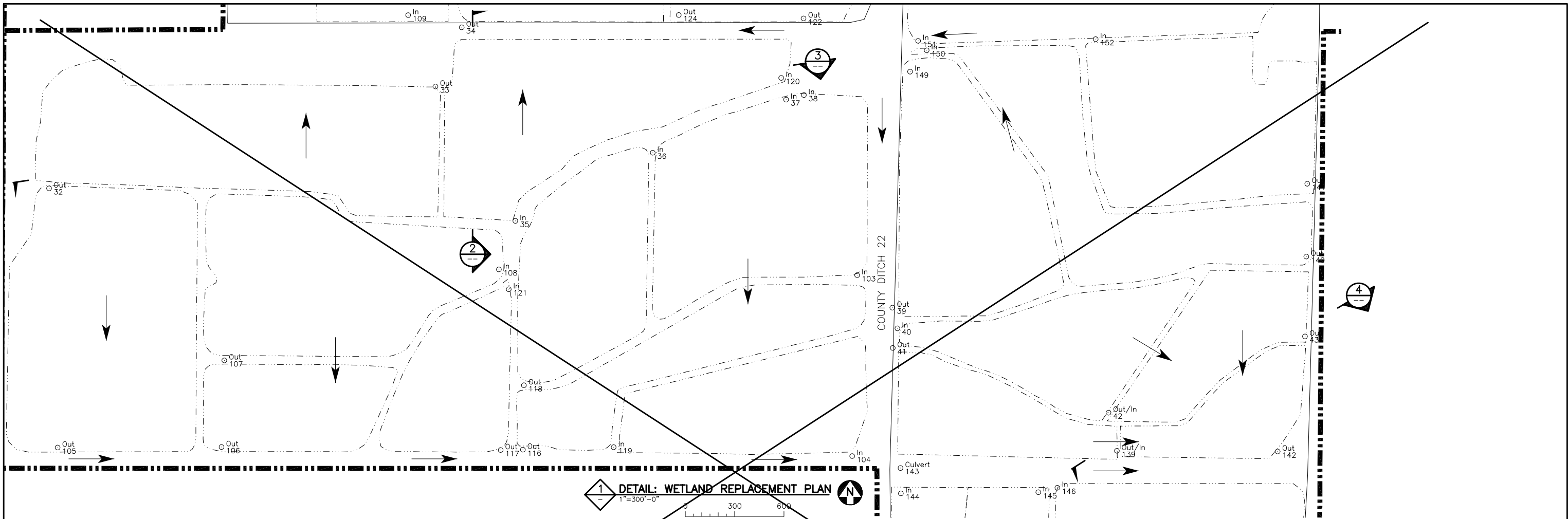
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Checked	MAJ
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Approved	MAJ

MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

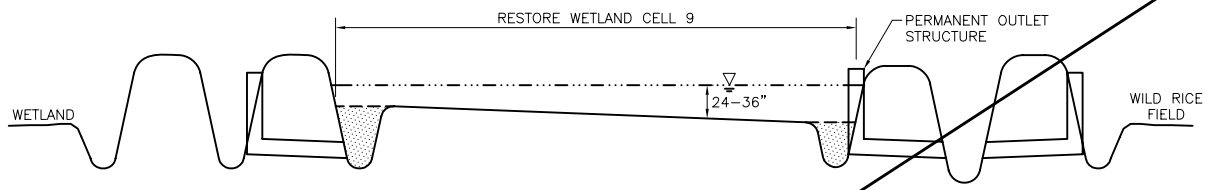
SITE 248 WETLAND REPLACEMENT PLAN
 PALISADE, MINNESOTA
PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.	
CLIENT PROJECT No.	23/31-286
DWG. No.	C-01
REV. No.	1

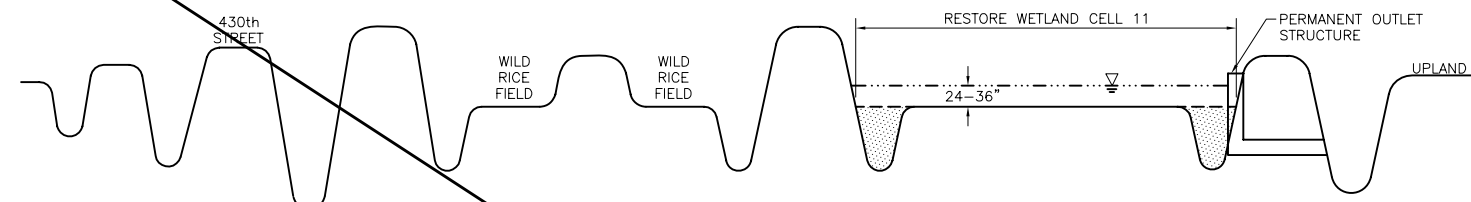
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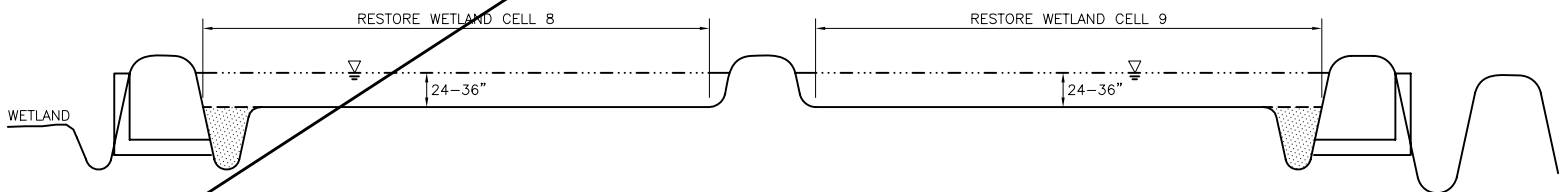
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3 TYPICAL CROSS SECTION - CELL 8 & 9
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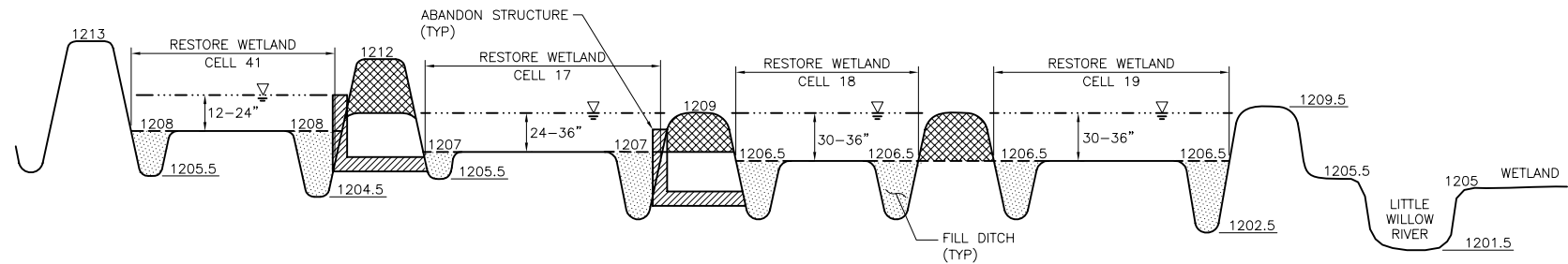
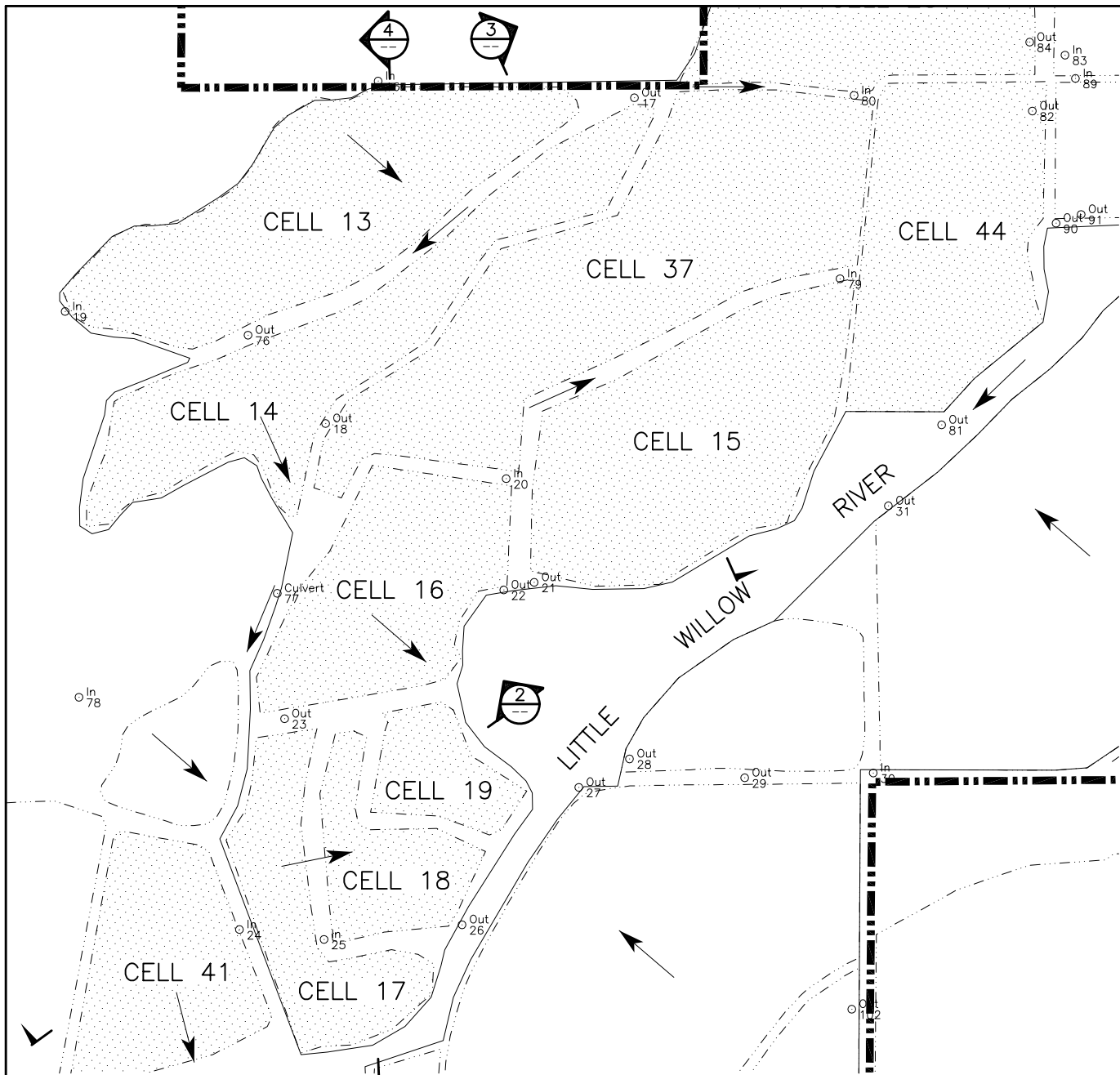
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				10/31/06

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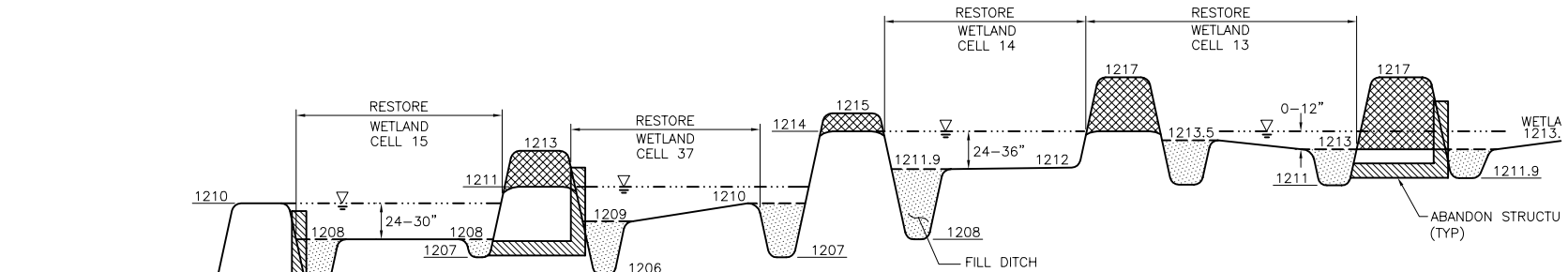
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MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

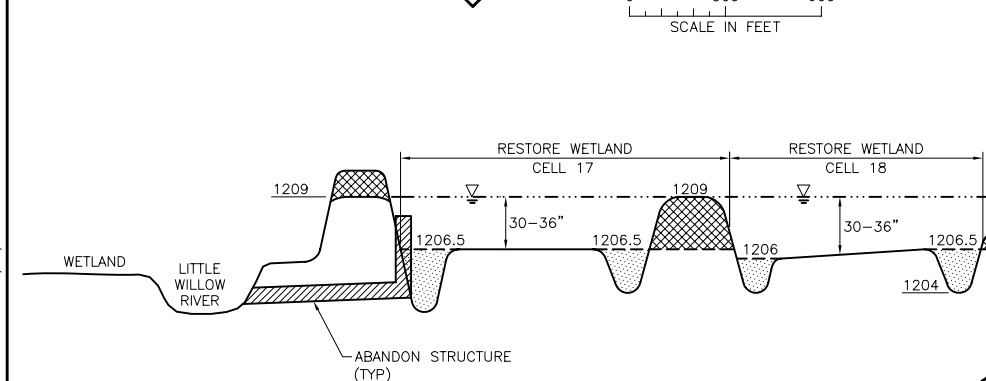
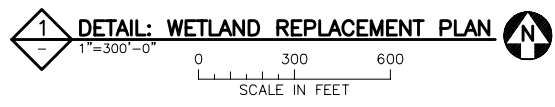
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PLAN DETAILS AND TYPICAL CROSS SECTIONS		CLIENT PROJECT No. 23/31-286
DWG. No. C-02	REV. No. 1	



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NOT TO SCALE



3 TYPICAL CROSS SECTION - CELLS 13, 14, 15, & 37
NOT TO SCALE



4 TYPICAL CROSS SECTION - CELLS 13, 14, 16, 17, 18, 19, 37
NOT TO SCALE

LEGEND

- FILL DITCH
- ABANDON STRUCTURE
- REMOVE DIKE/LOWER OVERFLOW
- RESTORE WETLAND

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Scale	AS SHOWN
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Designed	MAJ
Approved	MAJ

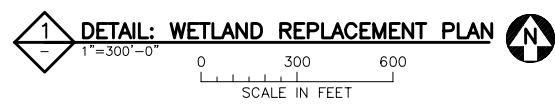
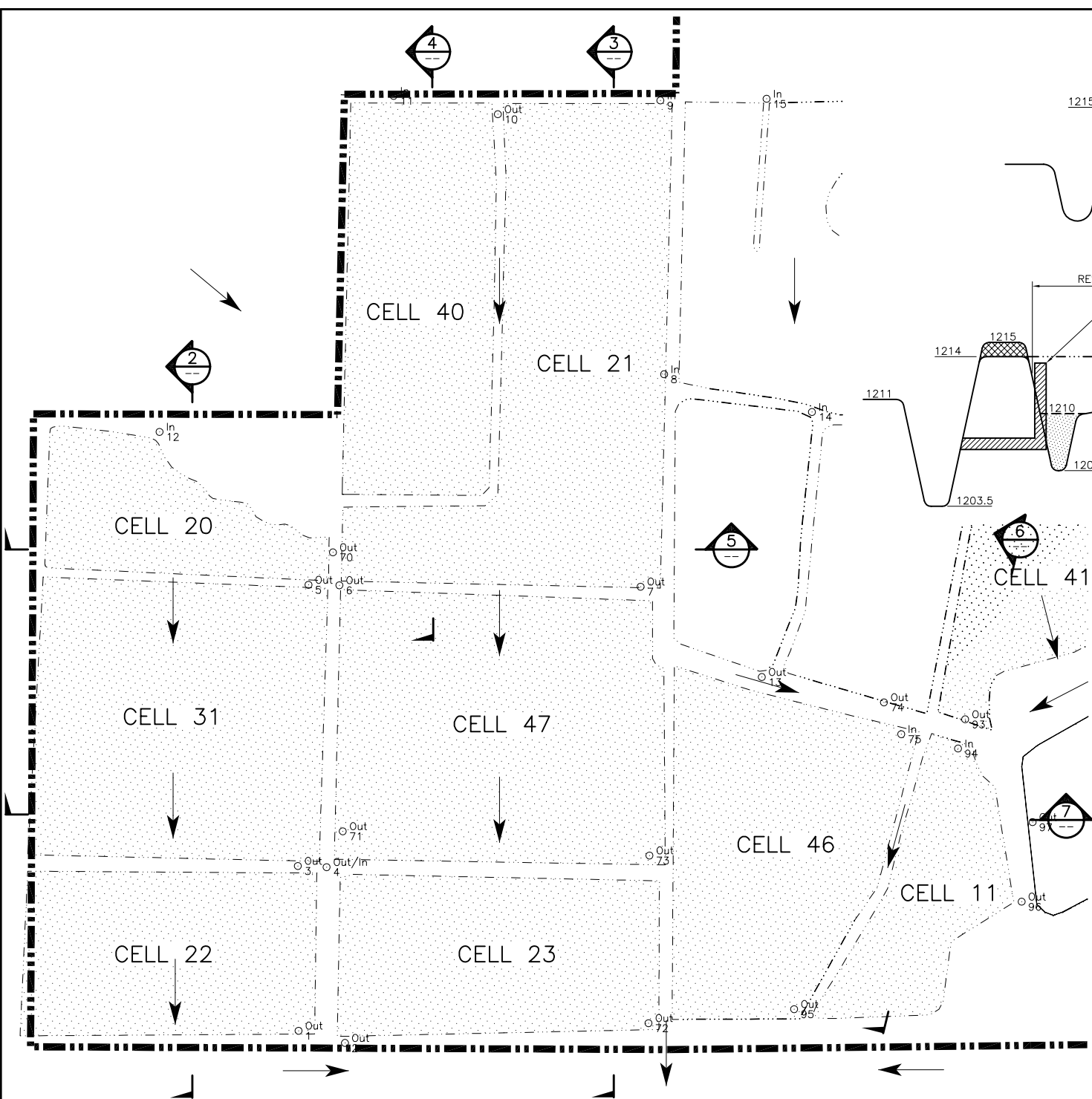
MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
 PALISADE, MINNESOTA

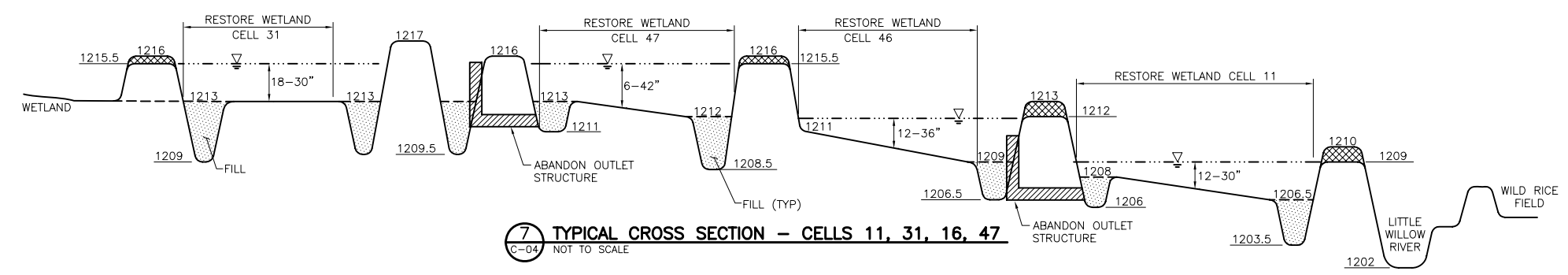
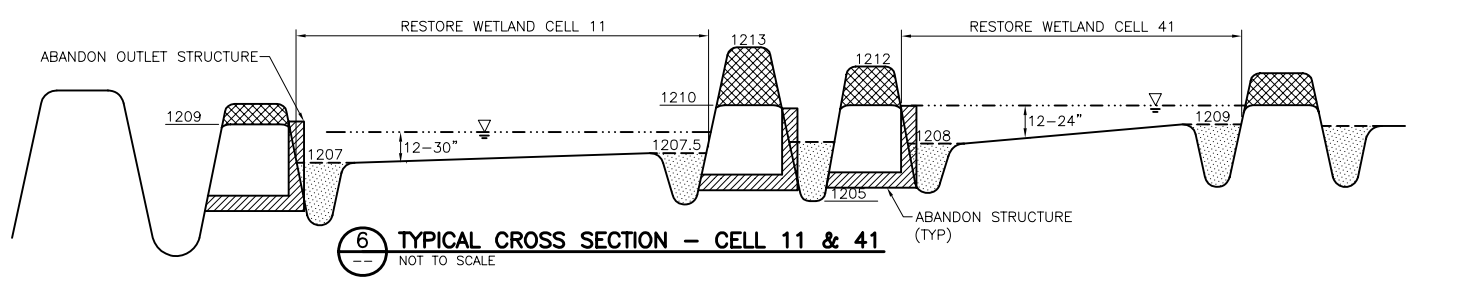
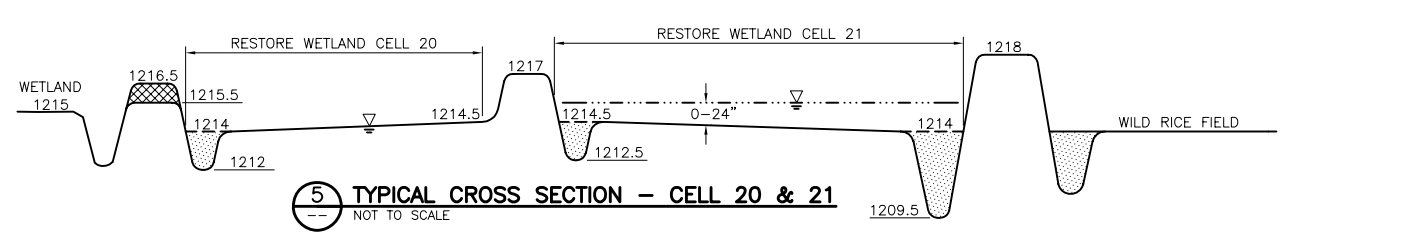
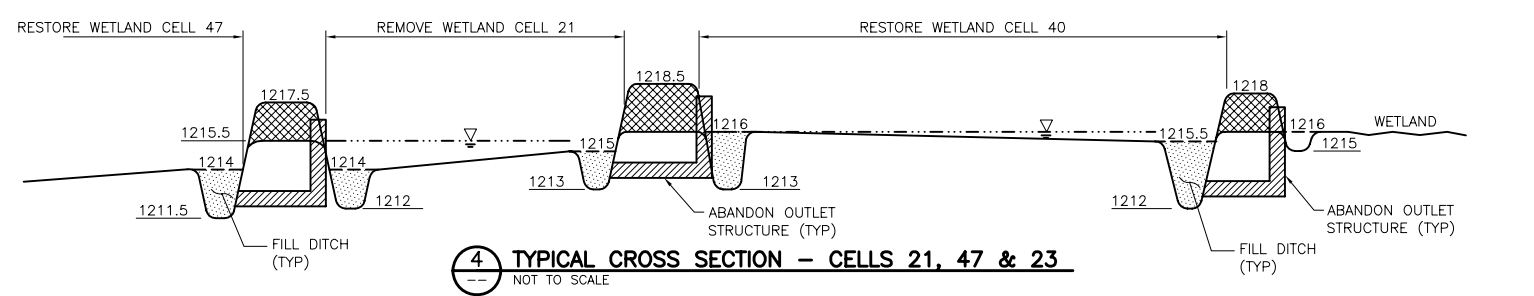
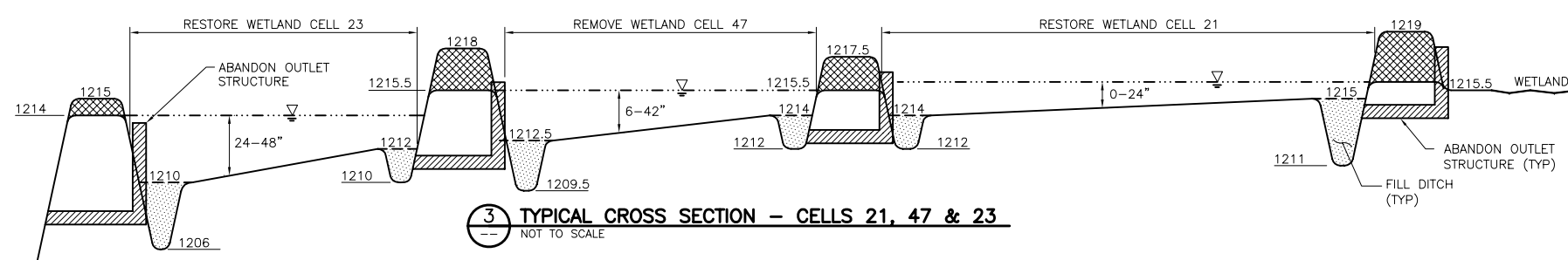
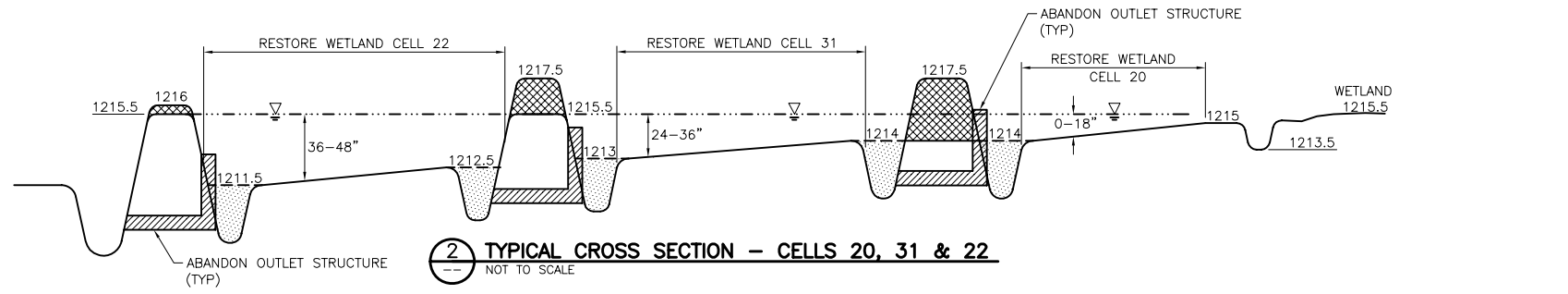
PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.	
CLIENT PROJECT No.	
23/31-286	
DWG. No.	REV. No.
C-03	1

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- LEGEND**
- FILL DITCH
 - ABANDON STRUCTURE
 - REMOVE DIKE/LOWER OVERFLOW
 - RESTORE WETLAND



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CLIENT	BID	CONSTRUCTION	RELEASED TO/FOR	A	B	C	0	1	2	3	DATE RELEASED
											10/31/06

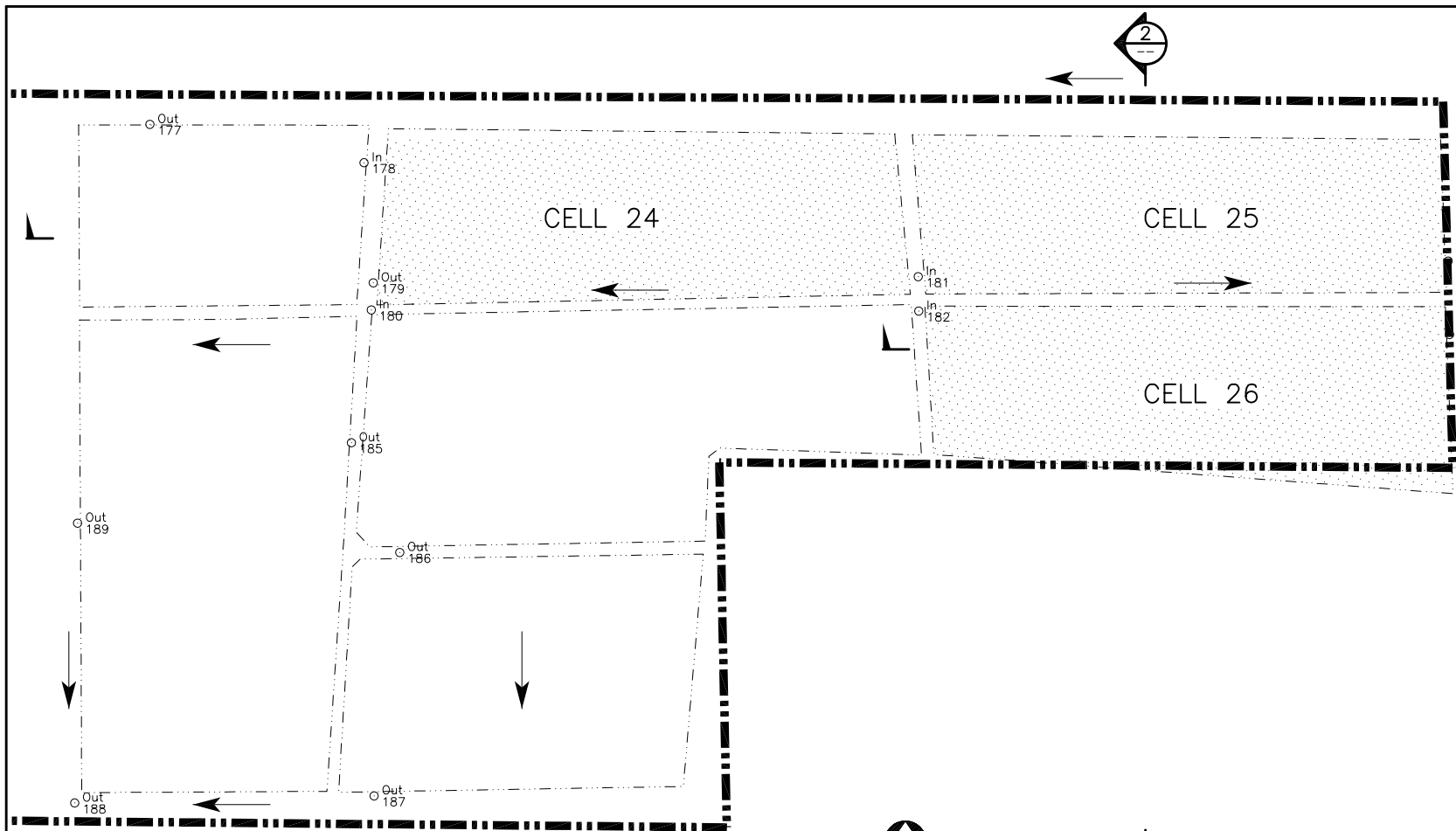
BARR
 Project Office:
BARR ENGINEERING CO.
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 MINNEAPOLIS, MN.
 55435-4803
 Corporate Headquarters:
 Minneapolis, Minnesota
 Ph: 1-800-632-2277
 Fax: (952) 832-2601
 www.barr.com

Scale	AS SHOWN
Date	03/08/06
Drawn	JMW
Checked	MAJ
Designed	MAJ
Approved	MAJ

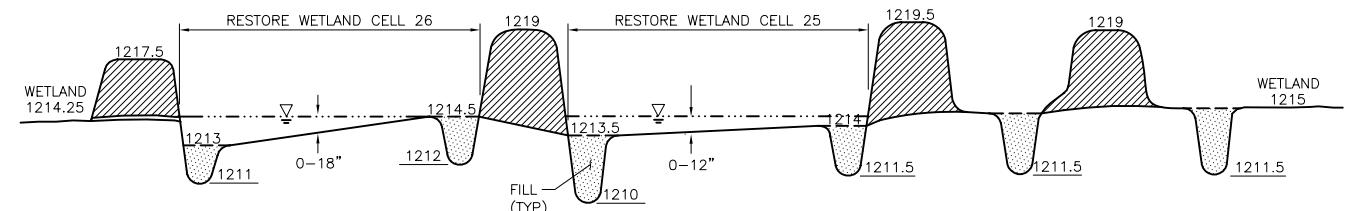
MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

SITE 248 WETLAND REPLACEMENT PLAN
 PALISADE, MINNESOTA
PLAN DETAILS AND TYPICAL CROSS SECTIONS

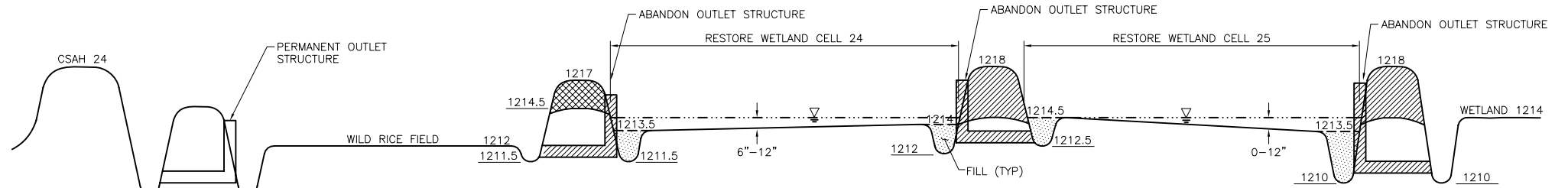
BARR PROJECT No.	CLIENT PROJECT No.	DWG. No.	REV. No.



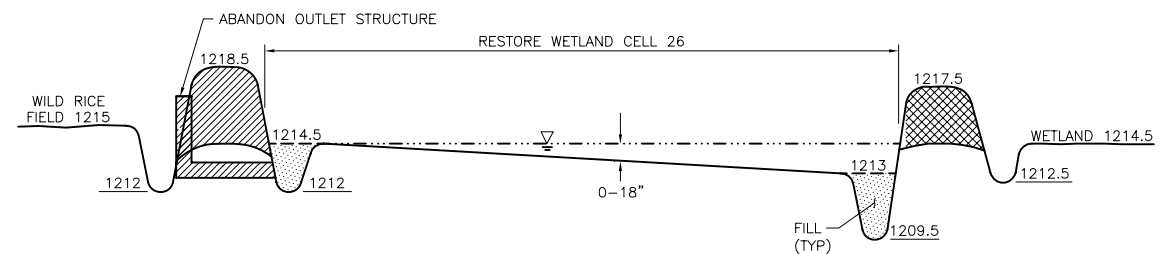
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 1"=300'-0"
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 SCALE IN FEET



2 **TYPICAL CROSS SECTION - CELL 25 & 26**
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3 **TYPICAL CROSS SECTION - CELL 24 & 25**
 NOT TO SCALE



4 **TYPICAL CROSS SECTION - CELL 26**
 NOT TO SCALE

- LEGEND**
- FILL DITCH
 - ABANDON STRUCTURE
 - REMOVE DIKE/LOWER OVERFLOW
 - RESTORE WETLAND

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											10/31/06

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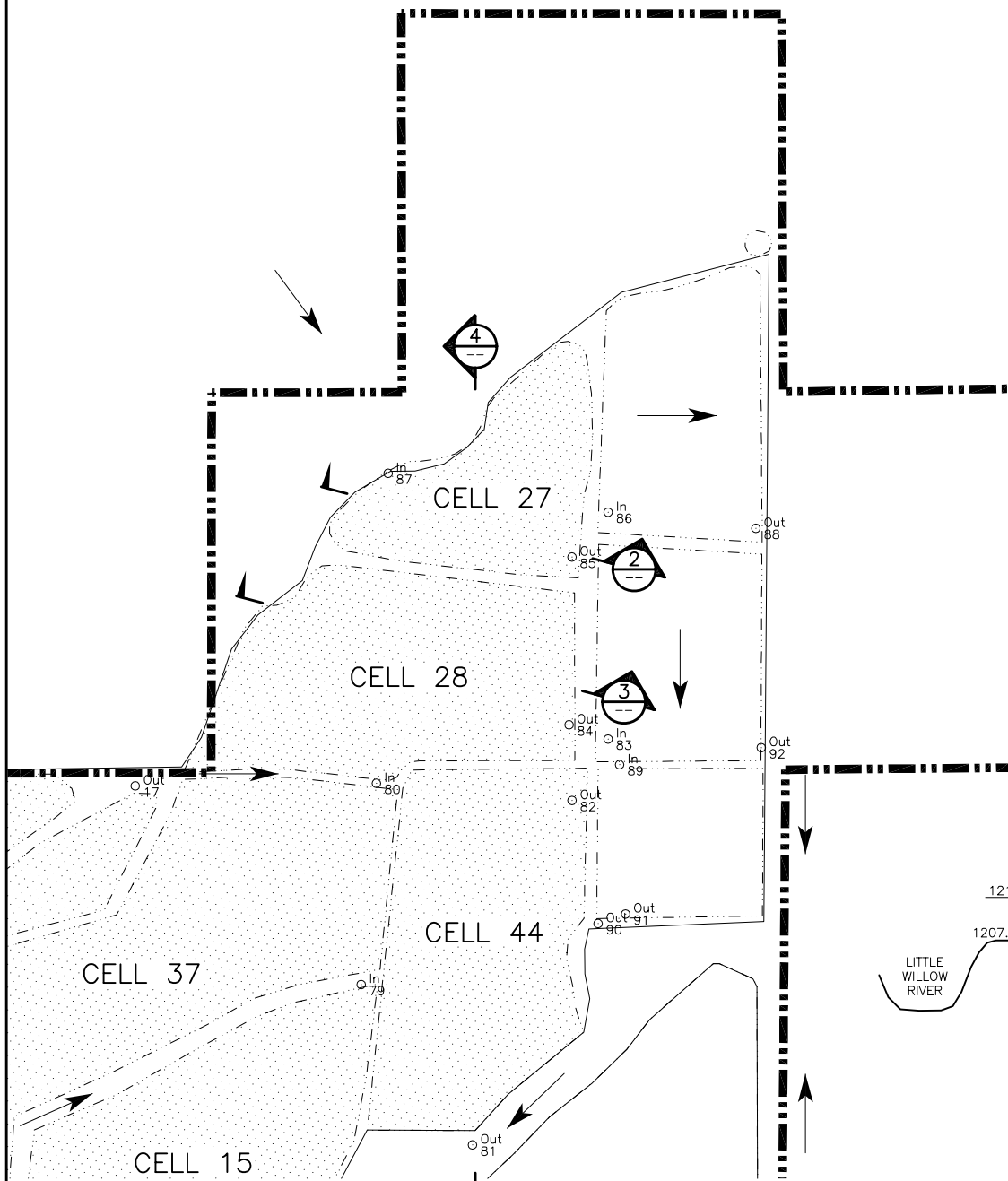
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Date	03/08/06
Drawn	JMW
Checked	MAJ
Designed	MAJ
Approved	MAJ

MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

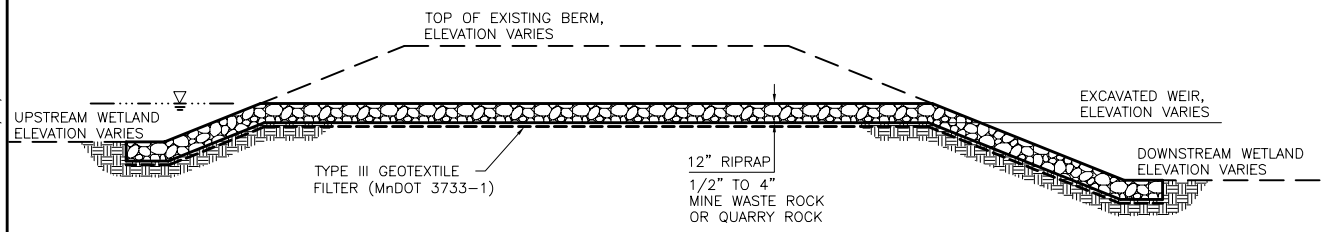
SITE 229 WETLAND REPLACEMENT PLAN
 PALISADE, MINNESOTA
PLAN DETAILS AND TYPICAL CROSS SECTIONS

BARR PROJECT No.	
CLIENT PROJECT No.	
23/31-286	
DWG. No.	REV. No.
C-05	1

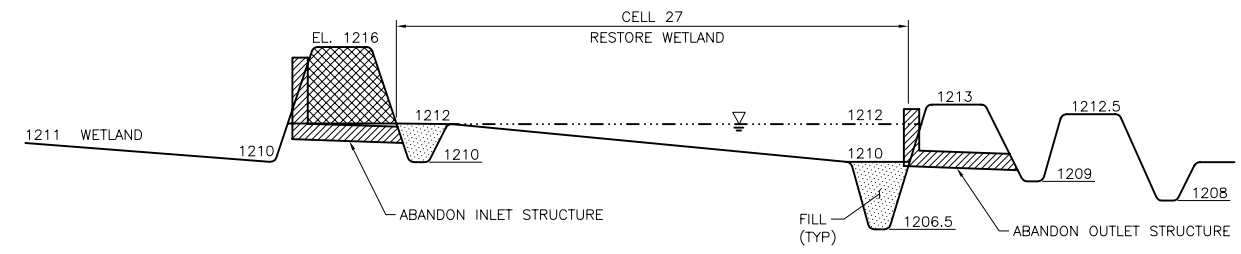
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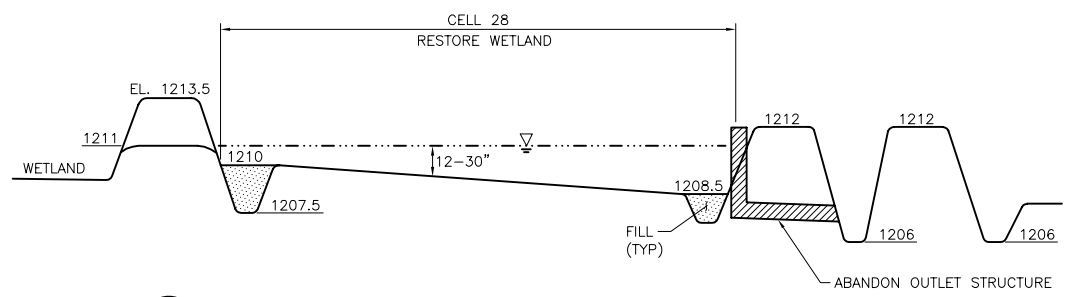
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 SCALE IN FEET



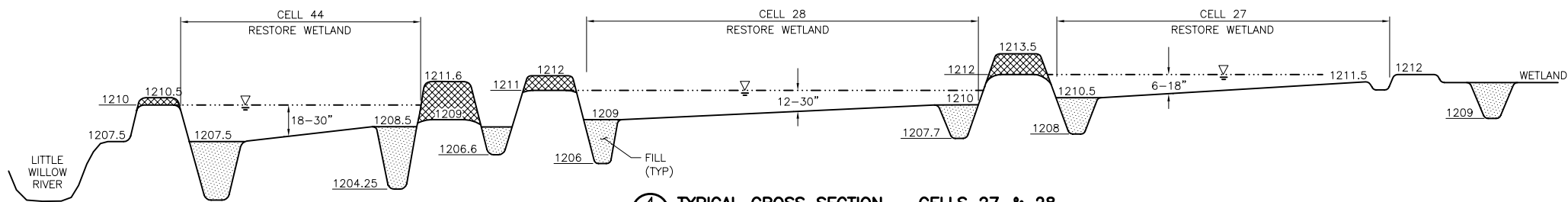
5 TYPICAL CROSS-SECTION - OUTLET WEIR
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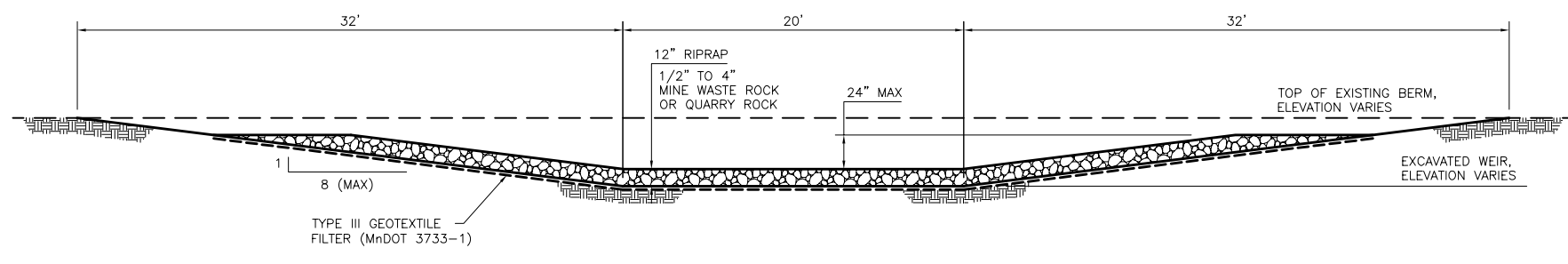
2 TYPICAL CROSS SECTION - CELL 27
 NOT TO SCALE



3 TYPICAL CROSS SECTION - CELL 28
 NOT TO SCALE



4 TYPICAL CROSS SECTION - CELLS 27 & 28
 NOT TO SCALE



6 TYPICAL LONGITUDINAL SECTION - OUTLET WEIR
 NOT TO SCALE

LEGEND

	FILL DITCH
	ABANDON STRUCTURE
	REMOVE DIKE/LOWER OVERFLOW
	RESTORE WETLAND

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 4700 WEST 77TH STREET
 MINNEAPOLIS, MN.
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Project Office:
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 Fax: (952) 832-2601
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Date	03/08/06
Drawn	JMW
Checked	MAJ
Designed	MAJ
Approved	MAJ

MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

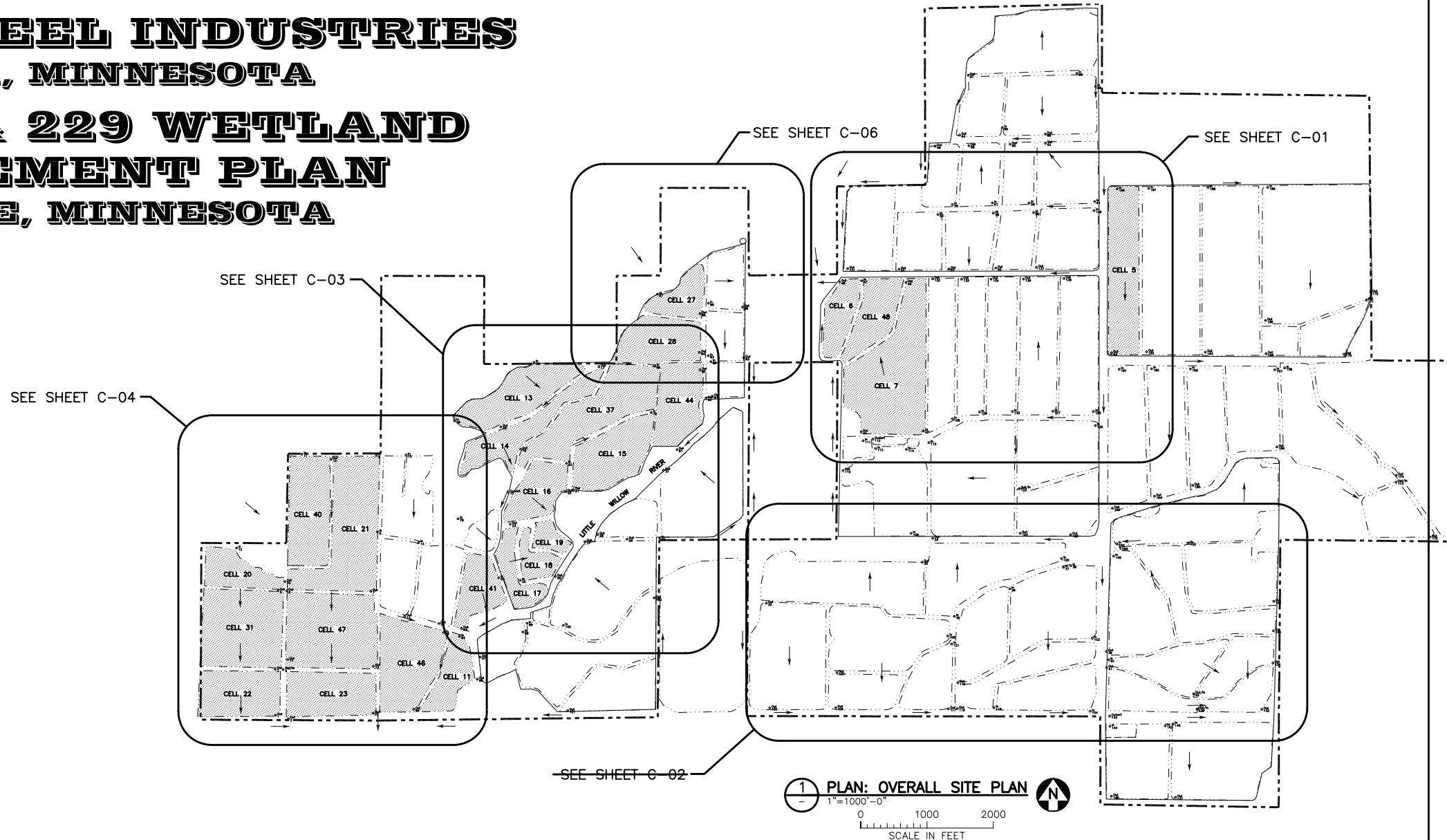
SITE 248 WETLAND REPLACEMENT PLAN
 PALISADE, MINNESOTA
 PLAN DETAILS AND TYPICAL
 CROSS SECTIONS

BARR PROJECT No.	
CLIENT PROJECT No.	
23/31-286	
DWG. No.	REV. No.
C-06	1

MINNESOTA STEEL INDUSTRIES NASHWAUK, MINNESOTA SITES 248 & 229 WETLAND REPLACEMENT PLAN PALISADE, MINNESOTA



SITE LOCATION MAP



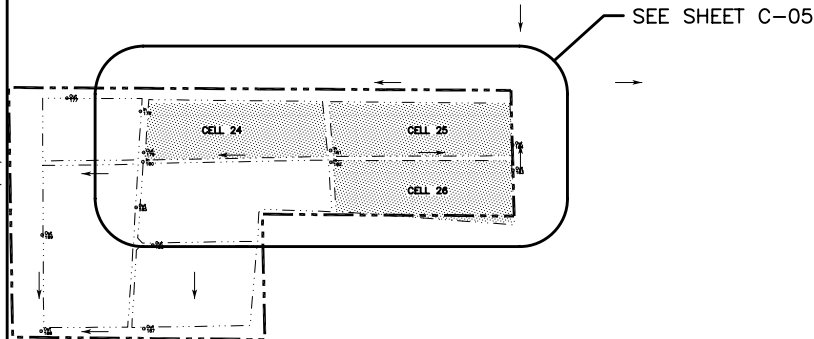
1 PLAN: OVERALL SITE PLAN
1"=1000'-0"
0 1000 2000
SCALE IN FEET



STATE MAP

INDEX

Sheet No.	Title
C-01	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-02	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-03	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-04	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-05	PLAN DETAILS AND TYPICAL CROSS SECTIONS
C-06	PLAN DETAILS AND TYPICAL CROSS SECTIONS



SEE SHEET C-05

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 Xrefs: in: Drawing - M:\Cad\2331286\23395_2.DWG M:\Cad\2331286\Godward_Spencer.dwg
 Images: in: Drawing - M:\Cad\2331286\Godward_Location_Top.dwg
 BARR - M:\CAD\2331286\23400_2.DWG Plot on: 6/11/2006 10:47:33

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Designed	MAJ
Approved	MAJ

MINNESOTA STEEL INDUSTRIES
 NASHWAUK, MINNESOTA

SITE 248 & 229 WETLAND REPLACEMENT PLAN PALISADE, MINNESOTA	
TITLE SHEET, SITE LOCATION MAP, AND SHEET INDEX	

BARR PROJECT No.	
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23/31-286	
DWG. No.	REV. No.
G-01	1