Auburn University
School of Forestry and Wildlife Sciences

Woody Biomass Resource Analysis for Biofuels Production
Boligee, Alabama Drain Area




Prepared for:
Project Flagship

Prepared by: Forest Products Development Center
Auburn University
September, 2008

Revised: 11/22/08

Summary of Findings

- Within the Boligee, Alabama study area, defined as the area within a 75-mile radius, there are 3.39 million dry tons of mill residues produced annually from existing forest products manufacturing operations. These include 1.29 million dry tons of pulp-quality chips, 1.08 million dry tons of sawdust and planer shavings, 0.96 million dry tons of bark, and 0.06 million tons of secondary manufacturing residues. Nearly all of these mill residues are currently utilized for either fiber or fuel. A large portion of these volumes are sold on the open market, however, and could potentially be available to a new entrant.

- Within the Boligee study area there are an estimated 2.44 million dry tons per year of forest residues potentially available. This number includes 1.35 million dry tons of logging residues and 1.09 million dry tons of cull trees (rough and rotten). These materials are largely unutilized at the present time and some portion could be recovered for biofuels production or other energy purposes.

- The Boligee study area is heavily forested, with 8.64 million acres of timberland within the designated 75-mile radius. This figure represents 76.6% of the total land area.

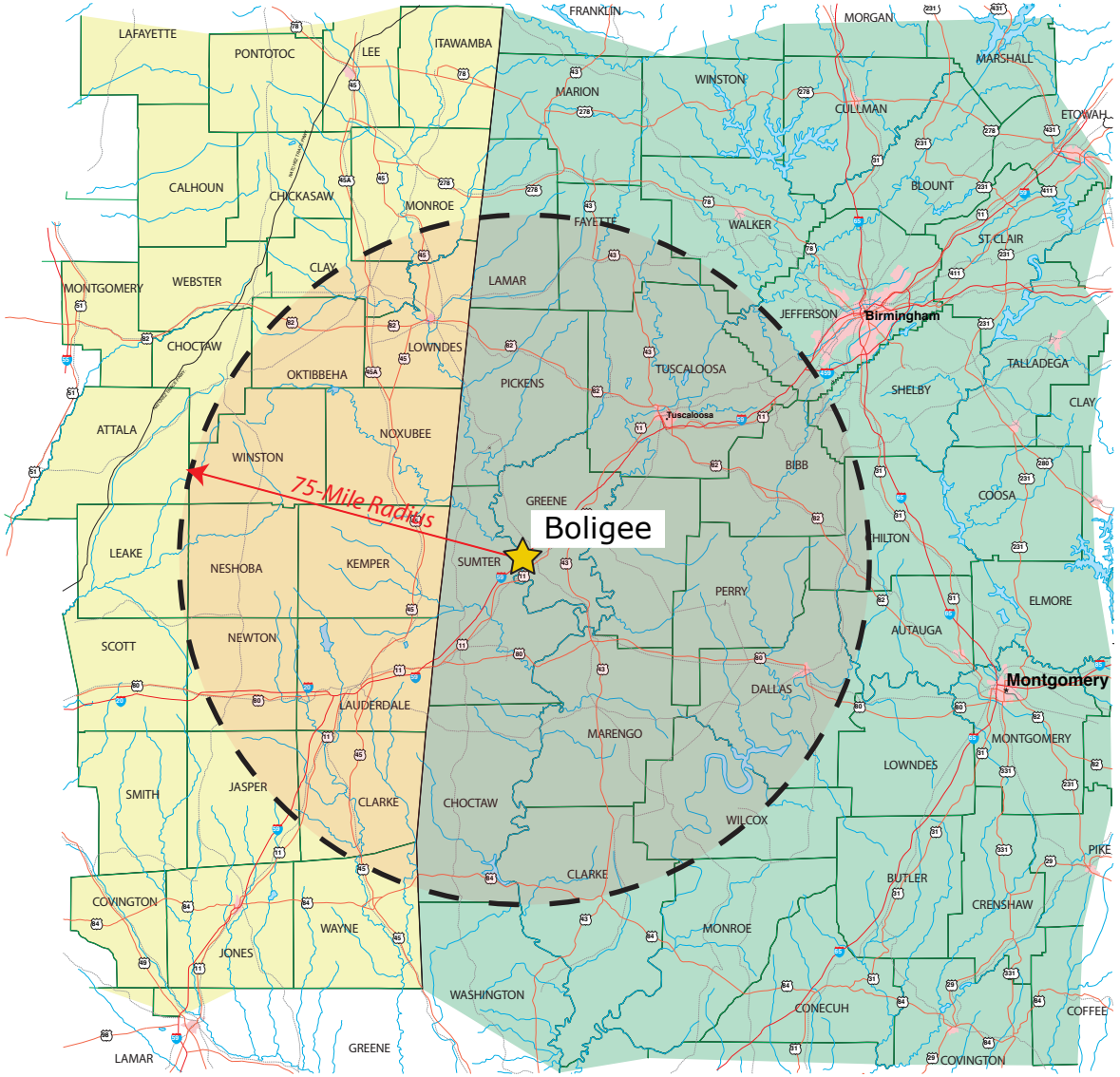
- Approximately 95.4% of the timberlands within the Boligee study area are owned by the private sector. Approximately 1.0% are held by the federal government and 1.3% by state and local governments. This ownership pattern is very favorable with respect to accessing open market timber and wood fiber.

- There is an estimated 12.93 billion cubic feet, or 223.1 million dry tons, of standing timber inventory within the Boligee drain area. Approximately 50.7% of this inventory is comprised of hardwood species and 49.3% is pines. Over the past fifteen years, the inventories of both pines and hardwoods have increased within the study area, with pine inventories increasing at an apparent 1.4% annual rate and hardwood inventories increasing at a 1.7% annual rate. More recent data shows that the current inventory is expanding even more rapidly than in the past, with growth now exceeding removals by 2.77 million dry tons annually.

- Delivered wood costs for both chips and roundwood pulpwood have increased at nominal annual rates of between 2% and 3% over the past twenty years. The increases have been largely attributable to harvesting and transportation costs, as the trends for stumpage prices have been relatively flat during the same period.

- Overall demand for pulpwood quality timber and chips has declined over the last ten years due to pulp mill closures, downsizing, and greater utilization of recycled fiber. However, newly constructed pellet mills in Selma, Alabama and Amory, Mississippi will represent new demand for low-quality wood fiber from the Boligee drain area. In addition, further demand growth for this resource is expected in the coming years due to expanding interest in various energy applications.

Boligee Study Area
75-Mile Radius



BOLIGEE DRAIN AREA
75-MILE RADIUS
LAND USE (acres)

State	County	Timberland	Other forestland	Nonforest	Non-Census water	Total
AL	Autauga	62,977	0	23,854	0	86,831
	Bibb	316,243	23,809	50,493	4,598	395,143
	Chilton	181,823	0	21,265	0	203,088
	Choctaw	515,902	0	64,282	1,641	581,825
	Clarke	377,817	0	51,350	620	429,787
	Dallas	385,660	0	200,683	4,582	590,925
	Fayette	221,885	0	57,398	1,488	280,771
	Greene	290,534	0	128,302	0	418,836
	Hale	275,232	0	145,875	419	421,526
	Jefferson	130,752	0	21,179	0	151,931
	Lamar	200,403	0	49,811	0	250,214
	Marengo	453,462	0	159,115	395	612,972
	Monroe	20,363	0	3,184	0	23,547
	Perry	358,251	5,952	96,576	0	460,779
	Pickens	455,458	0	100,673	0	556,131
	Shelby	24,840	0	12,826	0	37,666
	Sumter	434,903	0	125,791	4,873	565,567
	Tuscaloosa	688,915	0	174,364	0	863,279
	Walker	64,361	0	2,042	0	66,403
	Washington	18,134	0	0	0	18,134
	Wilcox	372,777	0	31,995	2,713	407,485
MS	Choctaw	36,730	0	0	0	36,730
	Clarke	344,289	0	61,065	0	405,354
	Clay	53,349	0	42,966	0	96,315
	Jasper	76,703	0	0	0	76,703

State	County	Timberland	Other forestland	Nonforest	Non-Census water	Total
	Kemper	421,576	0	79,716	0	501,292
	Lauderdale	342,325	0	115,848	0	458,173
	Lowndes	134,462	0	167,493	0	301,955
	Monroe	52,816	0	51,072	0	103,888
	Neshoba	274,891	0	86,842	0	361,733
	Newton	234,253	0	78,832	0	313,085
	Noxubee	322,248	0	190,640	0	512,888
	Oktibbeha	195,870	0	94,122	0	289,992
	Wayne	38,170	0	18,084	0	56,254
	Winston	264,270	0	77,686	0	341,956
Total Boligee Drain Area (acres)		8,642,644	29,761	2,585,424	21,329	11,279,158
Percent		76.6%	0.3%	22.9%	0.2%	

Source: USDA Forest Service FIA Program

BOLIGEE DRAIN AREA

75-MILE RADIUS

TIMBERLAND OWNERSHIP (acres)

State	County	National Forest	Other federal	State and local	Private	Total
AL	Autauga	0	0	0	62,977	62,977
	Bibb	53,499	0	0	262,744	316,243
	Chilton	22,869	0	0	158,954	181,823
	Choctaw	0	6,174	0	509,728	515,902
	Clarke	0	0	0	377,817	377,817
	Dallas	5,717	0	0	379,943	385,660
	Fayette	0	0	11,817	210,068	221,885
	Greene	0	11,362	0	279,172	290,534
	Hale	34,832	0	0	240,400	275,232
	Jefferson	0	0	6,210	124,542	130,752
	Lamar	0	0	5,160	195,243	200,403
	Marengo	0	0	0	453,462	453,462
	Monroe	0	0	0	20,363	20,363
	Perry	45,424	0	0	312,827	358,251
	Pickens	0	6,070	0	449,388	455,458
	Shelby	0	0	0	24,840	24,840
	Sumter	0	12,211	0	422,692	434,903
	Tuscaloosa	5,909	0	11,817	671,189	688,915
	Walker	0	0	11,583	52,778	64,361
	Washington	0	0	0	18,134	18,134
	Wilcox	0	5,536	6,037	361,204	372,777
MS	Choctaw	6,250	0	0	30,480	36,730
	Clarke	0	0	5,952	338,337	344,289
	Clay	0	0	0	53,349	53,349
	Jasper	0	0	0	76,703	76,703

State	County	National Forest	Other federal	State and local	Private	Total
	Kemper	0	0	0	421,576	421,576
	Lauderdale	0	5,952	27,996	308,377	342,325
	Lowndes	0	0	5,624	128,838	134,462
	Monroe	0	0	0	52,816	52,816
	Neshoba	0	7,185	0	267,706	274,891
	Newton	0	0	5,287	228,966	234,253
	Noxubee	0	13,466	0	308,782	322,248
	Oktibbeha	6,250	10,781	14,611	164,228	195,870
	Wayne	0	0	0	38,170	38,170
	Winston	23,808	5,952	0	234,509	264,270
Total Boligee Drain Area (acres)		204,559	84,689	112,094	8,241,301	8,642,644
Percent		2.4%	1.0%	1.3%	95.4%	

Source: USDA Forest Service FIA Program

BOLIGEE DRAIN AREA
75-MILE RADIUS
TIMBERLAND INVENTORY (cubic feet)

		Softwoods			Hardwoods		
State	**County**	**Growing Stock**	**Rough & Rotten**	**All Live**	**Growing Stock**	**Rough & Rotten**	**All Live**
AL	Autauga	37,979,174	1,695,812	39,674,986	52,123,620	1,766,375	53,889,995
	Bibb	259,190,509	3,820,671	263,011,180	227,468,047	46,082,493	273,550,540
	Chilton	65,237,821	6,975,080	72,212,901	113,287,101	22,668,508	135,955,609
	Choctaw	553,431,661	5,425,089	558,856,750	323,332,288	50,185,119	373,517,407
	Clarke	349,290,847	7,436,092	356,726,939	159,769,377	47,038,227	206,807,604
	Dallas	220,118,075	19,413,912	239,531,987	298,368,299	66,817,477	365,185,776
	Fayette	148,167,846	7,399,072	155,566,918	140,172,777	20,862,262	161,035,039
	Greene	141,868,490	9,206,445	151,074,935	276,100,445	45,092,025	321,192,470
	Hale	161,253,256	1,555,209	162,808,465	227,962,071	37,869,091	265,831,162
	Jefferson	144,411,410	1,378,130	145,789,540	82,153,044	6,055,859	88,208,903
	Lamar	121,426,374	3,741,246	125,167,620	133,168,918	13,627,717	146,796,635
	Marengo	262,150,347	8,592,173	270,742,520	326,477,735	43,038,177	369,515,912
	Monroe	21,409,202	1,910,252	23,319,454	27,627,903	5,031,176	32,659,079
	Perry	230,581,846	8,981,580	239,563,426	152,670,199	46,623,139	199,293,338
	Pickens	284,082,243	8,785,259	292,867,502	254,149,717	42,455,550	296,605,267
	Shelby	27,422,294	59,943	27,482,237	6,340,453	428,975	6,769,428
	Sumter	273,210,814	14,734,985	287,945,799	331,614,734	44,850,301	376,465,035
	Tuscaloosa	374,545,236	10,675,544	385,220,780	511,384,001	75,122,607	586,506,608
	Walker	28,841,233	763,899	29,605,132	41,226,779	7,268,334	48,495,113
	Washington	21,023,338	1,198,531	22,221,869	25,608,201	2,368,374	27,976,575
	Wilcox	283,358,628	26,102,586	309,461,214	229,702,331	35,781,323	265,483,654
MS	Choctaw	38,003,667	176,122	38,179,789	18,343,022	2,519,355	20,862,377
	Clarke	294,031,797	7,586,591	301,618,388	134,904,661	29,396,393	164,301,054
	Clay	27,107,762	465,386	27,573,148	62,601,556	22,238,586	84,840,142
	Jasper	55,512,676	652,610	56,165,286	23,996,302	6,244,659	30,240,961
	Kemper	395,270,025	6,326,604	401,596,629	145,439,927	31,664,286	177,104,213

State	County	Softwoods			Hardwoods		
		Growing Stock	Rough & Rotten	All Live	Growing Stock	Rough & Rotten	All Live
	Lauderdale	325,241,511	10,260,208	335,501,719	207,501,130	32,235,987	239,737,117
	Lowndes	34,299,262	9,182,240	43,481,502	113,202,378	46,567,857	159,770,235
	Monroe	29,275,715	0	29,275,715	42,548,074	6,238,617	48,786,691
	Neshoba	201,629,542	14,486,631	216,116,173	193,389,193	41,418,044	234,807,237
	Newton	140,462,910	8,812,887	149,275,797	92,584,875	23,325,626	115,910,501
	Noxubee	245,254,414	5,880,826	251,135,240	178,049,714	26,104,156	204,153,870
	Oktibbeha	105,493,750	13,307,496	118,801,246	200,530,295	23,647,048	224,177,343
	Wayne	30,801,467	513,307	31,314,774	17,235,497	7,393,695	24,629,192
	Winston	215,191,575	4,049,397	219,240,972	203,498,377	22,356,166	225,854,543
Total Drain Area (c.f.)		6,146,576,717	231,551,815	6,378,128,532	5,574,533,041	982,383,584	6,556,916,625
Total Drain Area (gr. tons)		212,056,897	7,988,538	220,045,434	192,321,390	33,892,234	226,213,624
Total Drain Area (dry tons)		106,028,448	3,994,269	110,022,717	96,160,695	16,946,117	113,106,812

Source: USDA Forest Service FIA Program.

BOLIGEE DRAIN AREA
75-MILE RADIUS
TIMBERLAND INVENTORY (cubic feet)

State	County	Softwoods			Hardwoods		
		Total Growing Stock	Sawlog Volume	Pulpwood Volume	Total Growing Stock	Sawlog Volume	Pulpwood Volume
AL	Autauga	37,979,174	16,892,314	21,086,860	52,123,620	41,117,639	11,005,981
	Bibb	259,190,509	173,578,901	85,611,608	227,468,047	157,251,149	70,216,898
	Chilton	65,237,821	49,242,367	15,995,454	113,287,101	75,375,124	37,911,977
	Choctaw	553,431,661	396,810,677	156,620,984	323,332,288	188,287,404	135,044,884
	Clarke	349,290,847	245,688,619	103,602,228	159,769,377	84,573,465	75,195,912
	Dallas	220,118,075	116,406,396	103,711,679	298,368,299	182,893,819	115,474,480
	Fayette	148,167,846	97,536,853	50,630,993	140,172,777	58,946,964	81,225,813
	Greene	141,868,490	95,371,447	46,497,043	276,100,445	181,290,989	94,809,456
	Hale	161,253,256	95,572,045	65,681,211	227,962,071	148,774,783	79,187,288
	Jefferson	144,411,410	110,186,494	34,224,916	82,153,044	51,850,402	30,302,642
	Lamar	121,426,374	73,036,363	48,390,011	133,168,918	92,110,784	41,058,134
	Marengo	262,150,347	181,590,192	80,560,155	326,477,735	228,243,710	98,234,025
	Monroe	21,409,202	17,837,088	3,572,114	27,627,903	18,283,068	9,344,835
	Perry	230,581,846	119,345,919	111,235,927	152,670,199	85,519,803	67,150,396
	Pickens	284,082,243	209,768,558	74,313,685	254,149,717	164,413,455	89,736,262
	Shelby	27,422,294	13,948,887	13,473,407	6,340,453	3,859,804	2,480,649
	Sumter	273,210,814	188,070,682	85,140,132	331,614,734	231,325,171	100,289,563
	Tuscaloosa	374,545,236	265,232,350	109,312,886	511,384,001	280,991,650	230,392,351
	Walker	28,841,233	13,826,229	15,015,004	41,226,779	27,045,525	14,181,254
	Washington	21,023,338	9,474,899	11,548,439	25,608,201	20,463,433	5,144,768
	Wilcox	283,358,628	169,184,732	114,173,896	229,702,331	155,609,888	74,092,443
MS	Choctaw	38,003,667	26,884,594	11,119,073	18,343,022	8,034,399	10,308,623
	Clarke	294,031,797	165,250,462	128,781,335	134,904,661	73,732,662	61,171,999
	Clay	27,107,762	17,959,996	9,147,766	62,601,556	42,502,193	20,099,363
	Jasper	55,512,676	38,291,991	17,220,685	23,996,302	10,700,603	13,295,699

State	County	Softwoods			Hardwoods		
		Total Growing Stock	Sawlog Volume	Pulpwood Volume	Total Growing Stock	Sawlog Volume	Pulpwood Volume
	Kemper	395,270,025	270,723,170	124,546,855	145,439,927	78,001,457	67,438,470
	Lauderdale	325,241,511	229,754,658	95,486,853	207,501,130	128,215,910	79,285,220
	Lowndes	34,299,262	28,776,721	5,522,541	113,202,378	73,585,594	39,616,784
	Monroe	29,275,715	23,052,899	6,222,816	42,548,074	25,530,201	17,017,873
	Neshoba	201,629,542	147,035,087	54,594,455	193,389,193	108,609,304	84,779,889
	Newton	140,462,910	83,496,047	56,966,863	92,584,875	50,324,534	42,260,341
	Noxubee	245,254,414	161,854,136	83,400,278	178,049,714	123,751,916	54,297,798
	Oktibbeha	105,493,750	60,832,711	44,661,039	200,530,295	133,734,101	66,796,194
	Wayne	30,801,467	26,260,913	4,540,554	17,235,497	4,942,630	12,292,867
	Winston	215,191,575	160,144,335	55,047,240	203,498,377	113,215,512	90,282,865
Total Drain Area (c.f.)		6,146,576,717	4,098,919,732	2,047,656,985	5,574,533,041	3,453,109,045	2,121,423,996
Total Drain Area (gr. tons)		212,056,897	141,412,731	70,644,166	192,321,390	119,132,262	73,189,128
Total Drain Area (dry tons)		106,028,448	70,706,365	35,322,083	96,160,695	59,566,131	36,594,564
Percent of Volume			66.7%	33.3%		61.9%	38.1%

Source: USDA Forest Service FIA Program.

BOLIGEE DRAIN AREA
75-MILE RADIUS
PINE INVENTORY CHANGE (cubic feet)

State	County	Current Inventory	Past Inventory	Total Change	Annual Change
AL	Autauga	39,674,986	28,281,340	11,393,646	759,576
	Bibb	263,011,180	178,592,472	84,418,708	5,627,914
	Chilton	72,212,901	73,589,439	-1,376,538	-91,769
	Choctaw	558,856,750	430,326,901	128,529,849	8,568,657
	Clarke	356,726,939	311,149,376	45,577,563	3,038,504
	Dallas	239,531,987	201,499,700	38,032,287	2,535,486
	Fayette	155,566,918	38,935,924	116,630,994	7,775,400
	Greene	151,074,935	126,554,052	24,520,883	1,634,726
	Hale	162,808,465	100,048,834	62,759,631	4,183,975
	Jefferson	145,789,540	49,932,092	95,857,448	6,390,497
	Lamar	125,167,620	76,401,359	48,766,261	3,251,084
	Marengo	270,742,520	218,048,396	52,694,124	3,512,942
	Monroe	23,319,454	22,329,630	989,824	65,988
	Perry	239,563,426	146,029,813	93,533,613	6,235,574
	Pickens	292,867,502	372,770,694	-79,903,192	-5,326,879
	Shelby	27,482,237	6,595,327	20,886,910	1,392,461
	Sumter	287,945,799	239,828,043	48,117,756	3,207,850
	Tuscaloosa	385,220,780	355,666,484	29,554,296	1,970,286
	Walker	29,605,132	15,910,146	13,694,986	912,999
	Washington	22,221,869	1,381,344	20,840,525	1,389,368
	Wilcox	309,461,214	236,924,131	72,537,083	4,835,806
MS	Choctaw	38,179,789	29,811,583	8,368,206	697,351
	Clarke	301,618,388	239,148,378	62,470,010	5,205,834
	Clay	27,573,148	7,290,491	20,282,657	1,690,221
	Jasper	56,165,286	42,756,816	13,408,470	1,117,373
	Kemper	401,596,629	292,890,231	108,706,398	9,058,867

State	County	Current Inventory	Past Inventory	Total Change	Annual Change
	Lauderdale	335,501,719	293,132,756	42,368,963	3,530,747
	Lowndes	43,481,502	61,469,786	-17,988,284	-1,499,024
	Monroe	29,275,715	7,384,095	21,891,620	1,824,302
	Neshoba	216,116,173	98,852,840	117,263,333	9,771,944
	Newton	149,275,797	111,555,125	37,720,672	3,143,389
	Noxubee	251,135,240	180,369,168	70,766,072	5,897,173
	Oktibbeha	118,801,246	61,827,866	56,973,380	4,747,782
	Wayne	31,314,774	25,940,423	5,374,351	447,863
	Winston	219,240,972	217,507,583	1,733,389	144,449
Total Drain Area (c.f.)		6,378,128,532	4,900,732,638	1,477,395,894	107,648,714
Total Drain Area (gr. tons)		220,045,434	169,075,276	50,970,158	3,713,881
Total Drain Area (dry tons)		**110,022,717**	**84,537,638**	**25,485,079**	**1,856,940**

Source: USDA Forest Service FIA Program.

Notes: Latest survey data is 2005 for AL and 2006 for MS. Prior survey is 1990 for AL and 1994 for MS.

BOLIGEE DRAIN AREA
75-MILE RADIUS
HARDWOOD INVENTORY CHANGE (cubic feet)

State	County	Current Inventory	Past Inventory	Total Change	Annual Change
AL	Autauga	53,889,995	31,576,454	22,313,541	1,487,569
	Bibb	273,550,540	181,103,546	92,446,994	6,163,133
	Chilton	135,955,609	126,032,001	9,923,608	661,574
	Choctaw	373,517,407	318,778,249	54,739,158	3,649,277
	Clarke	206,807,604	195,854,109	10,953,495	730,233
	Dallas	365,185,776	281,126,008	84,059,768	5,603,985
	Fayette	161,035,039	146,546,938	14,488,101	965,873
	Greene	321,192,470	252,911,575	68,280,895	4,552,060
	Hale	265,831,162	158,632,700	107,198,462	7,146,564
	Jefferson	88,208,903	62,702,219	25,506,684	1,700,446
	Lamar	146,796,635	164,982,154	-18,185,519	-1,212,368
	Marengo	369,515,912	225,455,092	144,060,820	9,604,055
	Monroe	32,659,079	8,983,285	23,675,794	1,578,386
	Perry	199,293,338	149,997,874	49,295,464	3,286,364
	Pickens	296,605,267	357,645,689	-61,040,422	-4,069,361
	Shelby	6,769,428	5,279,251	1,490,177	99,345
	Sumter	376,465,035	285,579,387	90,885,648	6,059,043
	Tuscaloosa	586,506,608	480,723,883	105,782,725	7,052,182
	Walker	48,495,113	30,909,331	17,585,782	1,172,385
	Washington	27,976,575	29,975,953	-1,999,378	-133,292
	Wilcox	265,483,654	172,393,722	93,089,932	6,205,995
MS	Choctaw	20,862,377	36,227,439	-15,365,062	-1,280,422
	Clarke	164,301,054	154,568,205	9,732,849	811,071
	Clay	84,840,142	31,153,916	53,686,226	4,473,852
	Jasper	30,240,961	24,916,351	5,324,610	443,718
	Kemper	177,104,213	174,576,455	2,527,758	210,647

State	County	Current Inventory	Past Inventory	Total Change	Annual Change
	Lauderdale	239,737,117	225,218,079	14,519,038	1,209,920
	Lowndes	159,770,235	163,036,025	-3,265,790	-272,149
	Monroe	48,786,691	42,824,352	5,962,339	496,862
	Neshoba	234,807,237	190,679,303	44,127,934	3,677,328
	Newton	115,910,501	129,830,049	-13,919,548	-1,159,962
	Noxubee	204,153,870	132,710,048	71,443,822	5,953,652
	Oktibbeha	224,177,343	112,945,443	111,231,900	9,269,325
	Wayne	24,629,192	14,481,131	10,148,061	845,672
	Winston	225,854,543	175,121,313	50,733,230	4,227,769
Total Drain Area (c.f.)		6,556,916,625	5,275,477,529	1,281,439,096	91,210,729
Total Drain Area (gr. tons)		226,213,624	182,003,975	44,209,649	3,146,770
Total Drain Area (dry tons)		**113,106,812**	**91,001,987**	**22,104,824**	**1,573,385**

Source: USDA Forest Service FIA Program.

Notes: Latest survey data is 2005 for AL and 2006 for MS. Prior survey is 1990 for AL and 1994 for MS.

BOLIGEE DRAIN AREA

75-MILE RADIUS

ANNUAL GROWTH AND REMOVALS (cubic feet)

State	County	Softwoods			Hardwoods		
		Net Growth	Removals	Surplus/ (Deficit)	Net Growth	Removals	Surplus/ (Deficit)
AL	Autauga	5,137,282	3,105,963	2,031,319	1,018,778	16,636	1,002,142
	Bibb	22,025,865	28,433,933	-6,408,068	9,340,386	7,549,725	1,790,661
	Chilton	5,677,765	2,220,062	3,457,703	3,675,265	2,671,121	1,004,144
	Choctaw	43,317,123	25,070,284	18,246,839	10,326,864	8,324,008	2,002,856
	Clarke	25,237,660	34,839,492	-9,601,832	7,715,454	14,431,310	-6,715,856
	Dallas	21,608,566	15,484,695	6,123,871	7,382,302	3,878,609	3,503,693
	Fayette	13,974,903	4,202,707	9,772,196	5,254,128	2,628,363	2,625,765
	Greene	11,684,454	11,939,743	-255,289	6,297,863	16,845,399	-10,547,536
	Hale	11,054,916	10,885,621	169,295	8,311,460	1,312,964	6,998,496
	Jefferson	9,857,943	3,302,195	6,555,748	1,070,504	1,318,258	-247,754
	Lamar	11,220,723	7,369,865	3,850,858	9,084,012	8,142,276	941,736
	Marengo	19,581,388	20,558,206	-976,818	13,984,777	9,462,931	4,521,846
	Monroe	1,009,734	0	1,009,734	342,978	66,377	276,601
	Perry	23,465,310	14,532,884	8,932,426	6,729,073	2,984,686	3,744,387
	Pickens	19,285,956	7,083,755	12,202,201	7,676,190	9,221,620	-1,545,430
	Shelby	1,030,133	0	1,030,133	496,047	0	496,047
	Sumter	25,857,328	24,518,076	1,339,252	12,723,085	9,824,593	2,898,492
	Tuscaloosa	30,003,434	12,477,518	17,525,916	10,636,123	6,860,822	3,775,301
	Walker	4,785,840	1,723,167	3,062,673	2,479,561	641,509	1,838,052
	Washington	2,271,745	0	2,271,745	1,057,665	0	1,057,665
	Wilcox	26,540,387	13,632,894	12,907,493	7,921,544	6,991,016	930,528
MS	Choctaw	1,059,117	2,266,475	-1,207,358	1,122,452	516,893	605,559
	Clarke	23,031,700	18,503,495	4,528,205	4,185,028	4,456,516	-271,488
	Clay	1,098,852	0	1,098,852	995,811	205,151	790,660
	Jasper	5,087,690	2,184,113	2,903,577	2,093,643	1,114,145	979,498

State	County	Softwoods Net Growth	Softwoods Removals	Softwoods Surplus/ (Deficit)	Hardwoods Net Growth	Hardwoods Removals	Hardwoods Surplus/ (Deficit)
	Kemper	32,074,967	21,388,115	10,686,852	6,825,002	4,386,843	2,438,159
	Lauderdale	22,116,714	18,285,935	3,830,779	8,088,238	7,247,042	841,196
	Lowndes	2,274,657	6,174,402	-3,899,745	3,623,063	5,597,774	-1,974,711
	Monroe	2,163,568	679,635	1,483,933	1,768,796	205,602	1,563,194
	Neshoba	13,254,440	5,211,076	8,043,364	10,525,003	6,214,461	4,310,542
	Newton	15,581,263	12,395,706	3,185,557	3,507,632	6,674,317	-3,166,685
	Noxubee	9,842,341	8,629,047	1,213,294	4,731,687	4,800,944	-69,257
	Oktibbeha	10,884,463	6,035,143	4,849,320	7,789,347	2,823,361	4,965,986
	Wayne	3,114,995	3,997,713	-882,718	863,002	0	863,002
	Winston	7,755,890	9,233,132	-1,477,242	3,971,105	2,982,480	988,625
Total Drain Area (c.f.)		483,969,112	356,365,047	127,604,065	193,613,868	160,397,752	33,216,116
Total Drain Area (gr. tons)		16,696,934	12,294,594	4,402,340	6,679,678	5,533,722	1,145,956
Total Drain Area (dry tons)		8,348,467	6,147,297	2,201,170	3,339,839	2,766,861	572,978
Percent of Growth			73.6%	26.4%		82.8%	17.2%

Source: USDA Forest Service FIA Program.

BOLIGEE DRAIN AREA
75-MILE RADIUS
FOREST RESIDUES

State	County	Logging Resid.	Cull Tree Harv.	**Total Forest Residue Biomass**
		dry tons.	dry tons.	dry tons.
AL	Autauga	2,219	2,985	5,204
	Bibb	34,961	35,447	70,408
	Chilton	7,197	7,922	15,120
	Choctaw	93,145	35,300	128,445
	Clarke	59,225	35,231	94,456
	Dallas	44,986	46,298	91,283
	Fayette	18,200	17,456	35,656
	Greene	39,086	34,166	73,253
	Hale	34,656	25,556	60,212
	Jefferson	5,059	5,887	10,946
	Lamar	20,206	14,168	34,374
	Marengo	98,770	27,341	126,111
	Perry	25,505	33,004	58,509
	Pickens	49,150	34,062	83,212
	Shelby	2,032	1,740	3,772
	Sumter	52,795	35,524	88,319
	Tuscaloosa	47,682	42,380	90,062
	Walker	3,052	1,309	4,361
	Washington	3,436	2,580	6,016
	Wilcox	51,250	27,672	78,922
MS	Attala	8,009	7,609	15,618
	Choctaw	31,451	29,878	61,329

State	County	Logging Resid.	Cull Tree Harv.	**Total Forest Residue Biomass**
		dry tons.	dry tons.	dry tons.
	Clarke	102,396	97,276	199,672
	Clay	17,265	16,402	33,667
	Jasper	22,027	20,925	42,952
	Kemper	67,720	64,334	132,053
	Lauderdale	70,951	67,404	138,355
	Leake	17,496	16,621	34,117
	Lowndes	36,519	34,693	71,212
	Monroe	8,730	8,293	17,023
	Neshoba	79,204	75,244	154,448
	Newton	49,994	47,494	97,487
	Noxubee	68,622	65,191	133,813
	Oktibbeha	52,142	49,535	101,677
	Scott	6,671	6,337	13,008
	Wayne	19,387	18,417	37,804
	Winston	72,518	68,892	141,410
TOTAL BOLIGEE DRAIN AREA		**1,351,195**	**1,091,683**	**2,442,879**

Source: USDA Forest Service and Auburn Univ. FPDC

BOLIGEE DRAIN AREA
75-MILE RADIUS
WOOD MANUFACTURING RESIDUES

State	County	Bark	Coarse Residues	Fine Residues	**Total Primary Wood Residues**	**Total Secondary Wood Residues**	**Total Wood Manuf. Residue**
		dry tons	dry tons	dry tons	dry tons	dry tons	dry tons
AL	Autauga	8,403	0	0	8,403	407	8,809
	Bibb	127,996	109,653	30,081	267,730	3,847	271,577
	Chilton	10,952	36,474	29,726	77,151	2,901	80,052
	Choctaw	135,934	20,143	15,893	171,970	2,317	174,287
	Clarke	78,905	99,161	81,768	259,833	3,764	263,597
	Dallas	84,653	26,572	44,810	156,035	3,987	160,023
	Fayette	13,033	44,497	34,899	92,429	1,383	93,812
	Greene	0	0	0	0	3,439	3,439
	Hale	0	0	0	0	1,624	1,624
	Jefferson	0	0	0	0	6,504	6,504
	Lamar	26,770	95,638	71,962	194,370	2,909	197,279
	Marengo	56,713	36,885	44,266	137,864	3,754	141,618
	Perry	0	0	0	0	0	0
	Pickens	29,803	51,512	66,345	147,660	1,945	149,605
	Shelby	1,693	5,138	2,741	9,572	1,005	10,577
	Sumter	7,336	8,625	17,140	33,101	5,765	38,866
	Tuscaloosa	88,486	232,900	178,031	499,417	12,540	511,957
	Walker	861	2,947	2,287	6,094	360	6,454
	Washington	697	857	367	1,921	36	1,957
	Wilcox	72,500	90,099	71,953	234,553	1,702	236,255
MS	Attala	0	0	0	0	0	0
	Choctaw	0	0	0	0	0	0
	Clarke	18,323	37,980	47,019	103,322	0	103,322

State	County	Bark	Coarse Residues	Fine Residues	**Total Primary Wood Residues**	**Total Secondary Wood Residues**	**Total Wood Manuf. Residue**
		dry tons	dry tons	dry tons	dry tons	dry tons	dry tons
	Clay	0	0	0	0	0	0
	Jasper	13,525	39,951	36,329	89,805	0	89,805
	Kemper	0	0	0	0	0	0
	Lauderdale	7,862	22,683	18,786	49,331	0	49,331
	Leake	0	0	0	0	0	0
	Lowndes	0	0	0	0	0	0
	Monroe	0	0	0	0	0	0
	Neshoba	56,206	152,877	144,326	353,409	0	353,409
	Newton	0	0	0	0	0	0
	Noxubee	44,050	127,871	102,130	274,051	0	274,051
	Oktibbeha	65,336	5,805	8,382	79,523	0	79,523
	Scott	4,434	10,771	11,827	27,031	0	27,031
	Wayne	9,100	25,978	24,717	59,796	0	59,796
	Winston						
TOTAL BOLIGEE DRAIN AREA		**963,571**	**1,285,016**	**1,085,785**	**3,334,371**	**60,187**	**3,394,558**

Source: USDA Forest Service and Auburn Univ. FPDC

BOLIGEE DRAIN AREA
HISTORICAL PULPWOOD PRICE DATA

Year	Quarter	Pulpwood Stumpage ($/gr. ton)		Cut & Haul ($/gr. ton)		Delivered Pulpwood ($/gr. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
1987	1	5.61	1.64	11.17	10.89	16.77	12.53
	2	5.58	1.72	12.17	11.41	17.76	13.14
	3	6.51	1.72	10.31	11.21	16.82	12.93
	4	6.36	1.72	10.47	11.21	16.82	12.93
1988	1	6.17	1.75	10.65	11.18	16.82	12.93
	2	5.14	2.41	10.75	10.00	15.89	12.41
	3	5.61	2.25	12.52	10.16	18.13	12.41
	4	6.36	2.26	11.38	10.33	17.73	12.59
1989	1	5.98	3.36	10.65	10.09	16.64	13.45
	2	6.17	3.38	8.97	10.07	15.14	13.45
	3	6.73	3.97	11.21	10.17	17.94	14.14
	4	5.86	5.00	12.83	9.48	18.69	14.48
1990	1	9.91	3.79	7.10	11.90	17.01	15.69
	2	10.28	4.31	8.41	13.10	18.69	17.41
	3	11.78	4.31	6.92	11.72	18.69	16.03
	4	8.97	3.97	9.35	11.55	18.32	15.52
1991	1	10.39	3.62	6.99	10.69	17.38	14.31
	2	7.48	3.79	13.08	10.34	20.56	14.14
	3	9.91	4.66	11.21	10.86	21.12	15.52
	4	9.35	5.17	11.78	10.86	21.12	16.03
1992	1	8.60	3.97	9.16	9.40	17.76	13.36
	2	7.76	3.02	11.87	13.46	19.63	16.48
	3	8.04	5.00	8.79	10.34	16.82	15.34
	4	6.79	3.67	11.47	11.85	18.26	15.52
1993	1	9.41	5.86	14.89	14.05	24.30	19.91
	2	8.97	5.78	14.92	16.64	23.89	22.41
	3	10.28	4.59	14.61	15.24	24.89	19.83
	4	10.12	4.99	16.14	15.52	26.26	20.52
1994	1	10.22	5.71	14.77	15.26	24.99	20.97

Year	Quarter	Pulpwood Stumpage ($/gr. ton)		Cut & Haul ($/gr. ton)		Delivered Pulpwood ($/gr. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
	2	9.60	4.20	13.52	11.06	23.12	15.26
	3	9.35	3.28	12.15	11.72	21.50	15.00
	4	9.88	4.66	11.93	11.66	21.81	16.31
1995	1	12.52	6.58	11.68	13.50	24.21	20.09
	2	11.25	10.03	14.98	12.78	26.23	22.81
	3	8.90	12.07	13.14	9.31	22.04	21.38
	4	10.16	8.22	12.27	11.61	22.43	19.83
1996	1	10.14	7.30	14.65	14.17	24.79	21.47
	2	8.04	5.97	13.91	12.57	21.96	18.54
	3	9.69	5.67	18.27	12.63	27.96	18.30
	4	9.21	7.71	14.47	13.63	23.68	21.34
1997	1	10.80	6.44	16.58	14.89	27.39	21.33
	2	11.64	8.77	14.91	13.68	26.55	22.45
	3	10.92	6.88	14.63	14.87	25.55	21.75
	4	14.17	11.07	17.63	14.43	31.80	25.50
1998	1	14.61	9.34	18.79	17.33	33.40	26.67
	2	11.76	7.93	12.79	15.07	24.55	23.00
	3	8.61	6.40	14.68	14.48	23.29	20.88
	4	11.86	7.91	13.06	13.09	24.92	21.00
1999	1	9.81	5.49	12.17	11.89	21.98	17.38
	2	9.73	6.73	12.06	9.52	21.79	16.25
	3	8.69	5.39	12.32	11.60	21.01	16.99
	4	9.20	6.39	18.29	17.36	27.49	23.75
2000	1	10.11	6.95	12.36	14.50	22.47	21.45
	2	7.94	6.03	12.70	11.81	20.64	17.84
	3	7.80	6.03	17.37	12.38	25.17	18.41
	4	7.13	5.21	12.30	12.36	19.43	17.57
2001	1	5.60	5.26	12.67	14.99	18.27	20.25
	2	5.86	6.11	12.59	14.02	18.45	20.13
	3	5.07	6.67	13.06	14.31	18.13	20.98
	4	4.98	5.85	11.77	9.90	16.75	15.75

Year	Quarter	Pulpwood Stumpage ($/gr. ton)		Cut & Haul ($/gr. ton)		Delivered Pulpwood ($/gr. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
2002	1	5.33	7.15	14.25	12.75	19.58	19.90
	2	5.14	6.18	18.82	14.99	23.96	21.17
	3	5.40	6.40	14.04	12.12	19.44	18.52
	4	6.73	7.32	15.87	13.40	22.60	20.72
2003	1	7.46	9.00	15.50	14.32	22.96	23.32
	2	7.23	9.14	15.27	8.86	22.50	18.00
	3	8.51	11.20	16.69	15.59	25.20	26.79
	4	7.67	10.89	15.76	16.22	23.43	27.11
2004	1	6.92	8.83	13.33	12.27	20.25	21.10
	2	6.55	7.10	14.23	13.33	20.78	20.43
	3	5.30	5.66	16.47	14.53	21.77	20.19
	4	6.77	7.91	16.20	16.03	22.97	23.94
2005	1	8.93	9.55	16.86	17.10	25.79	26.65
	2	7.56	8.80	18.48	17.75	26.04	26.55
	3	6.73	8.84	16.95	17.20	23.68	26.04
	4	7.17	8.25	19.20	16.80	26.37	25.05
2006	1	7.41	7.40	17.27	16.96	24.68	24.36
	2	6.41	5.93	17.35	14.72	23.76	20.65
	3	6.17	5.16	19.43	18.38	25.60	23.54
	4	6.41	6.03	18.08	16.54	24.49	22.57
2007	1	7.30	7.06	18.44	16.03	25.74	23.09
	2	5.92	6.18	17.39	15.74	23.31	21.92
	3	6.44	7.09	17.09	17.06	23.53	24.15
	4	6.62	5.04	17.38	16.52	24.00	21.56
2008	1	7.50	6.63	19.53	18.73	27.03	25.36
	2	6.64	10.24	20.66	18.09	27.30	28.33
	3	7.57	8.89	20.34	20.53	27.91	29.42

Source: Timber Mart-South

Notes: Conversions to oven-dry by KJM, Forest Products Development Center

BOLIGEE DRAIN AREA
HISTORICAL PULPWOOD PRICE DATA

Year	Quarter	Pulpwood Stumpage ($/o.d. ton)		Cut & Haul ($/o.d. ton)		Delivered Pulpwood ($/o.d. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
1987	1	11.21	3.28	22.33	21.78	33.55	25.06
	2	11.17	3.45	24.35	22.83	35.51	26.28
	3	13.02	3.45	20.62	22.41	33.64	25.86
	4	12.71	3.45	20.93	22.41	33.64	25.86
1988	1	12.34	3.50	21.31	22.36	33.64	25.86
	2	10.28	4.83	21.50	20.00	31.78	24.83
	3	11.21	4.50	25.05	20.32	36.26	24.83
	4	12.71	4.51	22.76	20.66	35.47	25.17
1989	1	11.96	6.72	21.31	20.17	33.27	26.90
	2	12.34	6.76	17.94	20.14	30.28	26.90
	3	13.46	7.93	22.43	20.34	35.89	28.28
	4	11.72	10.00	25.67	18.97	37.38	28.97
1990	1	19.81	7.59	14.21	23.79	34.02	31.38
	2	20.56	8.62	16.82	26.21	37.38	34.83
	3	23.55	8.62	13.83	23.45	37.38	32.07
	4	17.94	7.93	18.69	23.10	36.64	31.03
1991	1	20.79	7.24	13.98	21.38	34.77	28.62
	2	14.95	7.59	26.17	20.69	41.12	28.28
	3	19.81	9.31	22.43	21.72	42.24	31.03
	4	18.69	10.34	23.55	21.72	42.24	32.07
1992	1	17.20	7.93	18.32	18.79	35.51	26.72
	2	15.51	6.03	23.74	26.92	39.25	32.96
	3	16.07	10.00	17.57	20.69	33.64	30.69
	4	13.59	7.34	22.94	23.70	36.52	31.03
1993	1	18.82	11.72	29.78	28.10	48.60	39.83
	2	17.94	11.55	29.84	33.28	47.78	44.83
	3	20.56	9.17	29.23	30.48	49.79	39.66
	4	20.25	9.99	32.28	31.05	52.52	41.03
1994	1	20.45	11.41	29.53	30.52	49.98	41.93

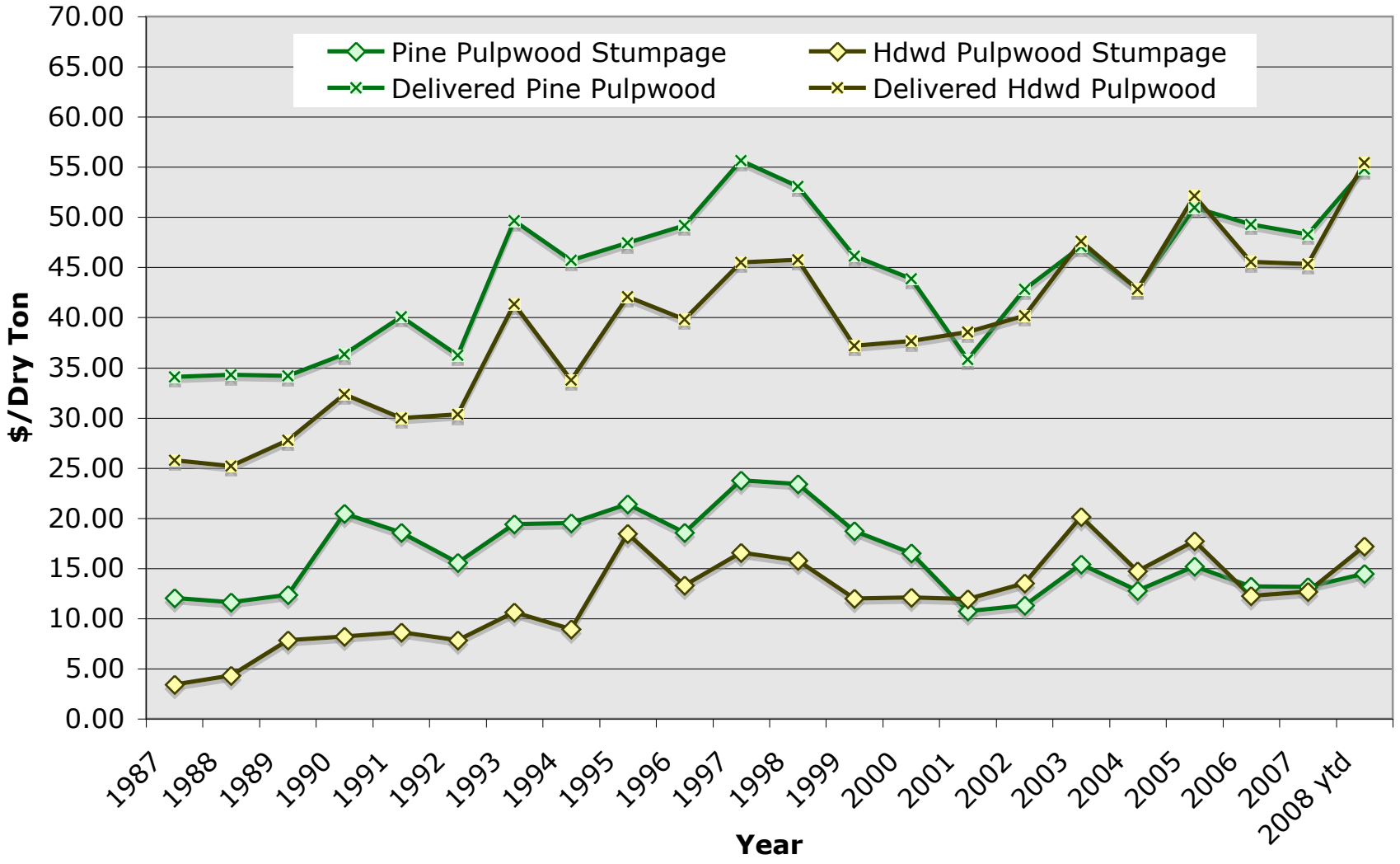
Year	Quarter	Pulpwood Stumpage ($/o.d. ton)		Cut & Haul ($/o.d. ton)		Delivered Pulpwood ($/o.d. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
	2	19.19	8.39	27.04	22.12	46.24	30.52
	3	18.69	6.55	24.30	23.45	42.99	30.00
	4	19.76	9.31	23.86	23.32	43.62	32.63
1995	1	25.05	13.17	23.36	27.01	48.41	40.17
	2	22.50	20.07	29.96	25.56	52.46	45.63
	3	17.79	24.14	26.29	18.62	44.08	42.76
	4	20.31	16.43	24.55	23.22	44.86	39.66
1996	1	20.28	14.60	29.31	28.34	49.59	42.94
	2	16.08	11.94	27.83	25.14	43.91	37.08
	3	19.38	11.33	36.55	25.27	55.93	36.60
	4	18.42	15.42	28.93	27.27	47.36	42.69
1997	1	21.61	12.89	33.17	29.77	54.77	42.66
	2	23.28	17.53	29.82	27.37	53.10	44.90
	3	21.84	13.75	29.26	29.75	51.10	43.50
	4	28.34	22.13	35.26	28.87	63.60	51.00
1998	1	29.22	18.68	37.58	34.66	66.80	53.34
	2	23.52	15.86	25.58	30.14	49.10	46.00
	3	17.22	12.79	29.36	28.97	46.58	41.76
	4	23.72	15.82	26.12	26.18	49.84	42.00
1999	1	19.62	10.98	24.34	23.78	43.96	34.76
	2	19.46	13.46	24.12	19.04	43.58	32.50
	3	17.38	10.78	24.64	23.20	42.02	33.98
	4	18.40	12.78	36.58	34.72	54.98	47.50
2000	1	20.22	13.90	24.72	29.00	44.94	42.90
	2	15.88	12.06	25.40	23.62	41.28	35.68
	3	15.60	12.06	34.74	24.76	50.34	36.82
	4	14.26	10.43	24.60	24.71	38.86	35.14
2001	1	11.20	10.52	25.34	29.98	36.54	40.50
	2	11.72	12.22	25.18	28.04	36.90	40.26
	3	10.14	13.34	26.12	28.62	36.26	41.96
	4	9.96	11.70	23.54	19.80	33.50	31.50

Year	Quarter	Pulpwood Stumpage ($/o.d. ton)		Cut & Haul ($/o.d. ton)		Delivered Pulpwood ($/o.d. ton)	
		Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
2002	1	10.66	14.30	28.50	25.50	39.16	39.80
	2	10.28	12.35	37.64	29.99	47.92	42.34
	3	10.80	12.80	28.08	24.24	38.88	37.04
	4	13.46	14.65	31.74	26.79	45.20	41.44
2003	1	14.92	18.01	31.00	28.63	45.92	46.64
	2	14.46	18.29	30.54	17.71	45.00	36.00
	3	17.02	22.39	33.38	31.19	50.40	53.58
	4	15.34	21.78	31.52	32.44	46.86	54.22
2004	1	13.84	17.67	26.66	24.53	40.50	42.20
	2	13.10	14.20	28.46	26.66	41.56	40.86
	3	10.60	11.31	32.94	29.07	43.54	40.38
	4	13.54	15.82	32.40	32.06	45.94	47.88
2005	1	17.86	19.10	33.72	34.20	51.58	53.30
	2	15.12	17.60	36.96	35.50	52.08	53.10
	3	13.46	17.68	33.90	34.40	47.36	52.08
	4	14.34	16.50	38.40	33.60	52.74	50.10
2006	1	14.82	14.80	34.54	33.92	49.36	48.72
	2	12.82	11.86	34.70	29.44	47.52	41.30
	3	12.34	10.32	38.86	36.76	51.20	47.08
	4	12.82	12.06	36.16	33.08	48.98	45.14
2007	1	14.60	14.12	36.88	32.06	51.48	46.18
	2	11.84	12.36	34.78	31.48	46.62	43.84
	3	12.88	14.18	34.18	34.12	47.06	48.30
	4	13.24	10.08	34.76	33.04	48.00	43.12
2008	1	15.00	13.26	39.06	37.46	54.06	50.72
	2	13.28	20.48	41.32	36.18	54.60	56.66
	3	15.14	17.78	40.68	41.06	55.82	58.84

Source: Timber Mart-South

Notes: Conversions to oven-dry by KJM, Forest Products Development Center

Boligee Area Pulpwood Price History
Stumpage vs. Delivered



Source: Timber Mart-South and KJM, AU FPDC

University of Alabama Museums

Office of Archaeological Research

June 8, 2010

THE UNIVERSITY OF
ALABAMA
MUSEUMS

Ms. Amanda Hill
Alabama Historic Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Re: Crossroads of America Industrial Park
Boligee, Green County, Alabama

Dear Ms. Hill,

Please find the enclosed report of our Phase I survey of 1500 acres in association with the proposed development in Greene County, Alabama.

While there are future development plans for the portions of the entire project area, the initial development plans, which include 235 acres included in the flagship boundary and approximately 8,350 feet of outfall line to the river are the primary concern of our client at this time (as seen in the figures found in appendix C). It is our understanding that there are USDA grant monies involved with the initial development plans which require AHC concurrence as part of the grant application.

Cultural resources found within or immediately adjacent to the flagship boundary and outfall line include 1Gr114, 1Gr115, 1Gr159, 1Gr 162, and a historic cemetery. None of the archaeological sites are recommended as potentially NRHP eligible. The cemetery is fenced, and is likely contained within that boundary, as well as being well defined by the landform. However, in order to ensure that no burials are disturbed, we would suggest any ground disturbing activities within 50 meters of the cemetery as currently defined be monitored by a professional archaeologist.

Three sites within the larger project area are considered potentially eligible for the NRHP (1Gr160, 1Gr161, and 1Gr166). Additional testing or avoidance of these sites is recommended.

Please feel free to contact me by email or at (205) 371-8708 if I can provide any additional information or otherwise be of assistance.

Sincerely,

Sam Mizelle
Office of archaeological Research
University of Alabama Museums

Enclosure: OAR Project 10-153 survey report

13075 Moundville
Archaeological Park
Moundville, Alabama 35474
(205) 371-2266
FAX (205) 371-2494

A Phase I Cultural Resources Reconnaissance Survey of an Approximate 1,500 Acre Pproposed Industrial Park and Wetland Mitigation in Boligee, Greene County, Alabama

Brandon S. Thompson

PERFORMED FOR:
TTL, Inc.
1309 Edgewood Drive
Valdosta Georgia, 31601

PERFORMED BY:
The University of Alabama
Office of Archaeological Research
13075 Moundville Archaeological Park
Moundville, Alabama 35474

MAY 2010

OFFICE OF ARCHAEOLOGICAL RESEARCH
The University of Alabama
University of Alabama Museums
13075 Mound State Parkway
Moundville, Alabama 35474

University of Alabama Museums

Office of Archaeological Research

THE UNIVERSITY OF
ALABAMA
MUSEUMS

May 31, 2010

A Phase I Cultural Resources Reconnaissance Survey of an Approximate 1,500 Acre Proposed Industrial Park and Wetland Mitigation in Boligee, Greene County, Alabama

OAR PROJECT NUMBER: 10-153

PERFORMED FOR: TTL, Inc.
1309 Edgewood Drive
Valdosta Georgia, 31601
Attn: Mr. Bob White

PERFORMED BY: Brandon S. Thompson, Cultural Resources Specialist
Daryll R. Berryman, Cultural Resources Assistant
Donald L. Brown, Cultural Resources Assistant
Myron F. Estes, Cultural Resources Graphics Technician
John F. Lieb, Cultural Resources Assistant
Darrell L. Smith, Cultural Resources Assistant
Ronald Stallworth, Cultural Resources Assistant
Joel H. Watkins, Cultural Resources Analyst
The University of Alabama
Office of Archaeological Research
13075 Moundville Archaeological Park
Moundville, Alabama 35474

DATE PERFORMED: April 19 to May 12, 2010

Brandon S. Thompson
Cultural Resources Specialist
Office of Archaeological Research

Eugene M. Futato, RPA/Deputy Director
The University of Alabama
Office of Archaeological Research

13075 Moundville
Archaeological Park
Moundville, Alabama 35474
(205) 371-2266
FAX (205) 371-2494

TABLE OF CONTENTS

CONTENTS PAGE

LIST OF FIGURES

ILLUSTRATIONS PAGE

LIST OF TABLES

TABLES PAGE

A Phase I Cultural Resources Reconnaissance Survey of an Approximate 1,500 acre Proposed Industrial Park and Wetland Mitigation in Boligee, Greene County, Alabama

Brandon S. Thompson

Introduction

The University of Alabama, Office of Archaeological Research (OAR) was contracted by TTL, Inc., to conduct a Phase I cultural resources reconnaissance survey of an approximate 1,500 acre proposed industrial park and wetland mitigation near the town of Boligee, in west Greene County, Alabama. Brandon S. Thompson (Cultural Resources Specialist), assisted by Daryll R. Berryman (Cultural Resources Assistant), Donald L. Brown (Cultural Resources Assistant), Myron F. Estes (Cultural Resources Graphics Technician), John F. Lieb (Cultural Resources Assistant), Darrell L. Smith (Cultural Resources Assistant), Ronald Stallworth (Cultural Resources Assistant), and Joel H. Watkins (Cultural Resources Analyst), conducted the survey from April 19 to May 12, 2010. The Principal Investigator for the project is Eugene M. Futato, Deputy Director of OAR.

The research design of the Phase I survey is to locate and identify any archaeological sites or historic standing structures within the survey boundaries, assess their significance and provide recommendation with regard to guidelines set forth by the *National Register of Historic Places* (NRHP). Included in this report is a discussion of the environmental setting of the survey area, a literature search of any sites or historic standing structures within or near the survey area, a description of field and laboratory methods, the results of the cultural resources reconnaissance, and conclusions and recommendations based on the findings of this survey.

Environmental Setting

The survey area consists of an approximate 1,500 acre (2.34 mi^2; 6.07 km^2) irregular shaped tract located near the town of Boligee in west Greene County, Alabama, adjacent to the Tombigbee River. The survey area can be seen in the SW ½ of the SW ¼ of Section 11, the SW ¼ of Section 12, and the majority of Sections 13, 14, and 24, T21, R1W, the NW ¼ of Section 10, and the SW ¼ of Section 18, T21 R1E, on the 1970 (photo revised 1987) USGS 7.5' Boligee, Alabama topographic quadrangle (Figures 1-2).

The survey area is located within the Alluvial Plain district of the East Gulf Coastal Plain physiographic section. The state of Alabama Geological Survey (Sapp and Emplaincourt 1975) characterizes the Alluvial Plain as "alluvium and terrace deposits of larger river valleys."

The Soil Survey of Greene County, Alabama (Cotton 1971) and the USDA National Resources Conservation Service, Web Soil Survey 2.0 (USDA 2008) indicate that 29 soil types and complexes occur within the survey area (Figure 3; Table 1).

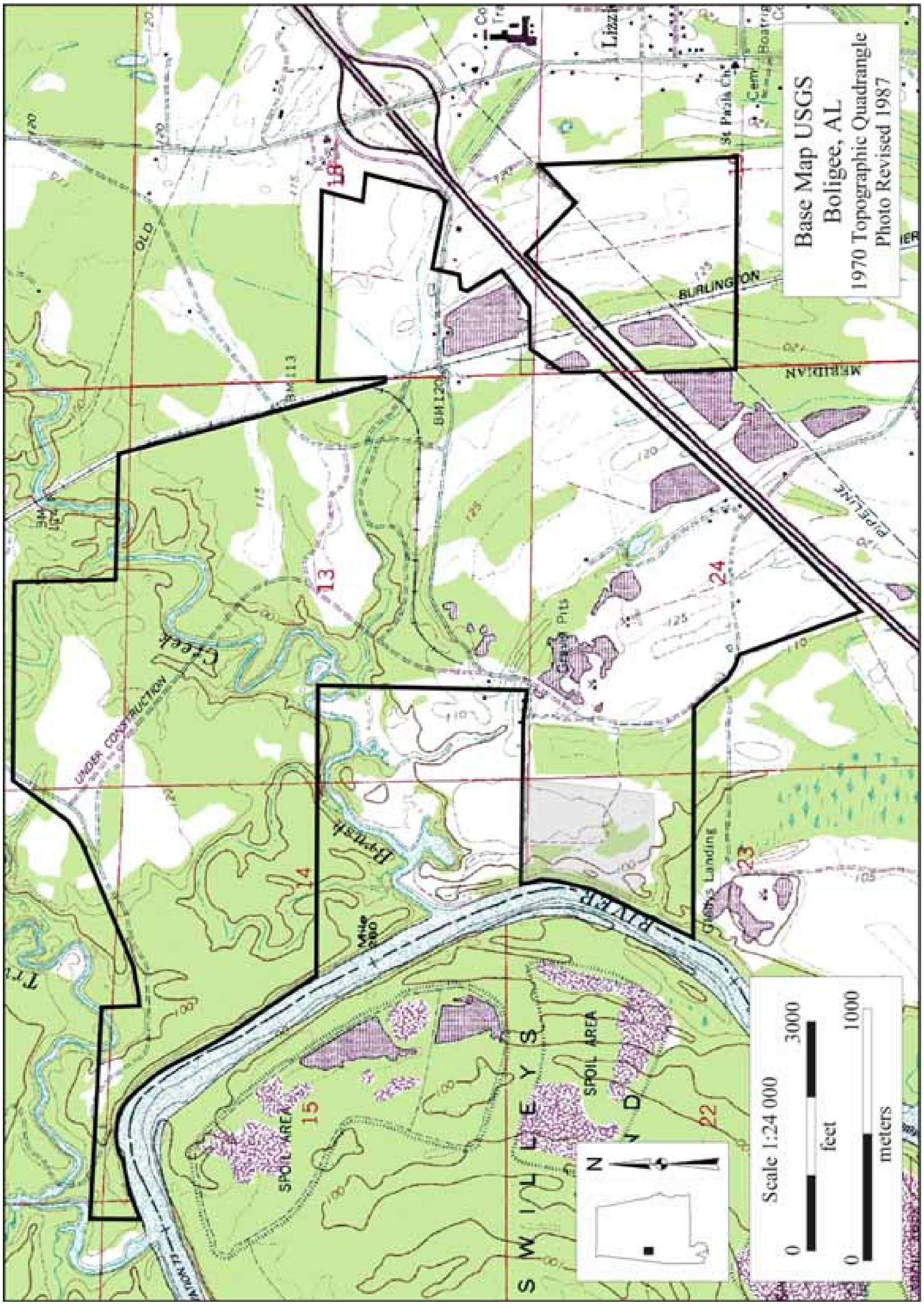


Figure 1. Survey area as seen on the 1970 USGS 7.5’ Boligee topographic quadrangle.

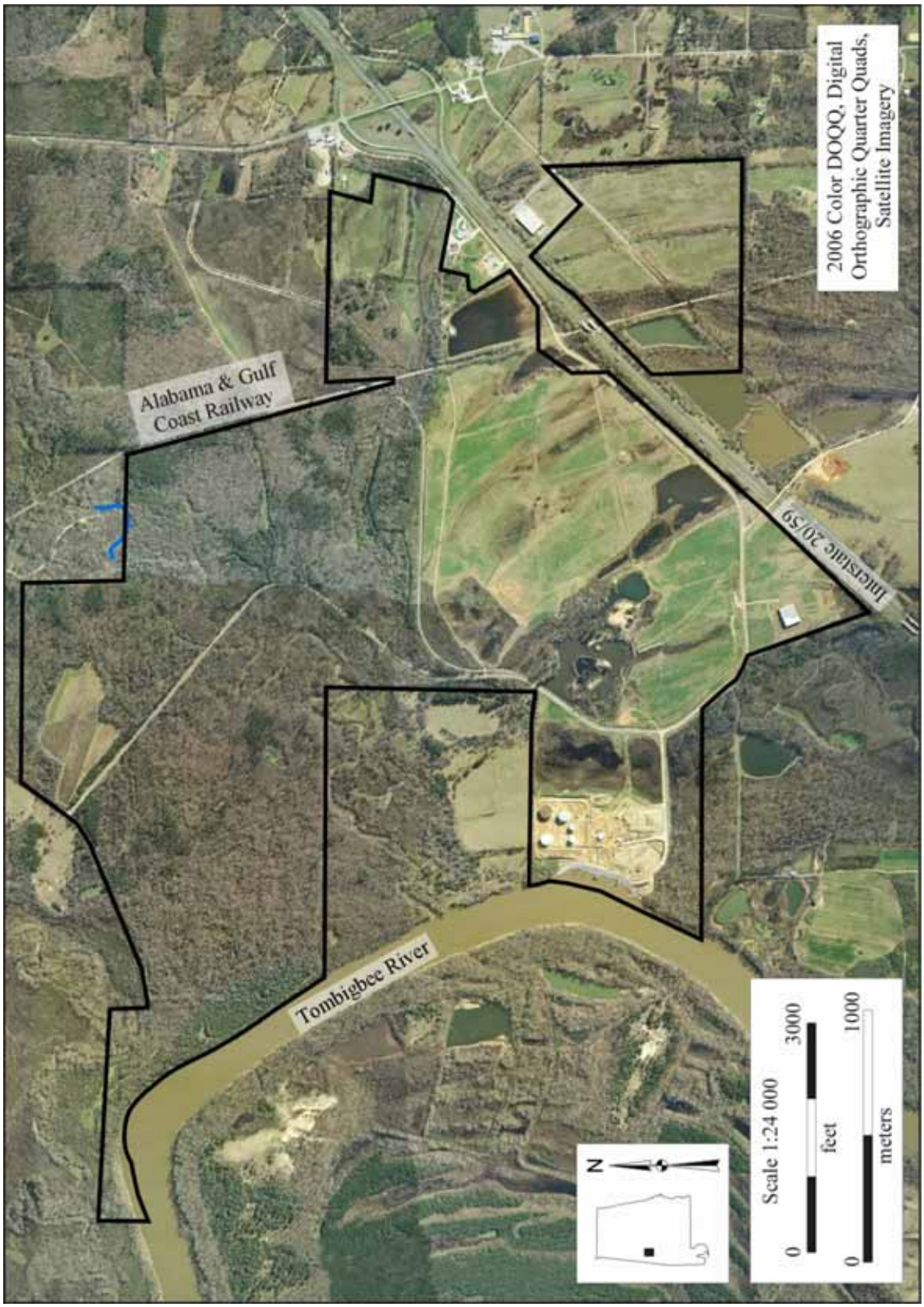


Figure 2. Aerial view of the survey area.

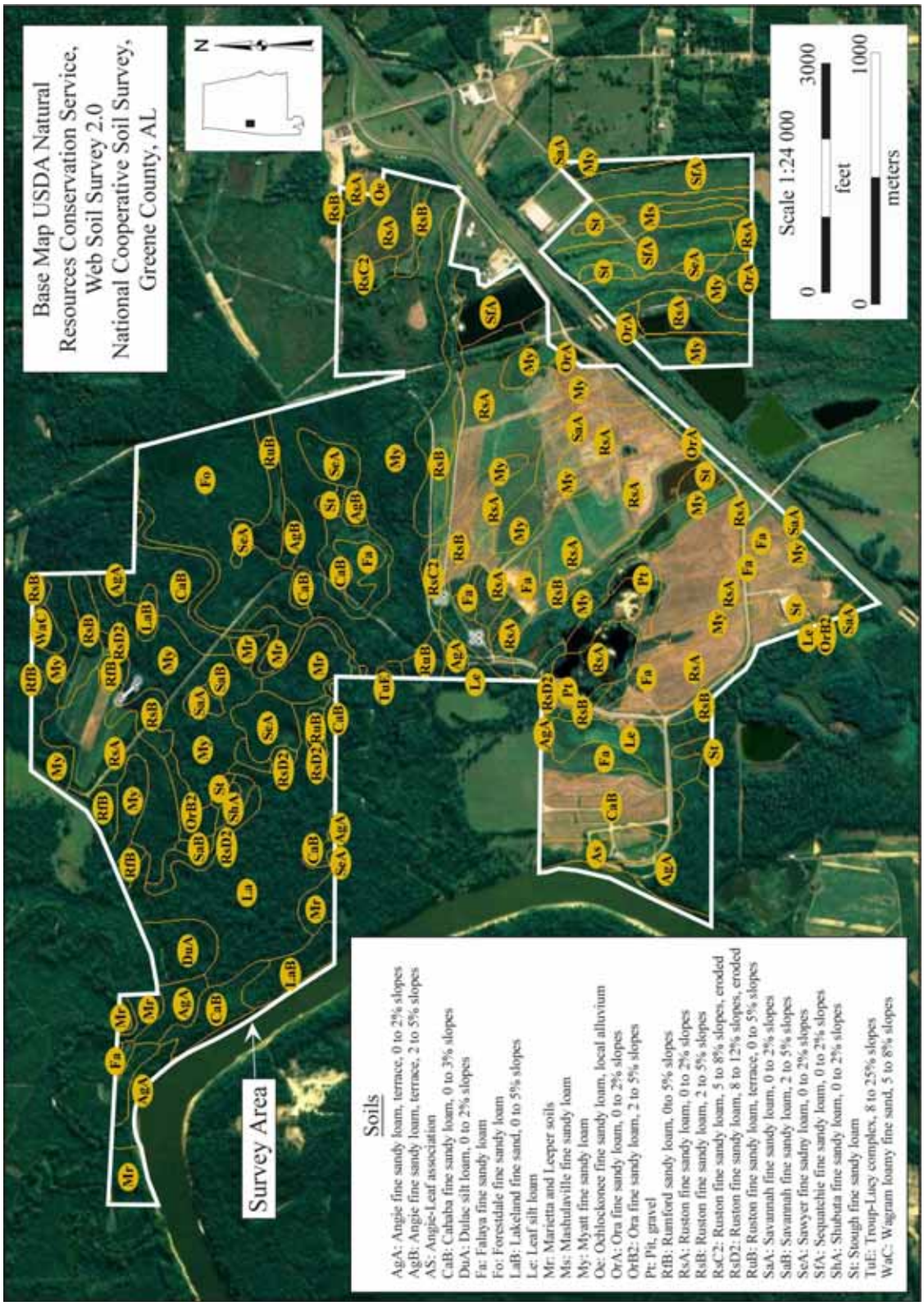


Figure 3. Survey area soil map.

Table 1. Soil types and descriptions found within the survey area.

Map Symbol	Soil Name	Depth from Surface (in)	Dominant Texture	Depth to Water Table (ft)
AgA	Angie fine sandy loam, terrace, 0 to 2% slopes	0-6 6-36 36-72	Fine sandy loam Silty clay Clay	0.5-1.5
AgB	Angie fine sandy loam, terrace, 2 to 5% slopes	0-6 6-36 36-72	Fine sandy loam Silty clay Clay	0.5-1.5
As	Angie-Leaf association	0-9 9-72	Silt loam Silty clay	0-1
CaB	Cahaba fine sandy loam, 0 to 3% slopes	0-10 10-30 30-50	Fine sandy loam Loam, sandy clay loam Fine sandy loam	4
DuA	Dulac silt loam, 0 to 2% slopes	0-6 6-40 40-72	Silt loam Silty clay loam Silty clay loam	1-2
Fa	Falaya fine sandy loam	0-46 46-72	Loam Clay loam	0.5-1.5
Fo	Forestdale fine sandy loam	0-6 6-42 42-72	Fine sandy loam Clay Clay	0-1
LaB	Lakeland fine sand, 0 to 5% slopes	0-32 32-72	Fine sand Sand	5
Le	Leaf silt loam	0-9 9-72	Silt loam Silty clay	0-1
Mr	Marietta and Leeper soils	0-42 42-72	Sandy clay loam Sandy clay	1.5-2
Ms	Mashulaville fine sandy loam	0-9 9-32 32-80	Fine sandy loam Loam Clay loam	0-1
My	Myatt fine sandy loam	0-5 5-54 54-80	Fine sandy loam Sandy clay loam Clay loam and sandy clay loam	0-1
Oe	Ochlockonee fine sandy loam, local alluvium	0-52 52-72	Fine sandy loam Sandy loam	0-1
OrA	Ora fine sandy loam, 0 to 2% slopes	0-5 5-26 26-72	Fine sandy loam Clay loam Clay loam	2-3
OrB2	Ora fine sandy loam, 2 to 5% slopes	0-5 5-26 26-72	Fine sandy loam Clay loam Clay loam	2-3
Pt	Pit, gravel	-	-	-
RfB	Rumford sandy loam, 0 to 5% slopes	0-7 7-38 38-70	Sandy loam Fine sandy loam Loamy sand	>6
RsA	Ruston fine sandy loam, 0 to 2% slopes	0-16 16-60 60-108	Fine sandy loam Sandy clay loam Fine sandy loam	>6
RsB	Ruston fine sandy loam, 2 to 2% slopes	0-16 16-60 60-108	Fine sandy loam Sandy clay loam Fine sandy loam	>6
RsC2	Ruston fine sandy loam, 5 to 8% slopes	0-16 16-60 60-108	Fine sandy loam Sandy clay loam Fine sandy loam	>6
RsD2	Ruston fine sandy loam, 8 to 12% slopes	0-16 16-60 60-108	Fine sandy loam Sandy clay loam Fine sandy loam	>6
RuB	Ruston fine sandy loam, terrace	0-16 16-60 60-108	Fine sandy loam Sandy clay loam Fine sandy loam	>6
SaA	Savannah fine sandy loam, 0 to 2%	0-8 8-23 23-45 45-72	Fine sandy loam Loam Loam Sandy clay loam	2-3
SaB	Savannah fine sandy loam, 0 to 5%	0-8 8-23 23-45 45-72	Fine sandy loam Loam Loam Sandy clay loam	2-3

Map Symbol	Soil Name	Depth from Surface (in)	Dominant Texture	Depth to Water Table (ft)
SeA	Sawyer fine sandy loam, 0 to 2%	0-9 9-26 26-60	Fine sandy loam Loam Silty clay	2-3
SfA	Sequatchie fine sandy loam, 0 to 2% slopes	0-15 15-48 48-72	Sandy loam Fine sandy loam Loamy sand	>6
ShA	Shubuta fine sandy loam, 0 to 2% slopes	0-9 9-36 36-72	Fine sandy loam Silty clay Sandy clay	>6
St	Stough fine sandy loam	0-8 8-37 37-72	Sandy loam Fine sandy loam Sandy clay loam	0.5-1.5
TuE	Troup-Lucy Complex, 8 to 25% slopes	0-60 60-80	Loamy sand Sandy loam	>6
W	Water	-	-	-
WaC	Wagram loamy fine sand, 5 to 8% slopes	0-30 30-72	Clay Selma Chalk	>6

A preliminary project area map provided by TTL identifies wetlands throughout much of the survey area (Figure 4). It should be noted the map shown in Figure 4 is a preliminary map and the project boundaries identified therein do not exactly match the current project boundaries used during this survey. This map serves only as a basis through which to identify wetland boundaries in the survey area. During the course of the Phase I reconnaissance, additional wetlands and periodically inundated areas were identified and mapped (Figures 5-8). Brush Creek, several first order streams, intermittent drainages, and ponds are found throughout the survey area (Figures 9-10). The Tombigbee River forms the western boundary of the survey area in the northwest and southwest areas (Figure 11).

The southern half of the survey area consists primarily of periodically plowed agricultural wheat fields (Figure 12). The northern half consists of a mixture wetlands with immature secondary hardwood and pine growth. The immature nature of the vegetation found throughout the northern half of the survey area suggests timber harvesting occurred within the recent past. However, areas directly adjacent to intermittent drainages, first order streams, and the Tombigbee River, contained moderate amounts of mature hardwood growth. County Road 89/Boligee Park Road runs roughly north-south through the entire survey area (Figure 13) and numerous other access roads can be found throughout the survey area. The Alabama and Gulf Coast Railway runs north-south through the eastern portion of the survey area and a service railway, off of the main line, runs west through the center of the survey area (Figure 14). The TEPPCO Boligee Intermodel Terminal, used for transporting diesel fuel and ethanol, is located the southwestern portion of the survey area (Figure 15).

Literature and Document Research

The literature and document research included an inspection of the Alabama State Site File (ASSF), the National Archaeological Database Bibliography (NADB), housed at OAR, and the Alabama Online Cultural Resources Database (AOCRD) for previously listed archaeological sites and previously conducted archaeological surveys within the survey boundaries and the APE. The *Historical Atlas of Alabama, Vol. 2* was searched and no cemeteries were recorded within

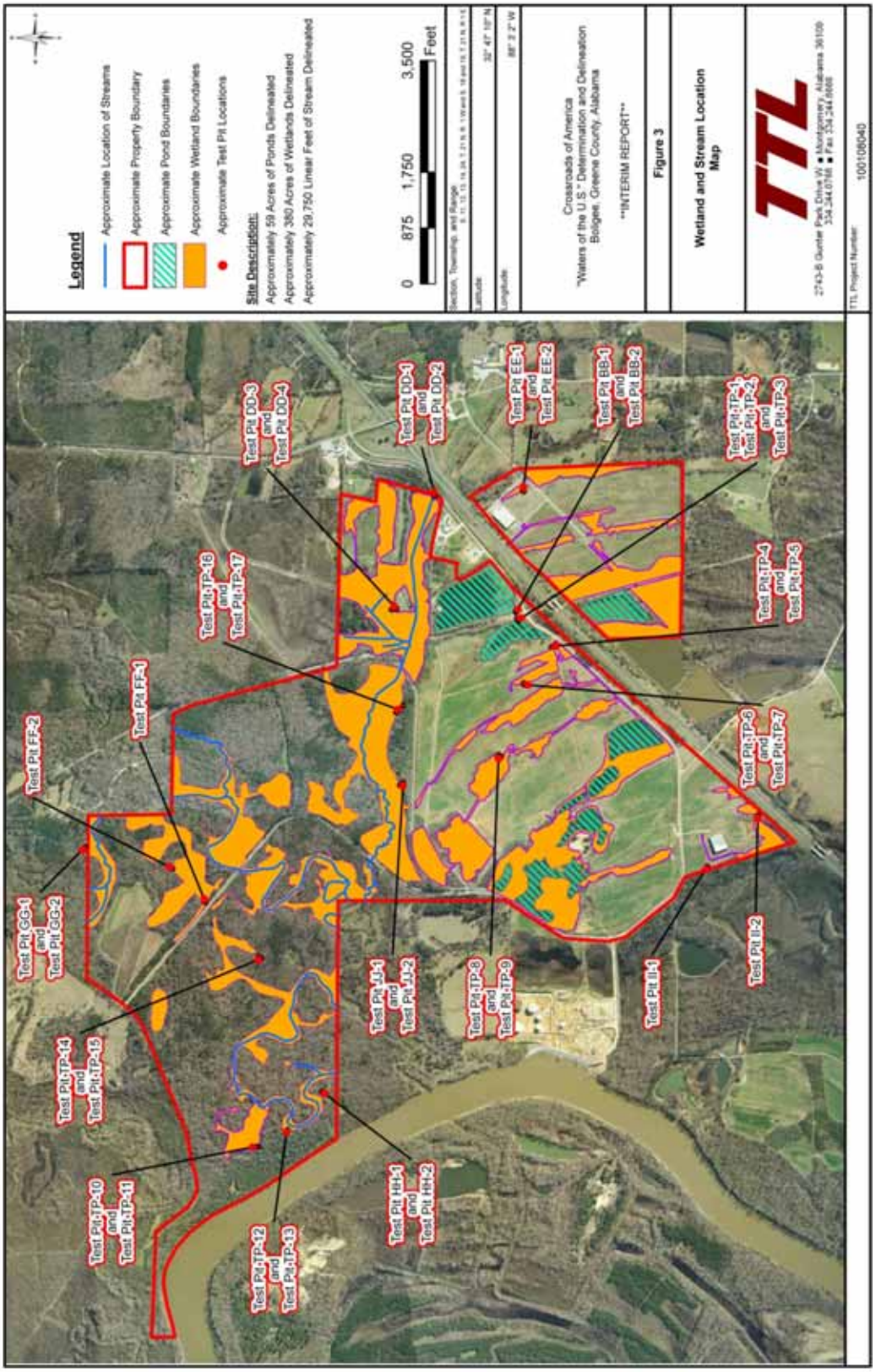


Figure 4. Preliminary TTL wetland delineation map.

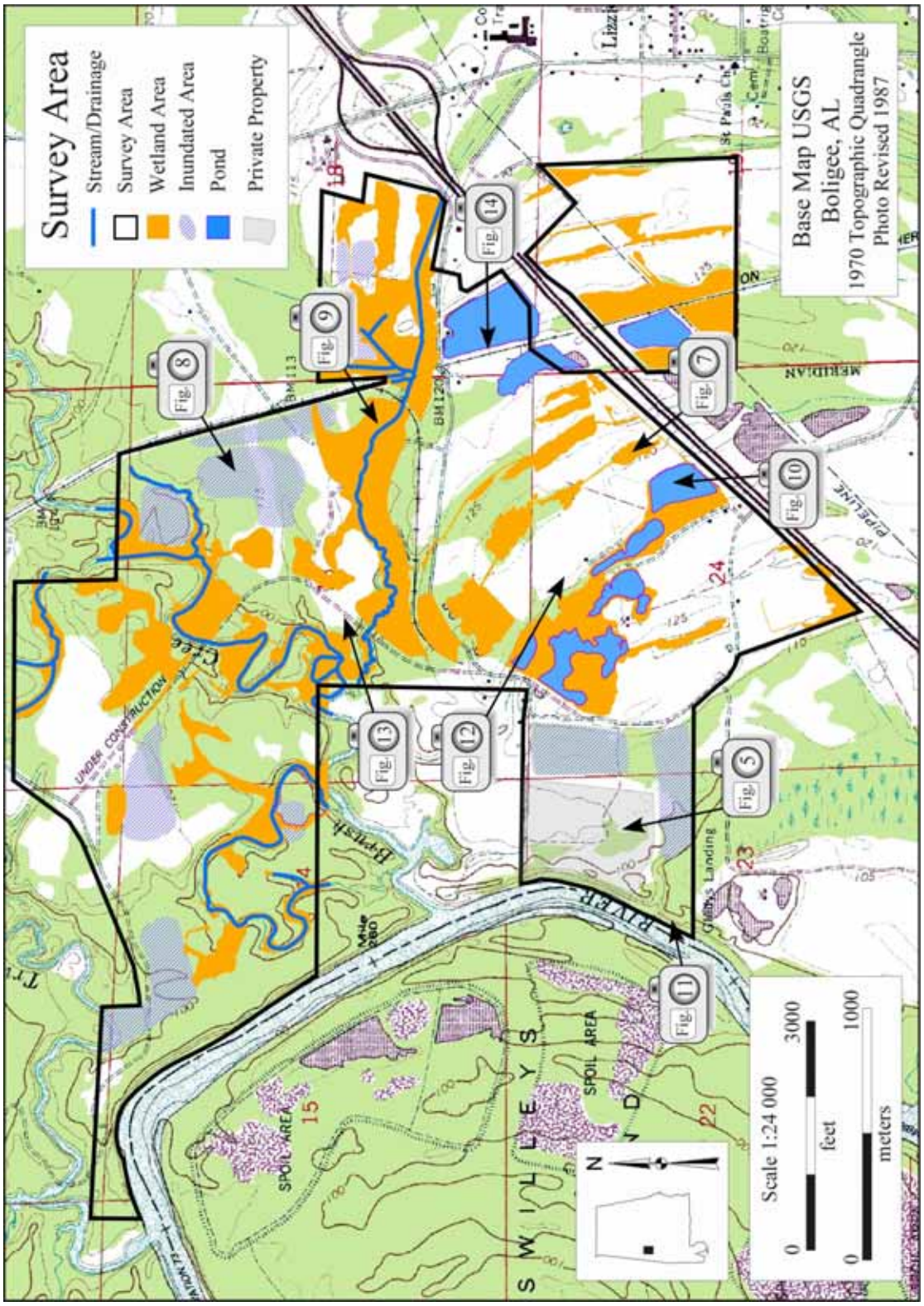


Figure 5. Topographic survey area map showing

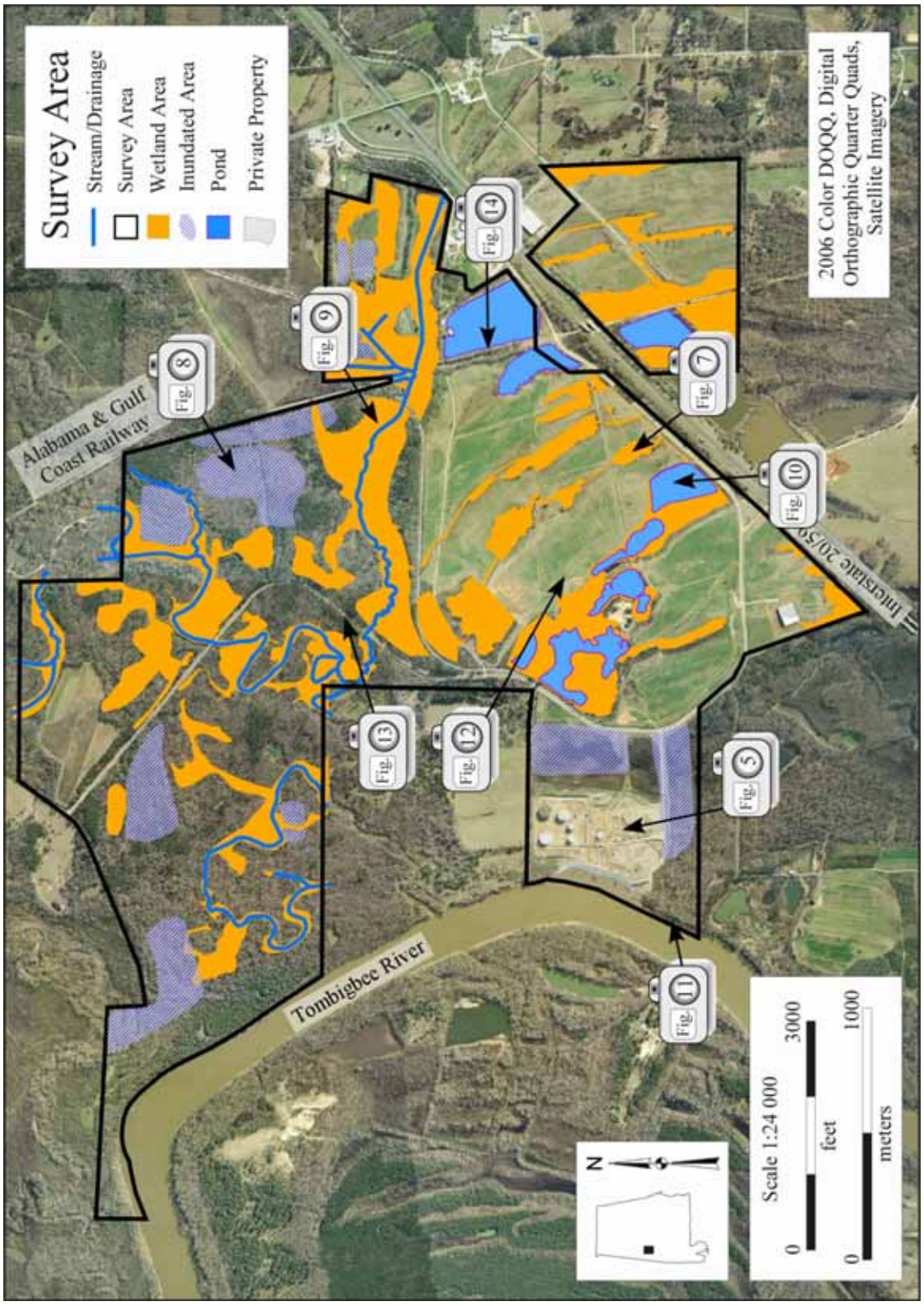


Figure 6. Aerial survey area map showing wetlands and inundated areas.

Figure 7. Wetlands and wetland delineation flagging in the southern portion of the survey area. View northwest.

Figure 8. Wetlands/inundated terrain in the northeastern portion of the survey area.

Figure 9. First-order stream located in the central portion of the survey area. View east.

Figure 10. Pond located in the southern portion of the survey area. View north.

Figure 11. The Tombigbee River as seen from the southwestern most extent of the survey area. View north.

Figure 12. Typical wheat field in the southern half of the survey area. View north.

Figure 13. County Road 89/Boligee Park Road runs through the center of the survey area. View south.

Figure 14. The Alabama and Gulf Coast Railway in the east portion of the survey area. View north.

Figure 15. The TEPPCO Boligee Intermodel Terminal in the southwestern section of the survey area. View northwest.

close proximity to or within the survey area (Remington 1999). However, the 1923 Greene County soil map (USDA Bureau of Soils 1923) shows a cemetery within the western boundaries of the survey area. Investigations into this area and the cemetery can be found in the *Results* section of this report.

Background research indicates that four archaeological surveys and six archaeological sites have previously been conducted and recorded within this project's boundaries, and an additional three sites are within a one mile radius of the survey area (Figures 16-19; Table 2). Mistovich (1980) conducted a Phase I archaeological survey within the northern boundaries of the survey area and recorded Sites 1Gr110 and 1Gr111. Mistovich (1981) also conducted a Phase I archaeological survey within the survey area's southern boundaries and recorded Sites 1Gr114 and 1Gr115. Both surveys conducted by Mistovich (1980 and 1981) were performed for a proposed industrial park in the area. Gilliland (1995) conducted a Phase I survey in the southeastern most portion of the project area for a proposed factory and access road. During the survey, no archaeological sites or historic standing structures were found. Finney (OAR 2002) conducted a Phase I reconnaissance for a proposed petroleum pipeline in the southwestern portion of the survey area and recorded Site 1Gr157. No report of this survey is available, however all five of these sites were revisited during the course of this survey. The findings of the revisits are included in the *Results* section of this report.

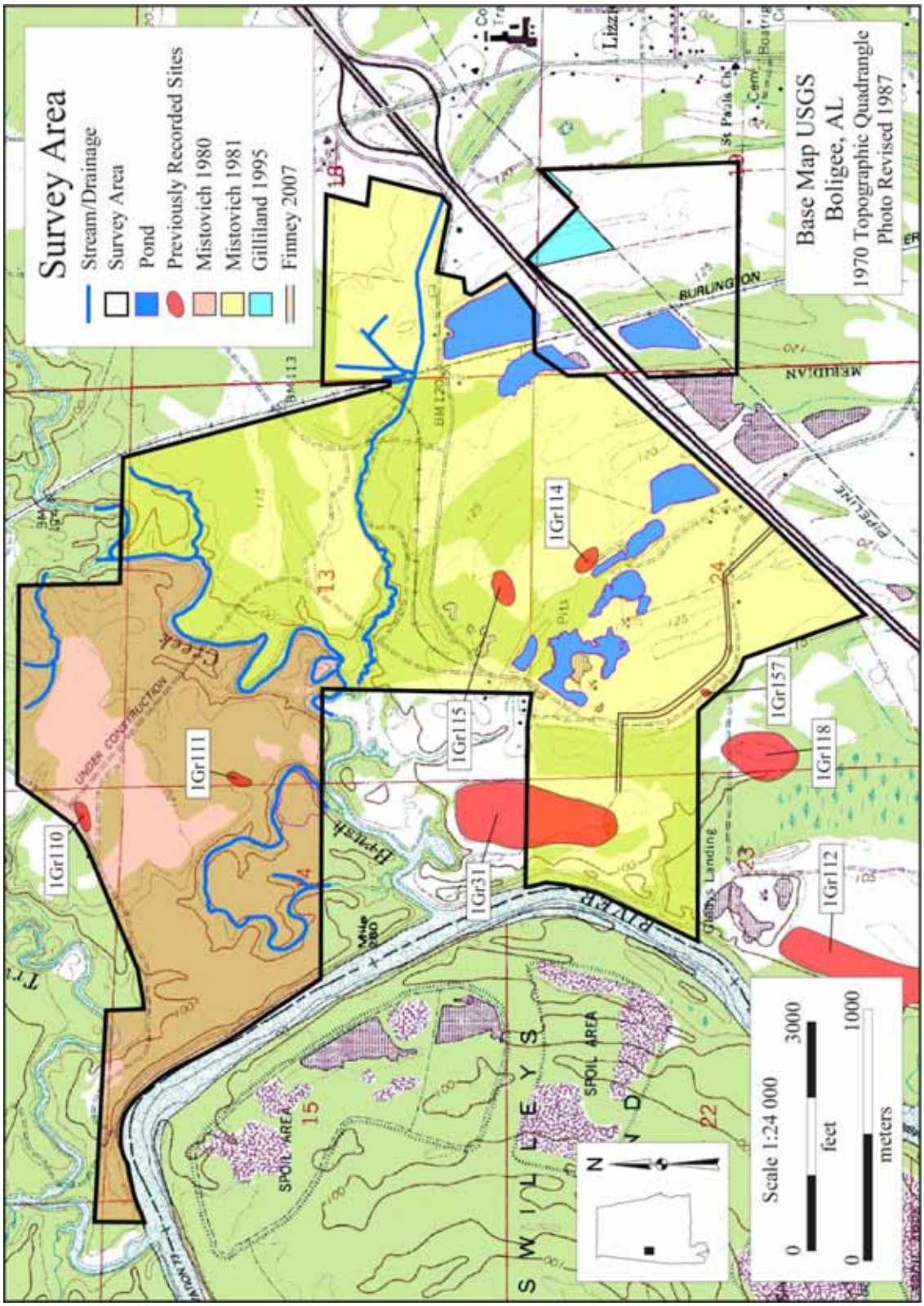


Figure 16. Topographic map showing previous surveys conducted within the current project boundaries.

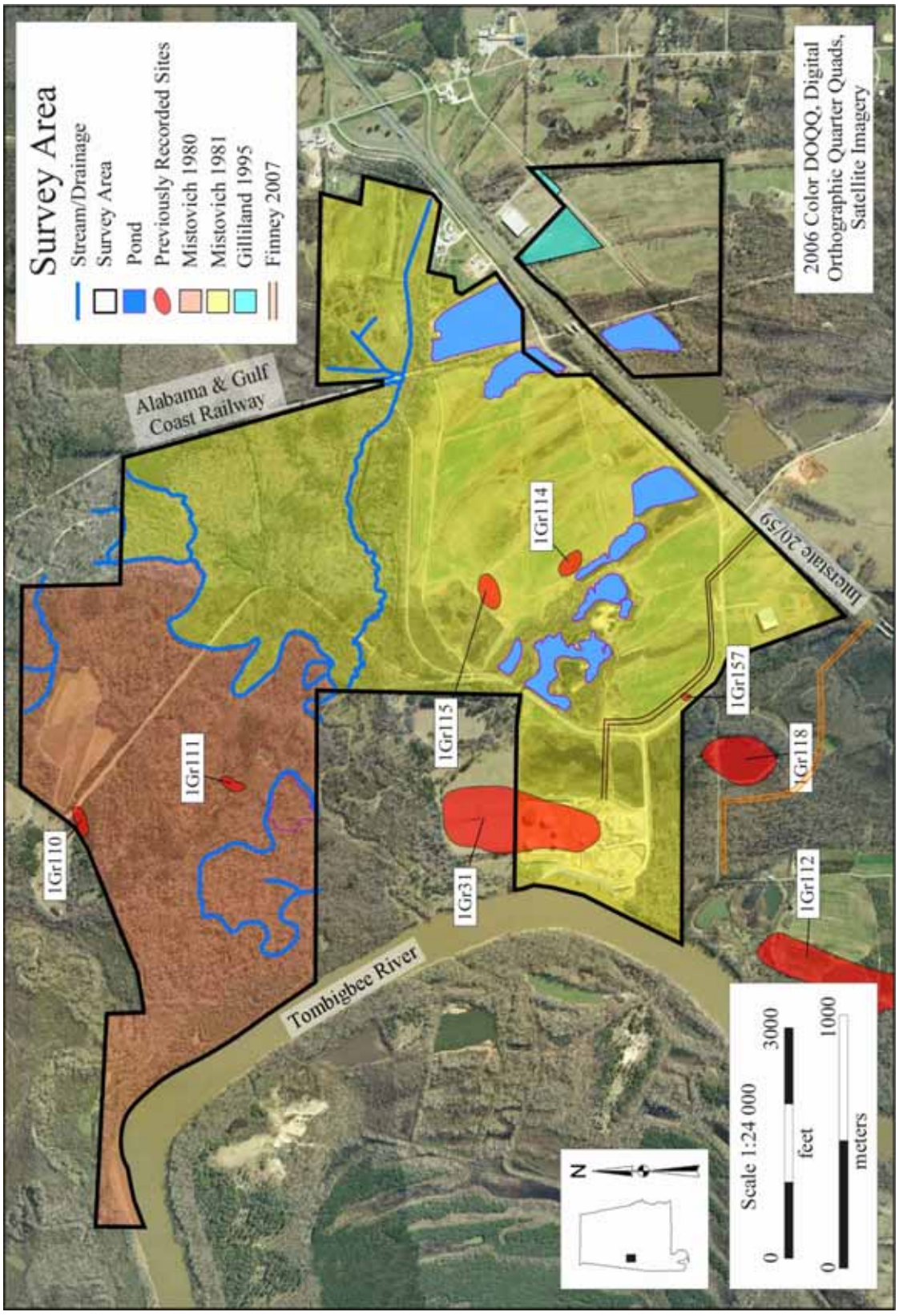


Figure 17. Aerial map showing previous survey conducted within the current project boundaries.

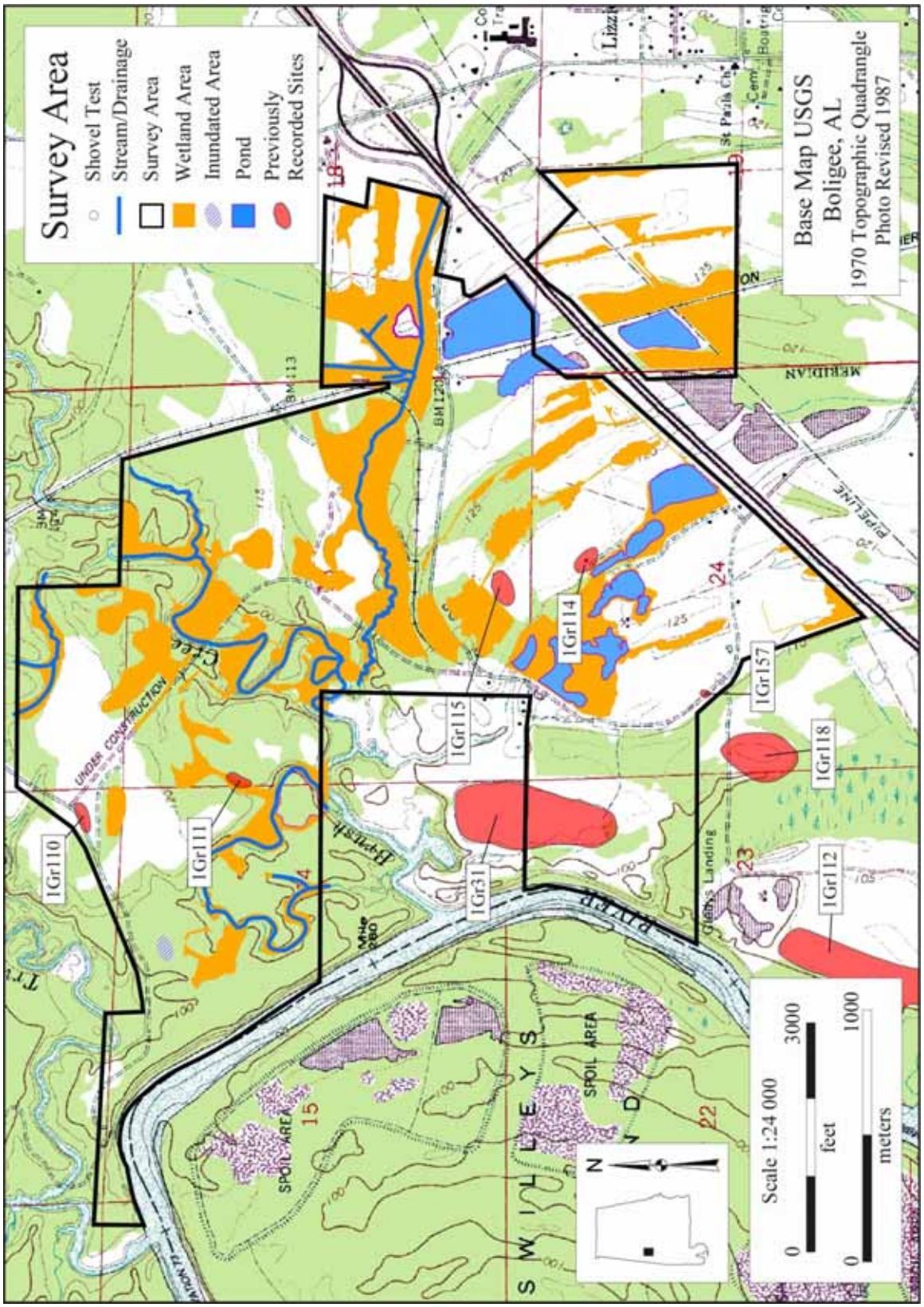


Figure 18. Topographic map showing the previously recorded sites within the project boundaries.

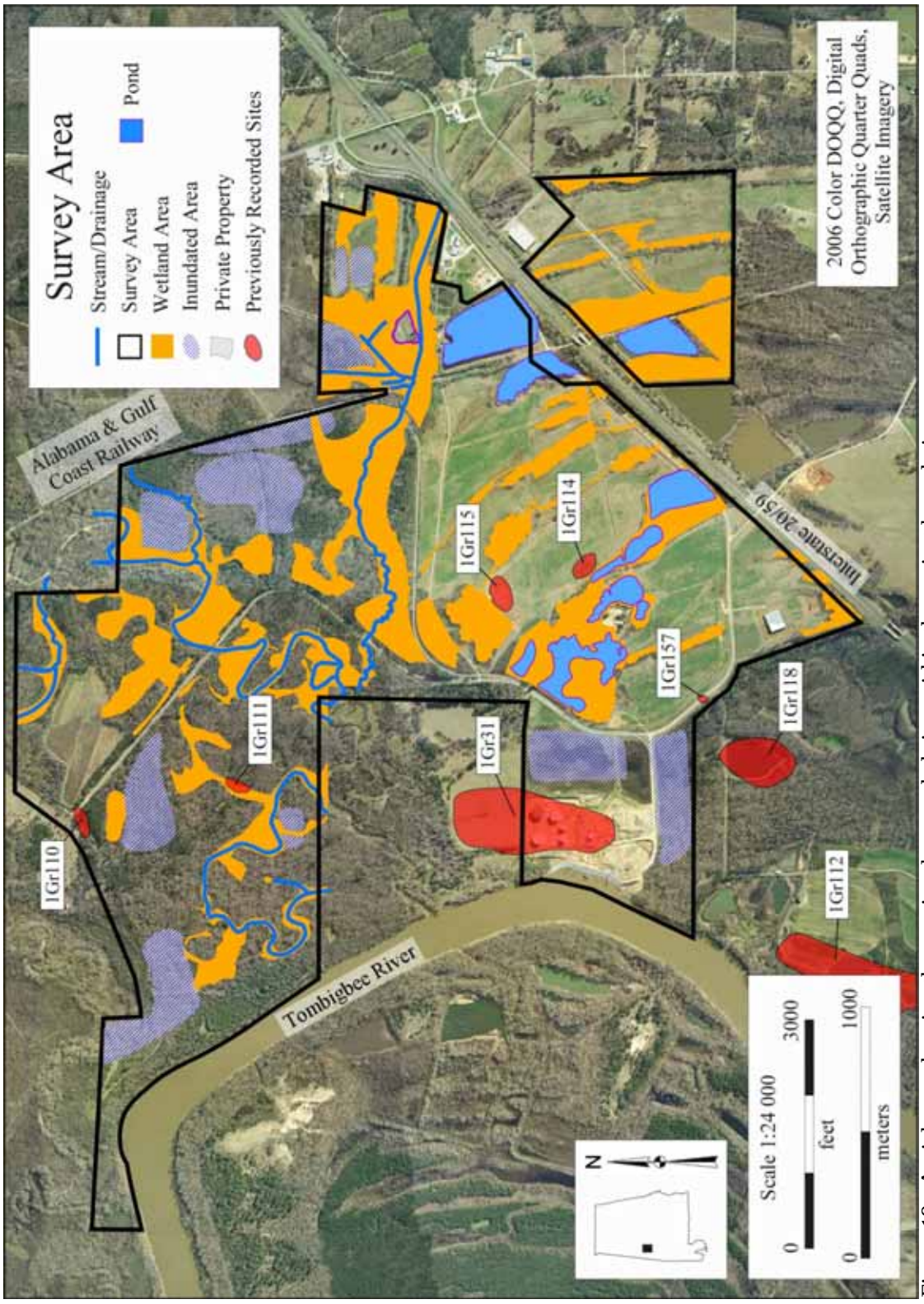


Figure 19. Aerial map showing the previously recorded sites within the project boundaries.

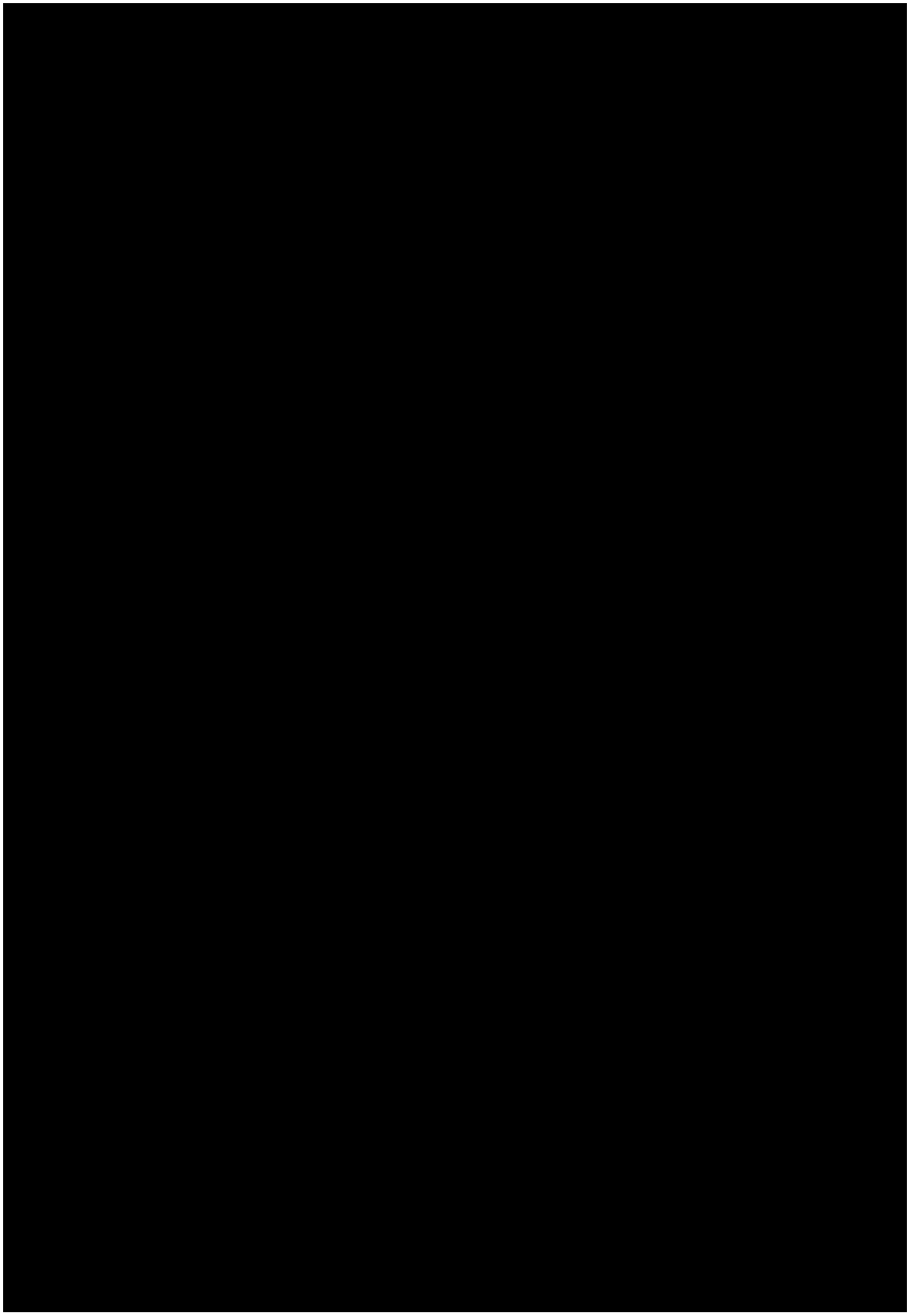
Table 2. Sites within a one mile radius of the survey area.

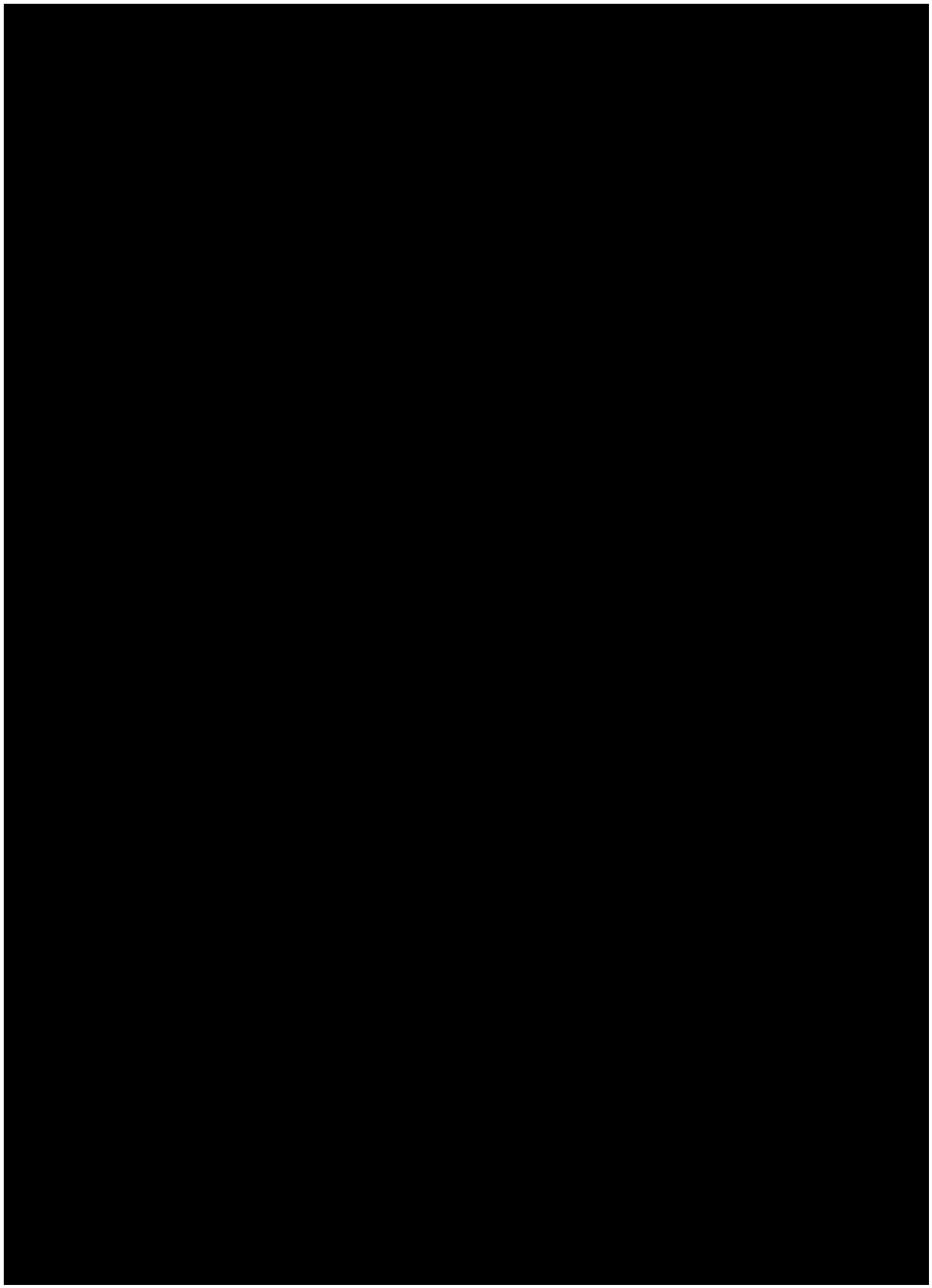
The sixth site within the survey area, Site 1Gr31, lies within private property and was, therefore, not revisited (Figure 20).

Field Methods

The field survey implemented standard Phase I survey techniques. Field investigations consisted of a pedestrian reconnaissance implementing visual inspection of exposed surface areas and subsurface testing, resulting in the excavation of 984 shovel tests in the survey area (Figures 21-22). Field investigations were conducted by two to three two-person crews. As

Figure 20. TEPPCO Boligee Intermodel Terminal within the southern boundaries of Site 1Gr31. View west.





required in the state of Alabama, shovel tests had a minimum diameter of 30 cm and were excavated to sterile subsoil. All excavated soils were screened through 6 mm (¼ in) mesh screen in an effort to recover cultural materials. Soil profiles were recorded in each shovel test noting soil stratigraphy, including soil colors, textures and depths. Depths of artifact recovery in shovel tests were also recorded when determinable. Where soil was visible at the surface, initial investigations consisted of ground surface inspection. These locations included bare soil exposures along natural slopes, drainages, access road cutbanks, access road surfaces, specific areas within recently plowed wheat fields, and erosional surfaces. Additionally, wetland areas and locations with standing water were only visually inspected for cultural materials.

Where visibility of the soil surface was limited, shovel tests were excavated at 30 m intervals in those areas with a high probability of containing cultural materials and archaeological sites. Such high probability areas were limited in extent and consisted of landforms with relatively level surfaces (areas of <10% slope) and terraces adjacent to intermittent drainages, first order streams, and the Tombigbee River. These 30 m interval methods were also limited to those settings showing an absence of disturbance from timber harvesting activities and erosion that has removed soil surface horizons. Areas deemed to have a low probability of intact cultural deposits were sampled at a greater interval of 60 m. These areas included the wheat fields in the southern half of the survey area, areas impacted by access road construction or on slopes greater than 20° were only visually inspected for cultural materials.

The terrain of the survey area consists of relatively flat terrain, including floodplains and terraces adjacent to intermittent drainages, first order streams, and the Tombigbee River. Wetlands and periodically inundated areas were found throughout the survey area. Generally, these areas were only visually inspected for cultural deposits, however, when an area of higher elevation within the wetlands was encountered, it was tested for cultural materials. Shovel Test 424 can be seen in Figure 23. It is an example of a shovel test placed adjacent to a wetland/inundated area. It was excavated to approximately 20 cmbs and consisted of a 7.5 YR 6/1 gray clay mottled with 7.5 YR 5/8 strong brown clay from 0 to 20 cmbs.

Approximately half of the terrain in the survey area has been and is currently being used for agricultural purposes, resulting in highly disturbed and eroded soils. Based on the disturbances and modification to the terrain, there is a low probably of intact cultural deposits in the southern half of the survey area. The northern half of the survey area, while displaying signs of timber harvesting in the past, contains terraces adjacent to permanent water sources that would have provided ideal landforms for habitation of prehistoric and historic people. Due to the ideal landforms adjacent to the permanent water sources and the close proximity of the survey area to Site 1Gr31, there is a moderate to high probability of intact deposits in the northern half of the survey area.

Figure 23. Shovel Test 424, placed adjacent to a wetland/inundated area.

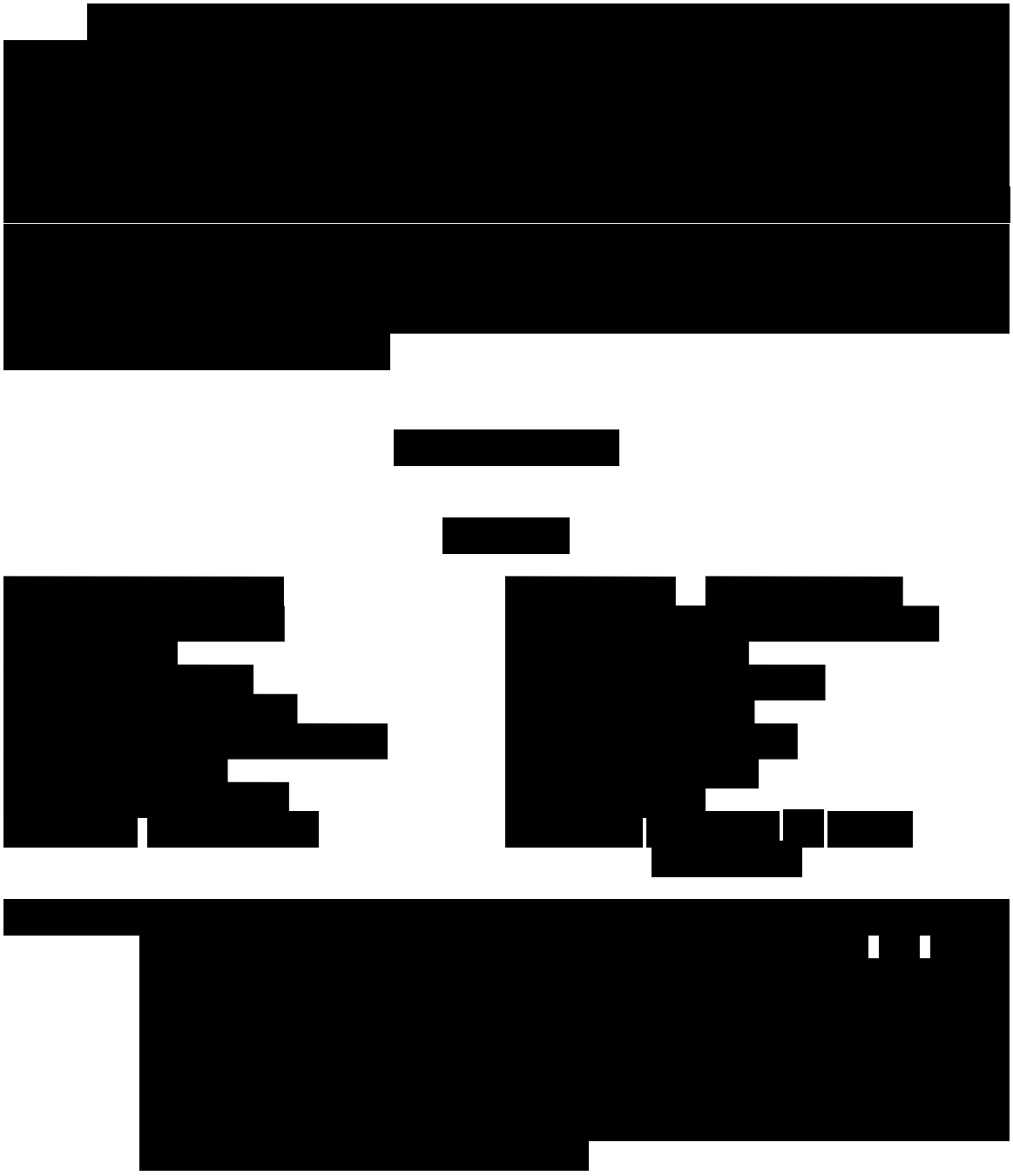
[redacted]

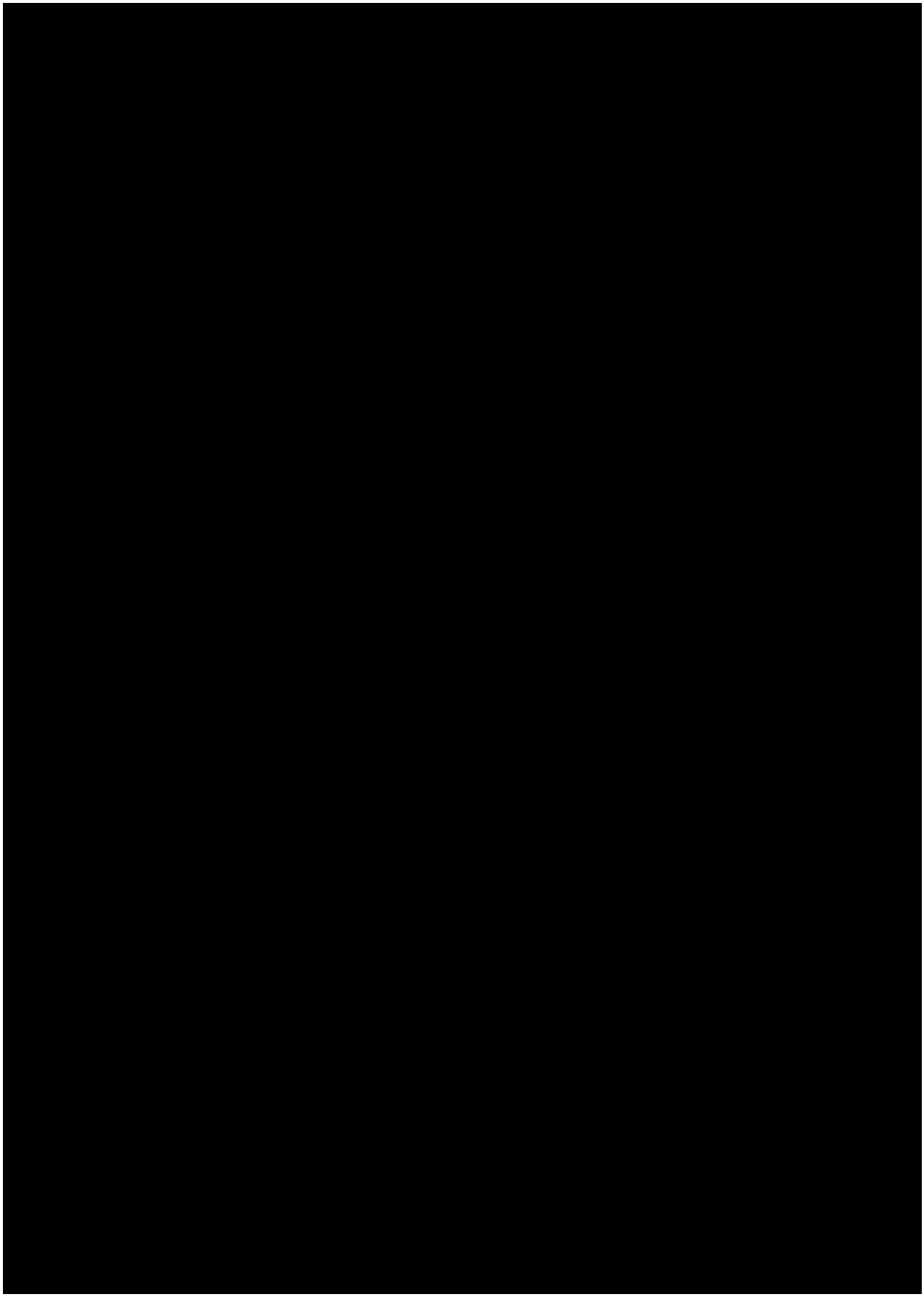
Laboratory Methods and Collection Curation

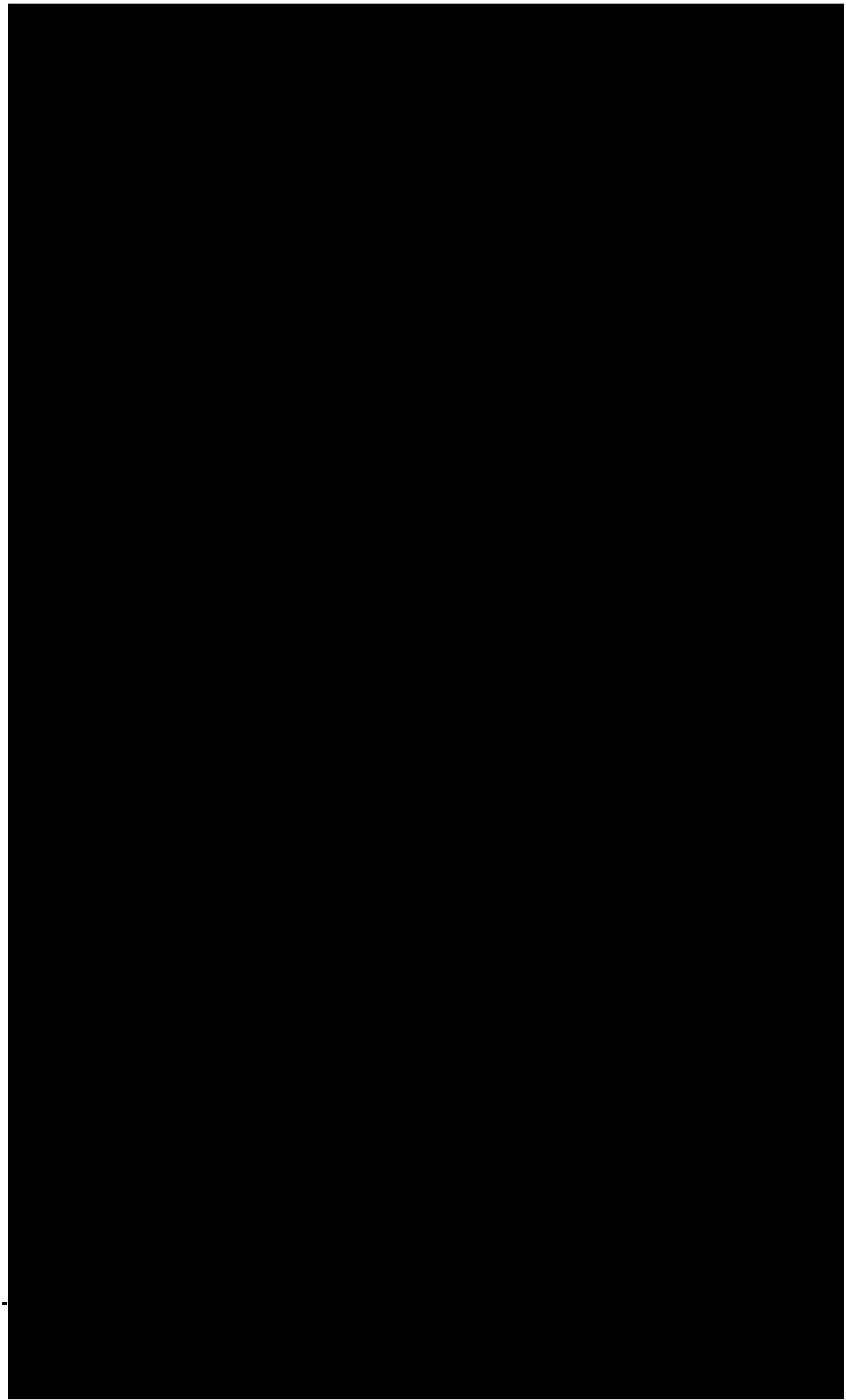
All cultural materials recovered during the project were returned to the David L. DeJarnette Laboratory at Moundville Archaeological Park. All photographs, field notes, maps, and documentation pertinent to the survey will be curated at the Erskine Ramsay Archaeological

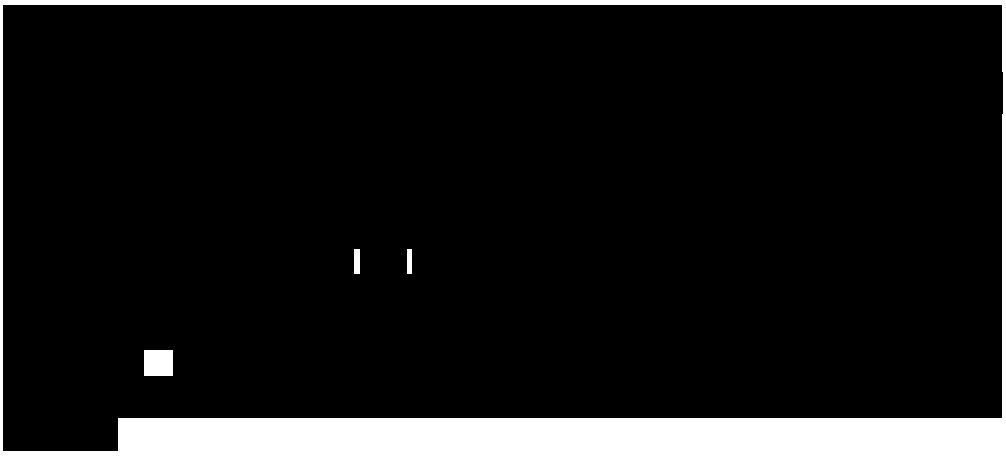
Repository located at Moundville Archaeological Park. This repository meets Department of the Interior curation standards as defined under 36 CFR Part 79. All debitage was sorted by raw material type and size graded by using a system of Humboldt U.S.A. Standard Sieve nested screens with graduated square hole sizes of 1 inch, .5 inch, and .25 inch and was analyzed using the mass analysis technique as outlined by Ahler (1989).

Results









Site 1Gr159

Topographic Map: Boligee
Township: 21N Range: 1W
Elevation: 125 ft
Maximum Depth: 10 cm
Percentage Disturbed: 95 %
Topographic Association: Floodplain
Direction to Water: E
Ground Cover: Cultivation
Soil Texture: Fine sandy loam

Easting: 401849 *Northing*: 3627882
Section: NW¼, SW¼, NE¼ of Section 24
Site Size: 50 m by 40 m
Preservation State: Cultivation
NRHP Status: Ineligible
Nearest Water Source: Lake
Distance to Water: 20 m
Soil Types: Ruston
Components: Late 19th to Mid 20th Century Nonaboriginal

Comments: Site 1Gr159 is located in a floodplain adjacent to a small pond along the southern boundary of the survey area and is identified as a late 19th to mid 20th century nonaboriginal historic refuse scatter (Figure 30). A total of 33 shovel tests, 10 positive for cultural materials, was excavated to determine the extent of cultural deposits (Figure 31). The site currently lies within a periodically plowed wheat field with an access road, wetlands, and pond to the east and wheat fields to the north, south, and west (Figures 32-33). Due to the access road, wetlands, and pond to the east, additional shovel tests in this direction were not attempted.

Shovel Test 49 can be seen in Figure 34 and is an example of a typical shovel test from Site 1Gr159. It was excavated to a depth of 15 cmbs and no O horizon was present. From 0 to 10 cmbs a 10 YR 5/3 brown fine sandy loam was present. From 10 to 15 cmbs a culturally sterile compact 10 YR 5/8 yellowish brown sandy clay was present. Cultural materials were recovered from the surface and within the first 10 cmbs. Diagnostic materials recovered include whiteware, wire and machine cut nails, various types of glass, and machine produced brick (Appendix B). These materials date the site from the late 19th century to the mid 20th century. Indeed, a structure is present in the area of Site 1Gr159 on the 1923 Green County Soil Map (USDA Bureau of Soils 1923) and the USGS 1970 (photo revised 1987) 7.5' Boligee, Alabama topographic quadrangle. Some artifacts exhibited signs of burning and it is probable the structure was burned and demolished to make the area usable for agricultural purposes.

Given the high degree of disturbance associated with the agricultural wheat field, the access road, exposed ground surfaces, the lack of intact soil stratigraphy, and the shallowness of deposits, there is a low probability of intact cultural deposits in the area. Therefore, Site 1Gr159 does not meet the criteria for eligibility into the NRHP and further testing is not warranted.

Figure 30. Site 1Gr159 from the site's southeastern boundary. View northwest.

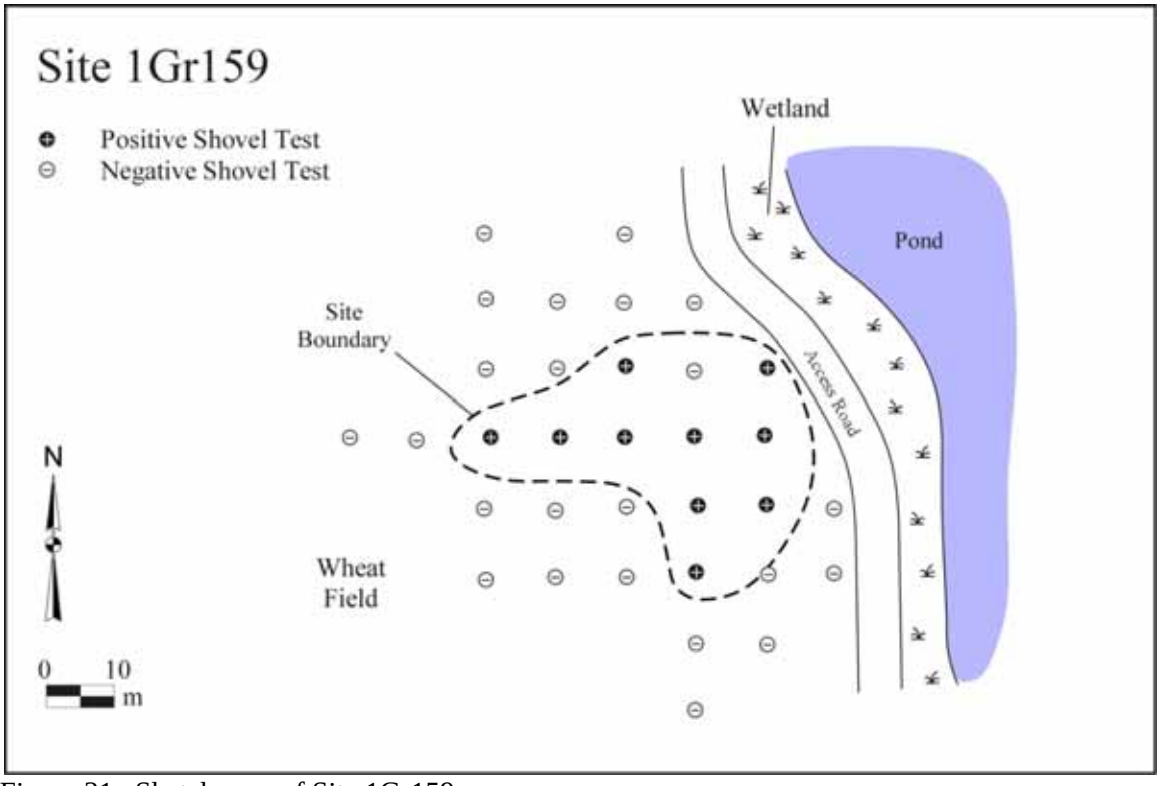
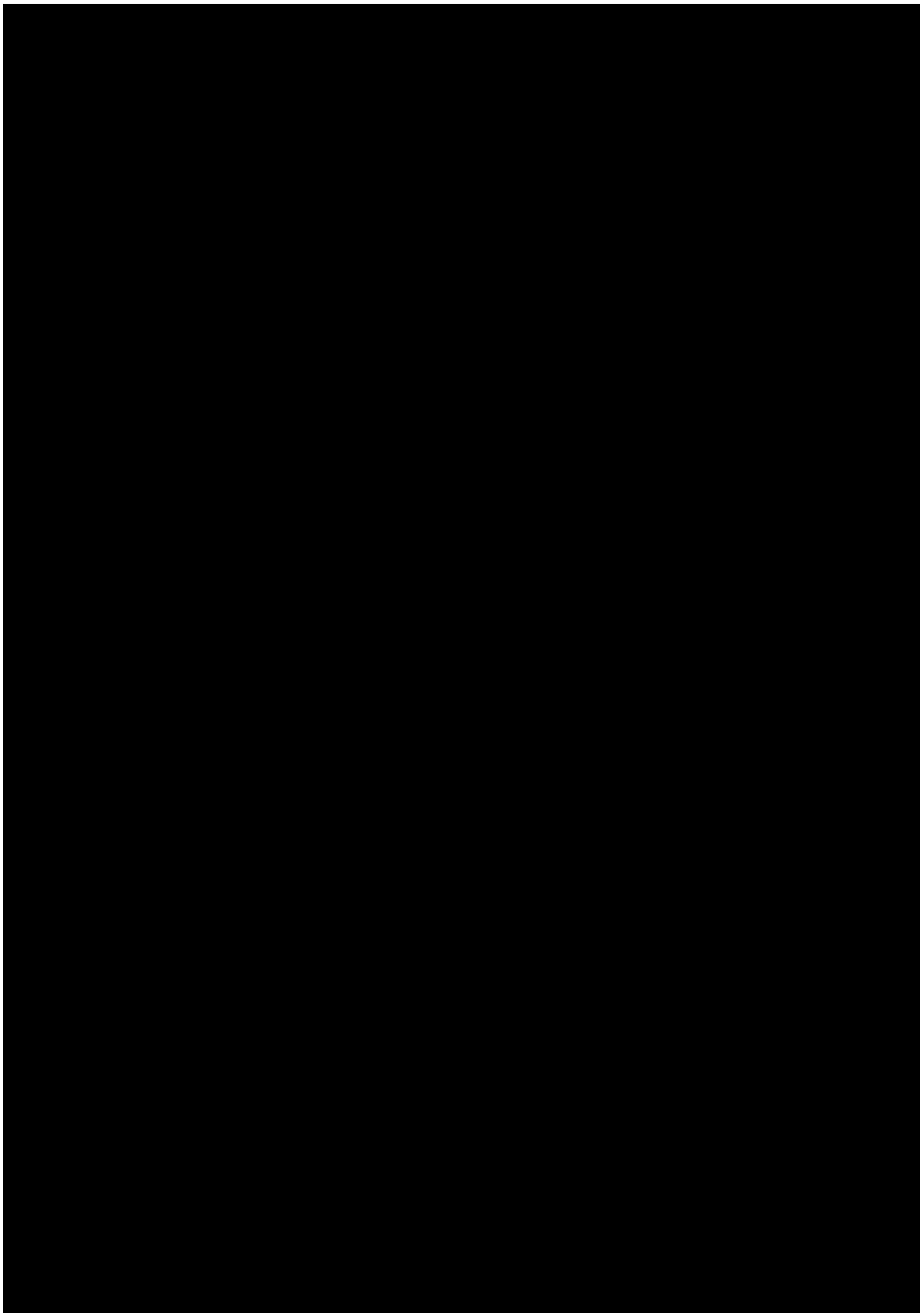


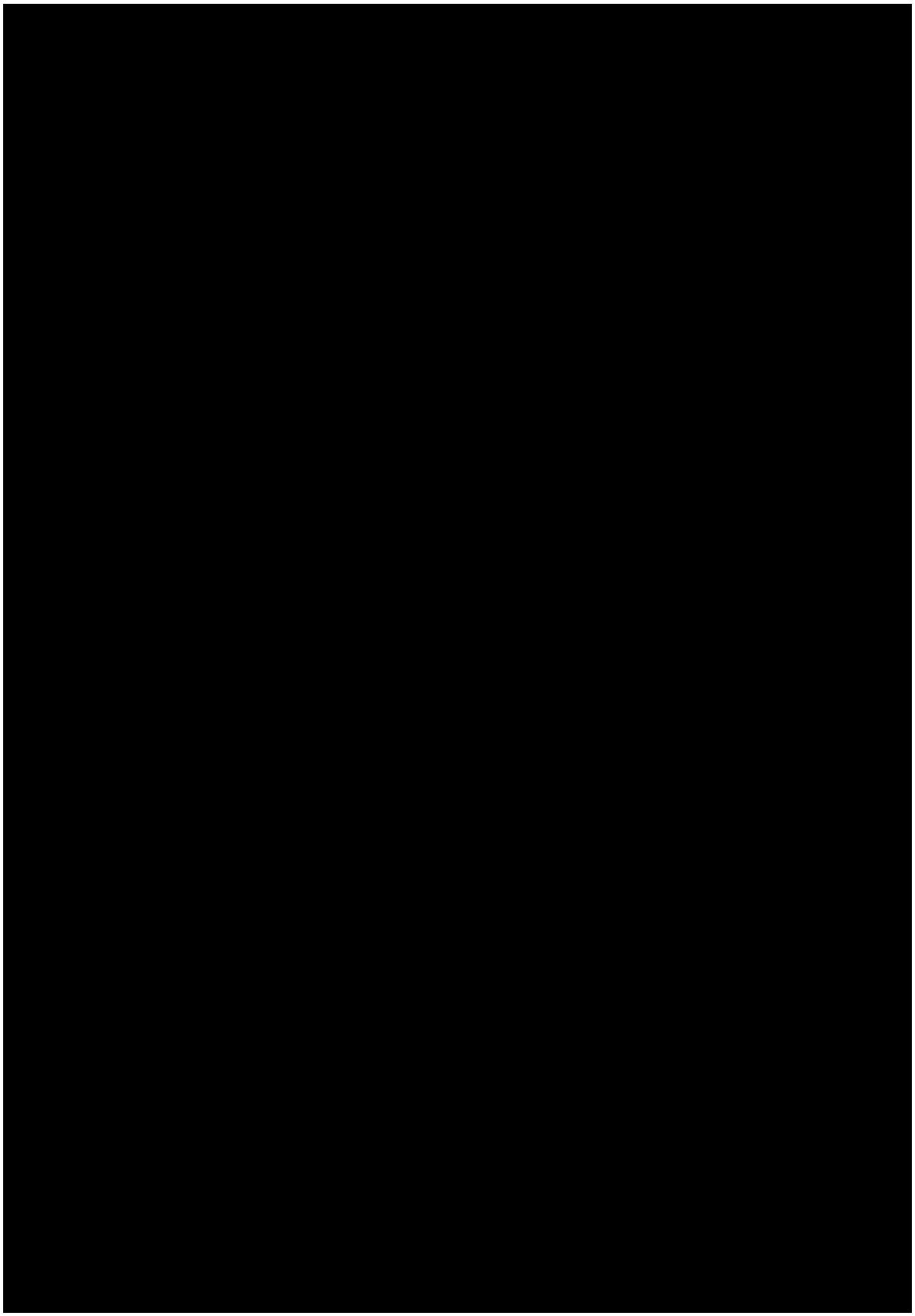
Figure 31. Sketch map of Site 1Gr159.

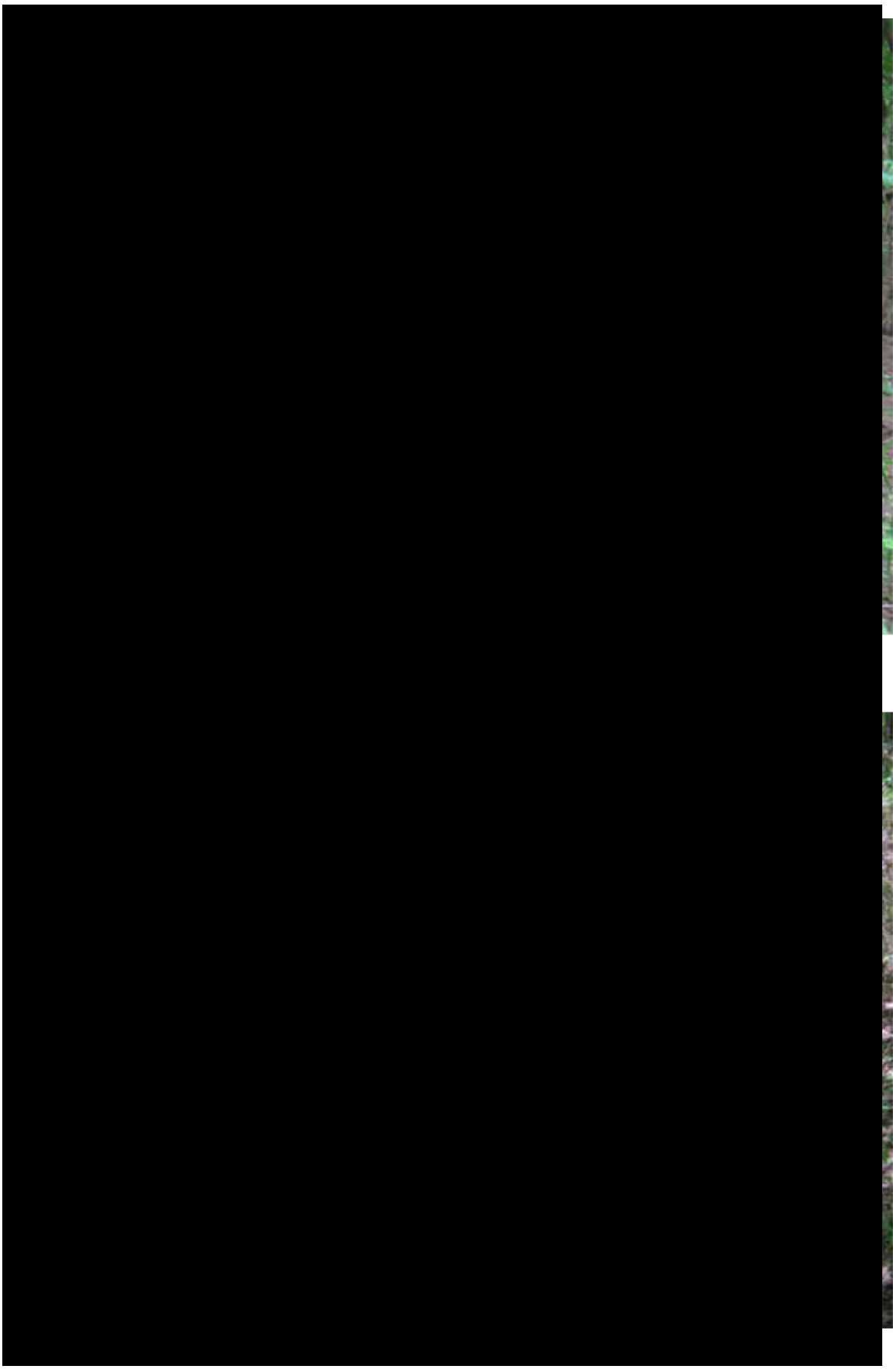
Figure 32. Access road, wetlands, and pond to the east of Site 1Gr159 taken from the site's northeast boundary. View southeast.

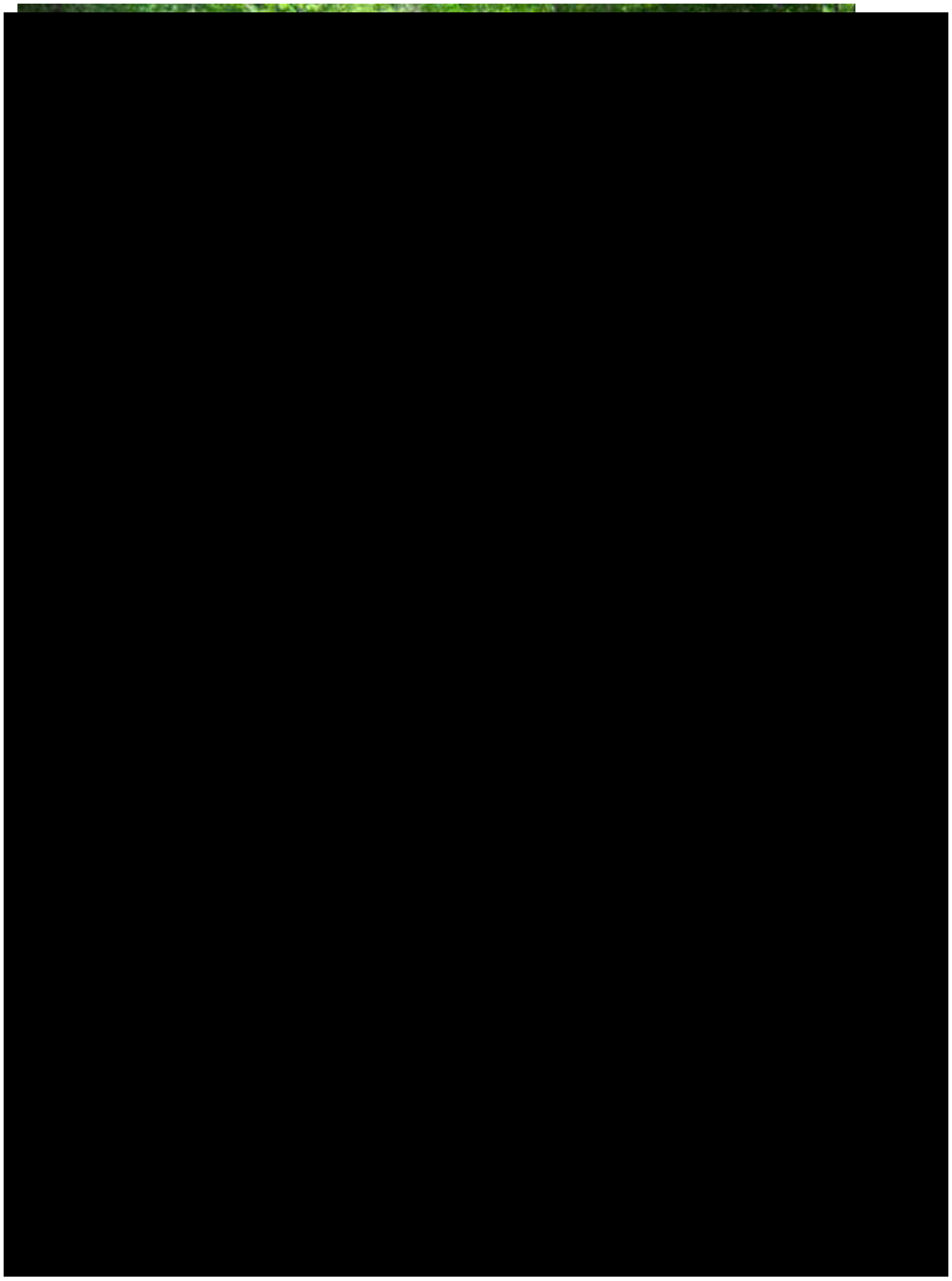
Figure 33. View of Site 1Gr159 from the site's northern boundary. View south.

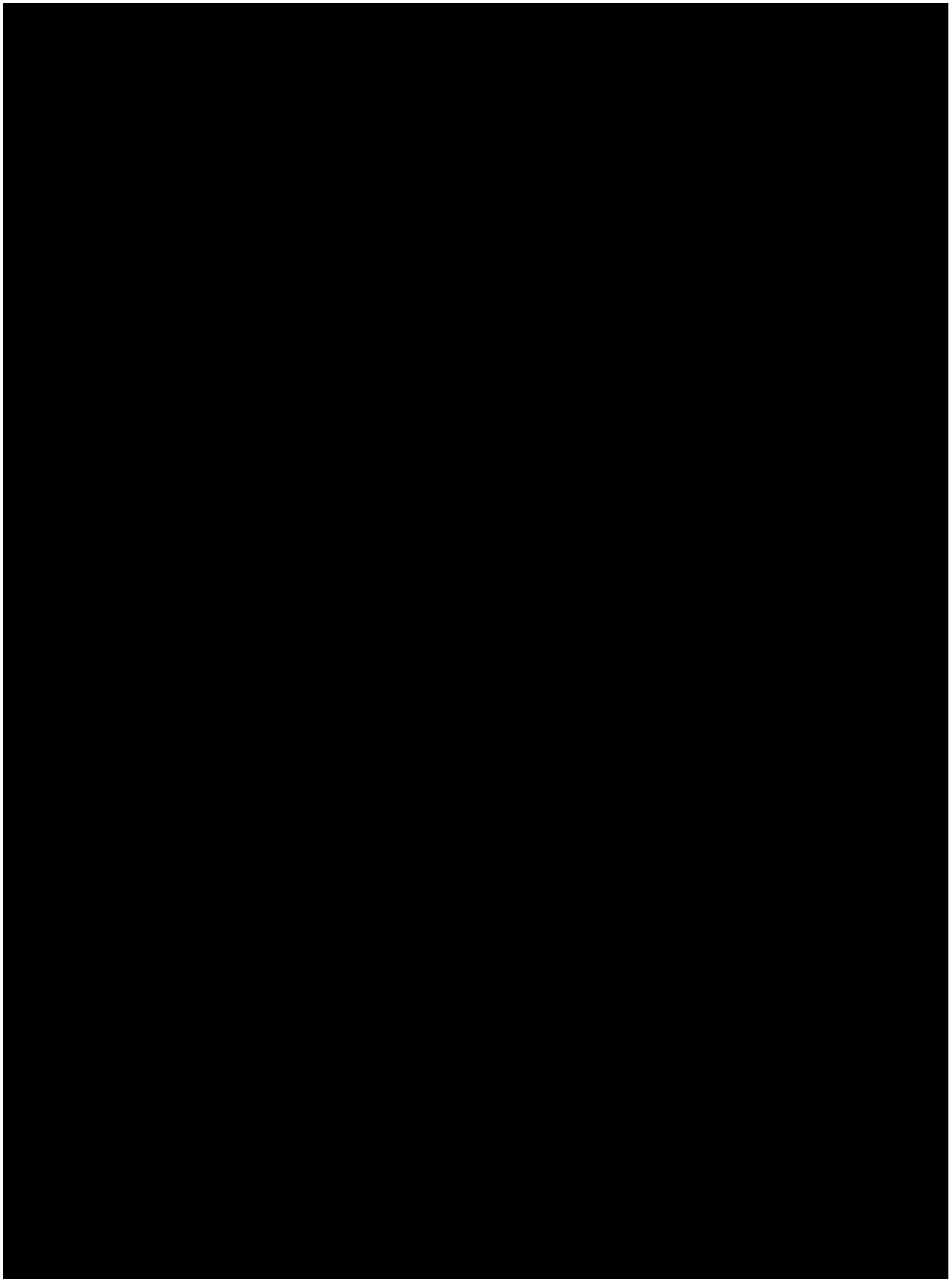
Figure 34. Shovel Test 49 from Site 1Gr159.

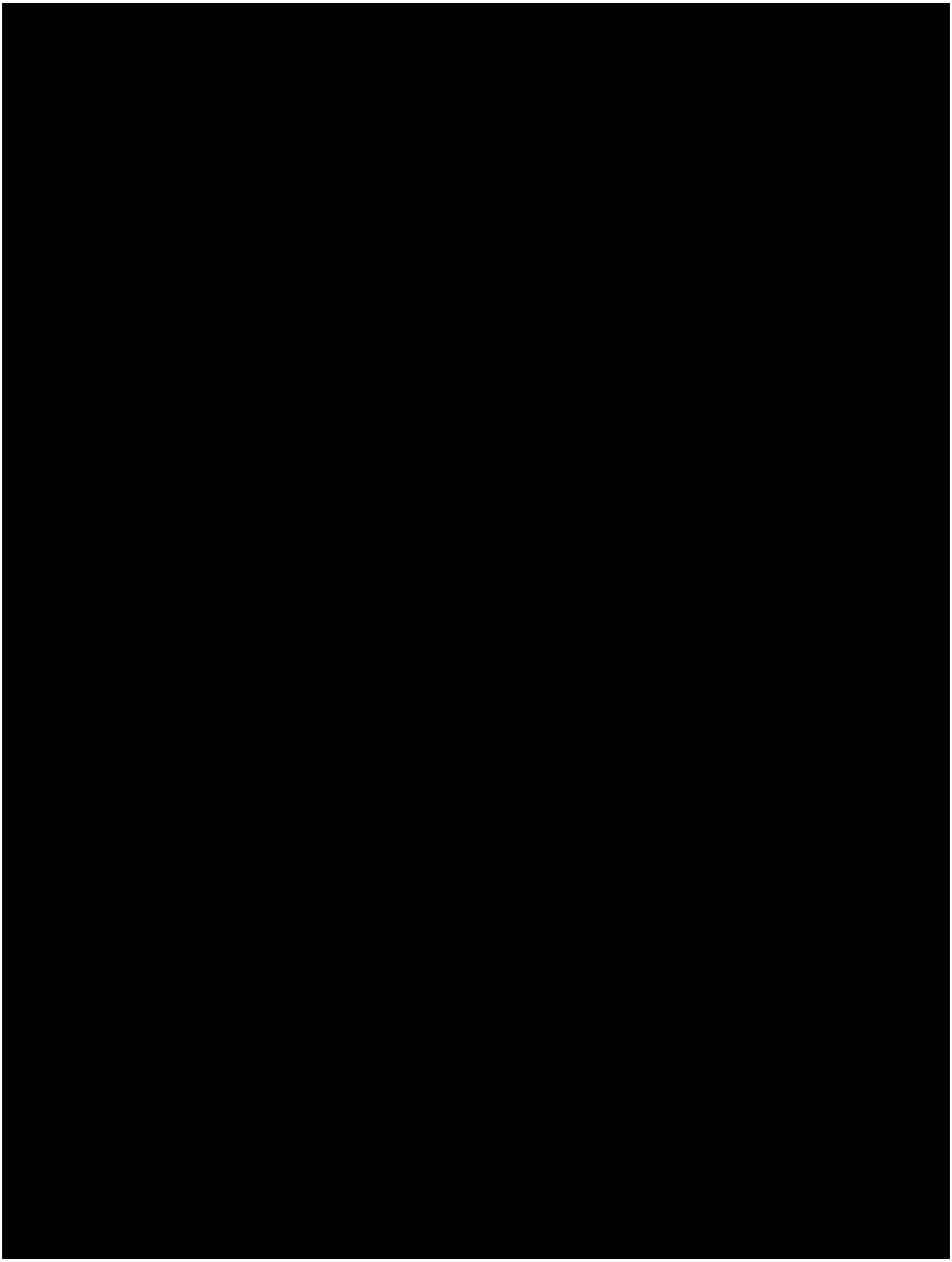


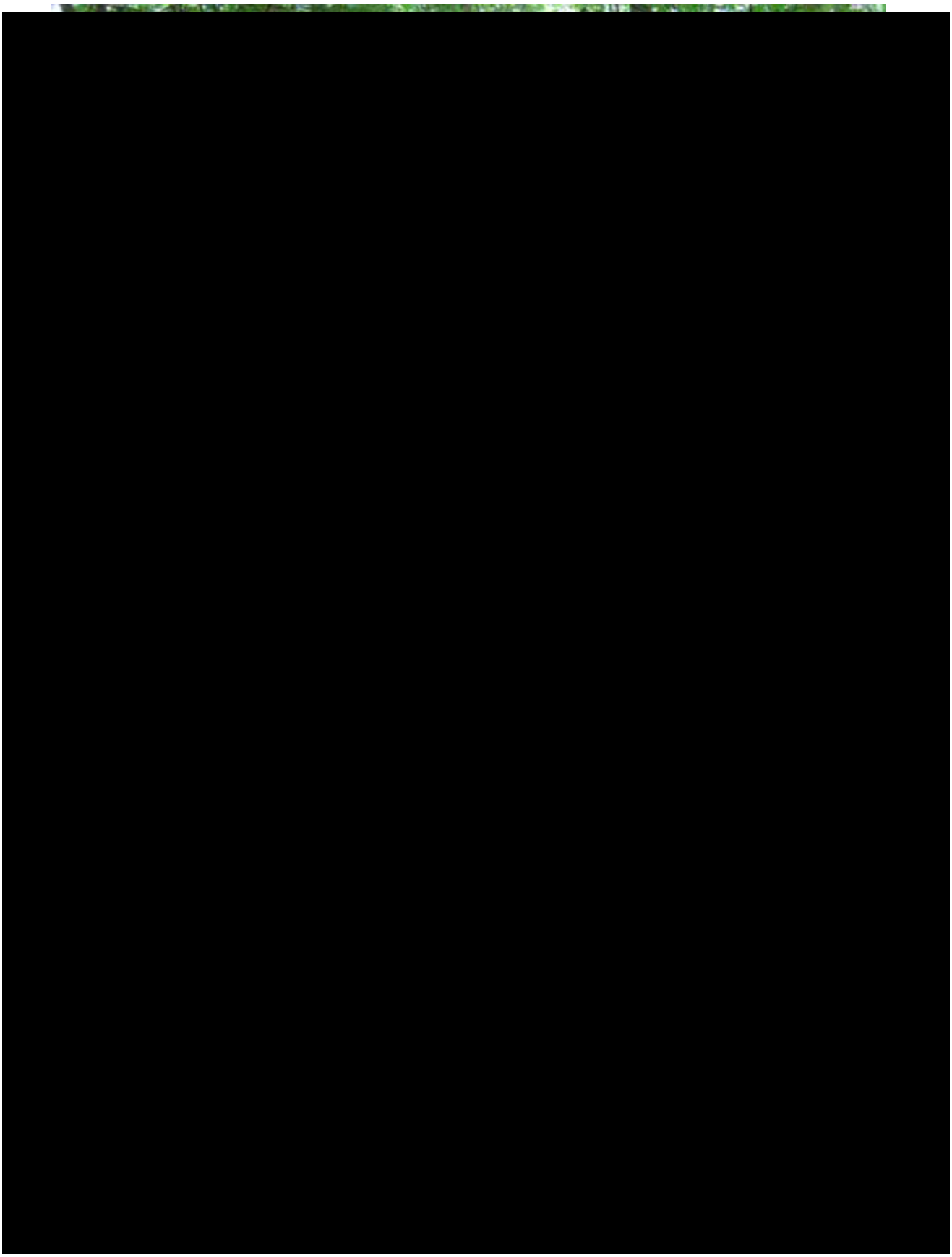


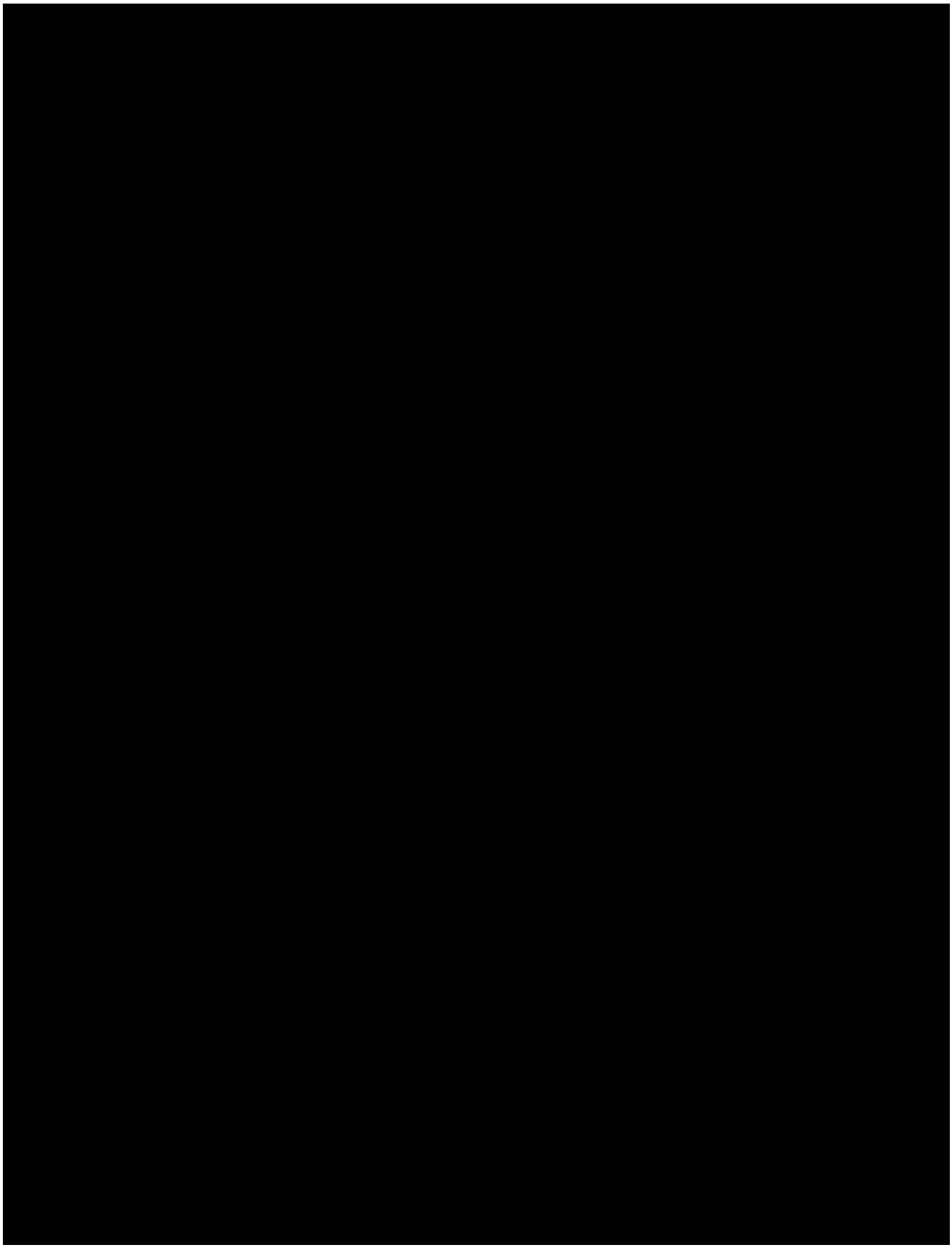


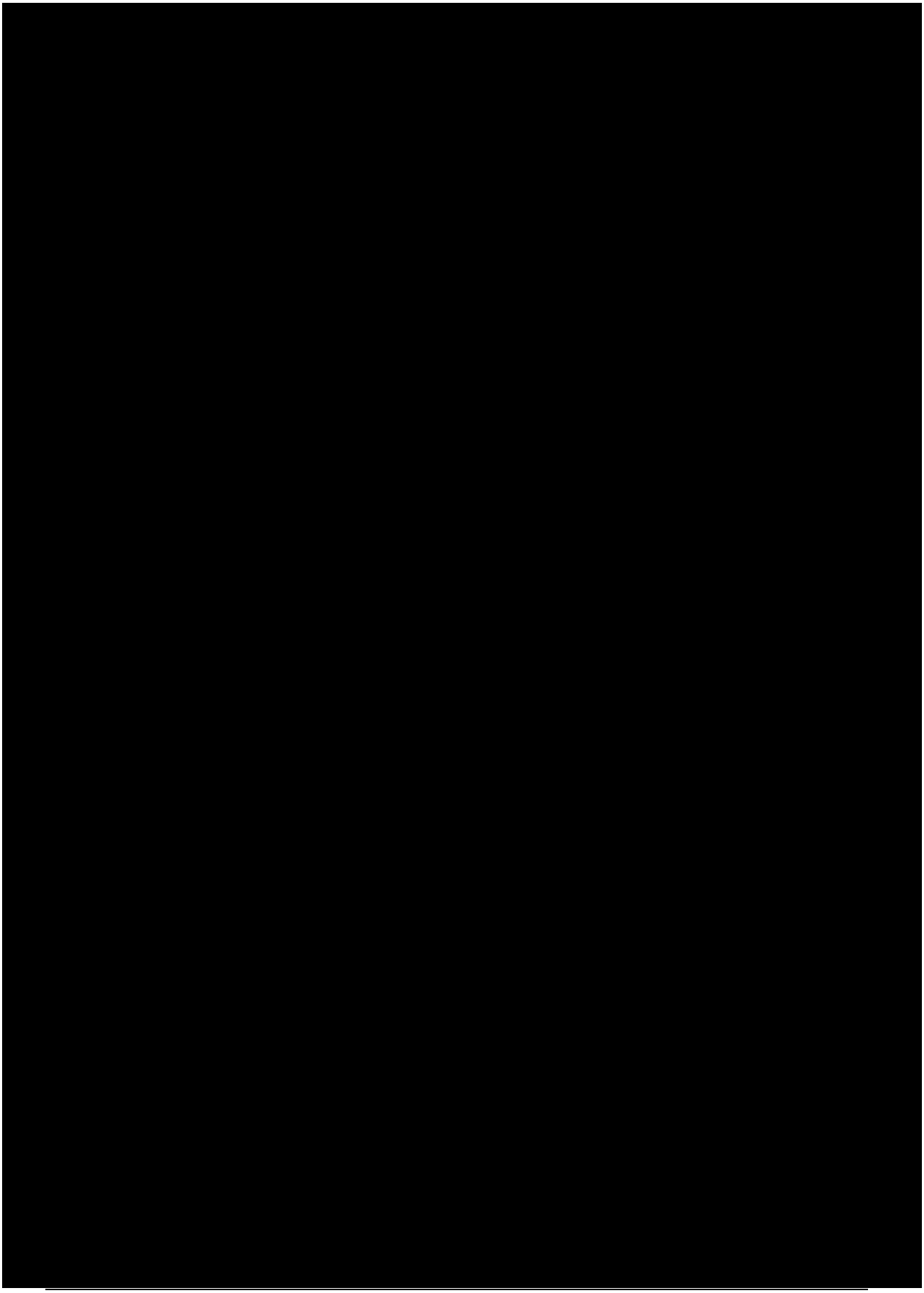












Site 1Gr162

Topographic Map: Boligee
Township: 21N Range: 1W
Elevation: 125 ft
Maximum Depth: 10 cm
Percentage Disturbed: 95 %
Topographic Association: Terrace
Direction to Water: N
Ground Cover: Cultivation
Soil Texture: Fine sandy loam

Easting: 401713 *Northing*: 3629080
Section: SW¼, NW¼, SE¼ of Section 13
Site Size: 40 m by 10 m
Preservation State: Cultivation
NRHP Status: Ineligible
Nearest Water Source: First order stream
Distance to Water: 60 m
Soil Types: Ruston
Components: Early to Mid 20th Century Nonaboriginal

Comments: Site 1Gr162 is located on the second terrace south of a first order stream in the center of the survey area and is identified as an early to mid 20th century nonaboriginal historic refuse scatter (Figure 50). A total of 16 shovel tests, 4 positive for cultural materials, was excavated to determine the extent of cultural deposits (Figure 51). The site currently lies within a periodically plowed wheat field with an access road to the south, an intermitted drainage to the south and west, and a railroad to the north (Figures 52-53). Due to the access road, wetlands, and pond to the east, additional shovel tests in this direction were not attempted.

Shovel Test 574 can be seen in Figure 54 and is an example of a typical shovel test from Site 1Gr159. It was excavated to a depth of 15 cmbs and no O horizon was present. From 0 to 10 cmbs a 7.5 YR 4/4 brown fine sandy loam was present. From 10 to 15 cmbs a culturally sterile 2.5 YR 4/6 compact red sandy clay was present. Cultural materials were recovered from the surface and within the first 10 cmbs. Diagnostic materials recovered include whiteware, stoneware, various types of glass, and machine produced brick (Appendix B). These materials date the site from the late early to the mid 20th century. Indeed, a structure is present in the area of Site 1Gr162 on the 1923 Green County Soil Map (USDA Bureau of Soils 1923) and the USGS 1970 (photo revised 1987) 7.5' Boligee, Alabama topographic quadrangle. Some artifacts exhibited signs of burning and it is probable the structure was burned and demolished to make the area usable for agricultural purposes.

Given the high degree of disturbance associated with the agricultural wheat field, exposed ground surfaces, the lack of intact soil stratigraphy, and the shallowness of deposits, there is a low probability of intact cultural deposits in the area. Therefore, Site 1Gr162 does not meet the criteria for eligibility into the NRHP and further testing is not warranted.

Figure 50. Site 1Gr162 from the site's eastern boundary. View west.

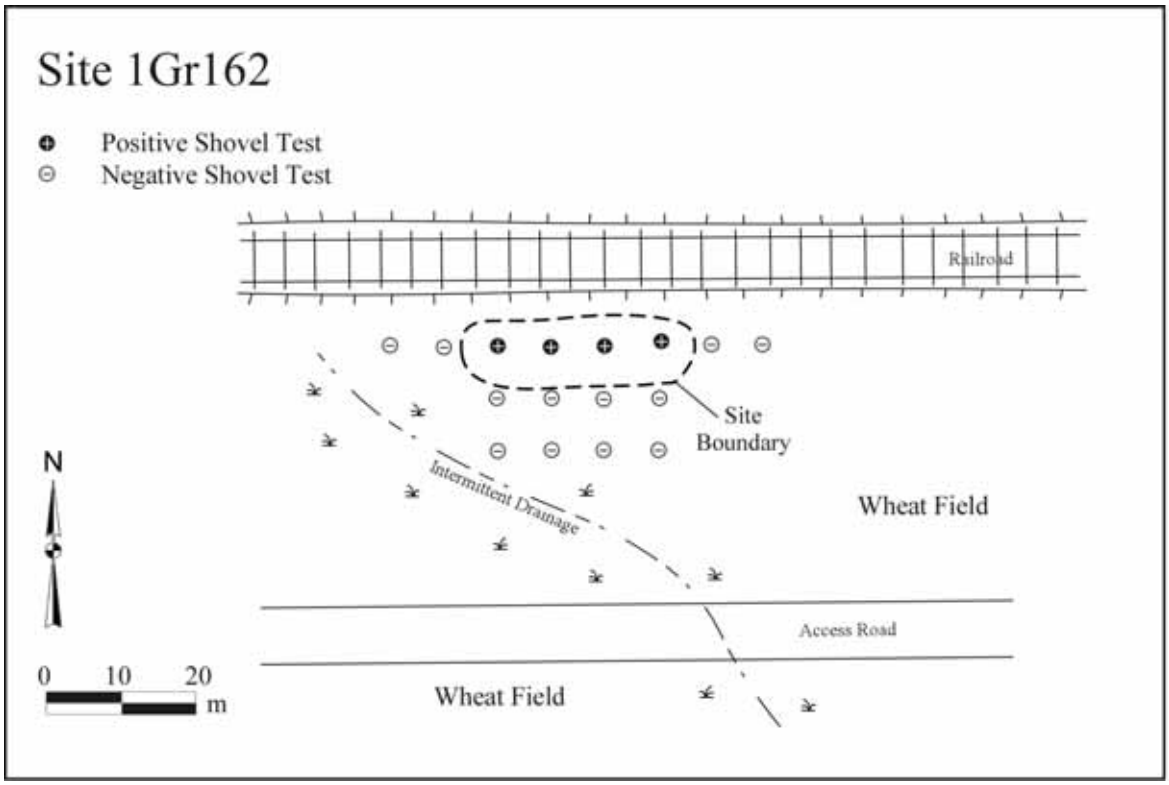
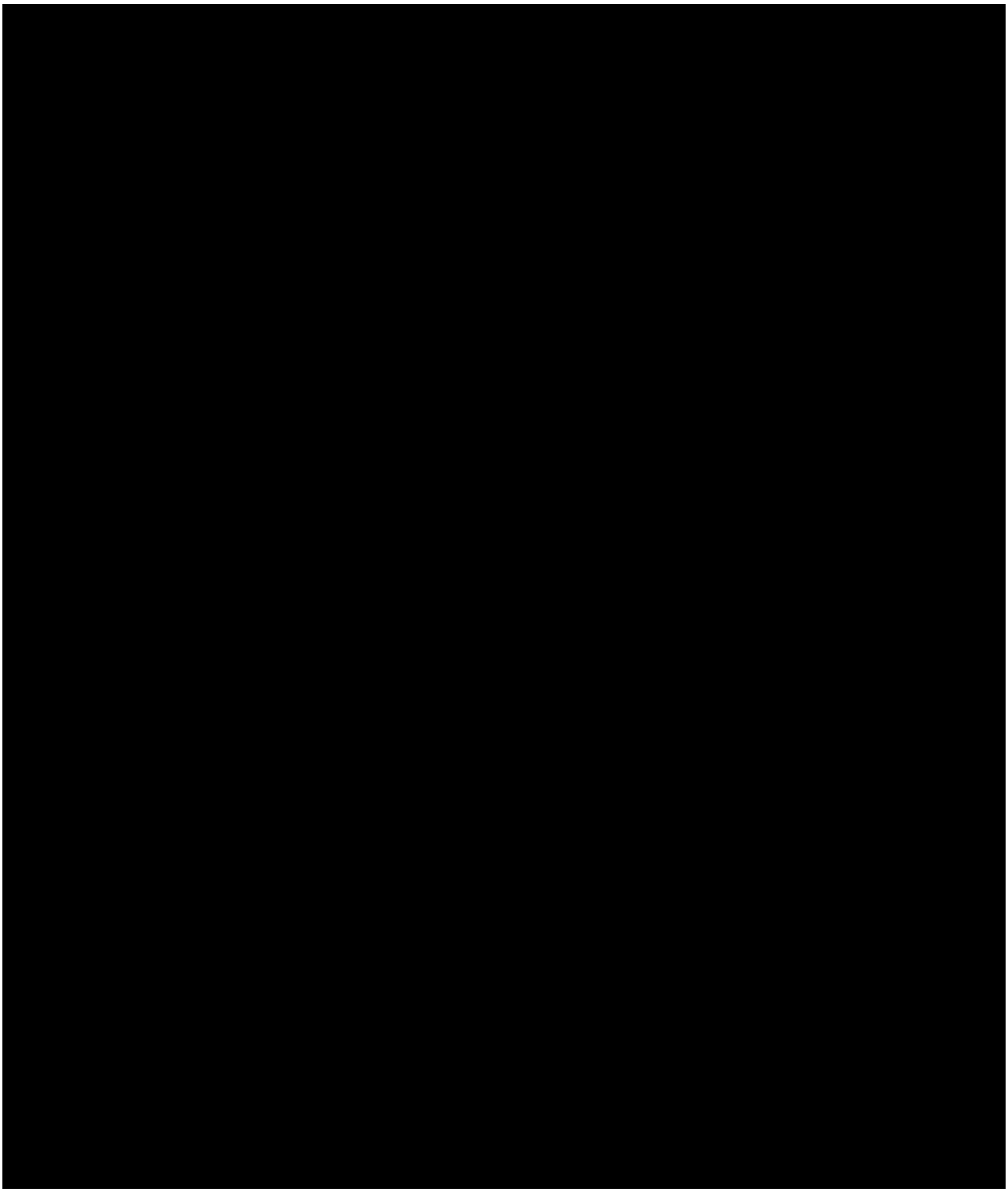


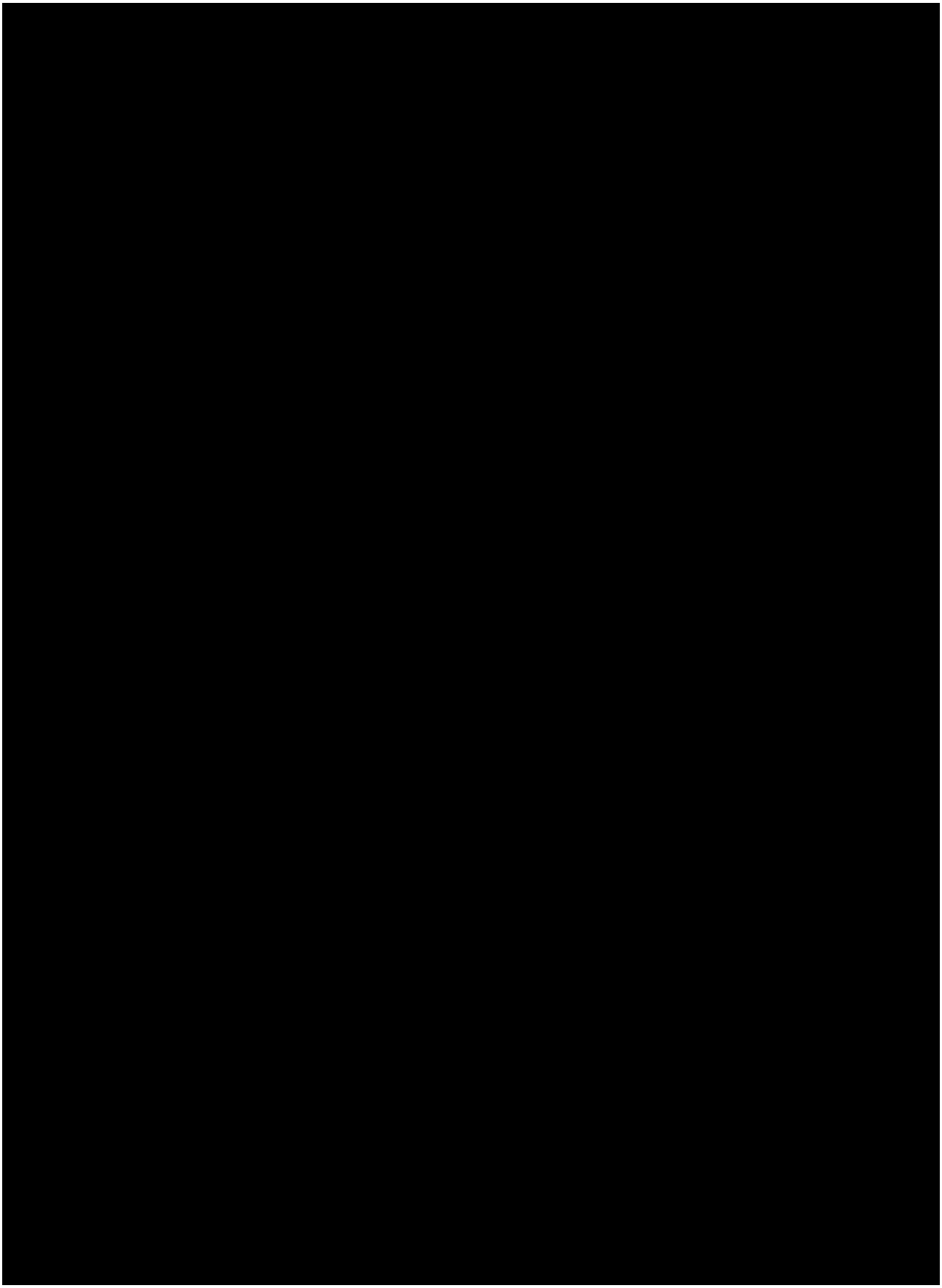
Figure 51. Sketch map of Site 1Gr162.

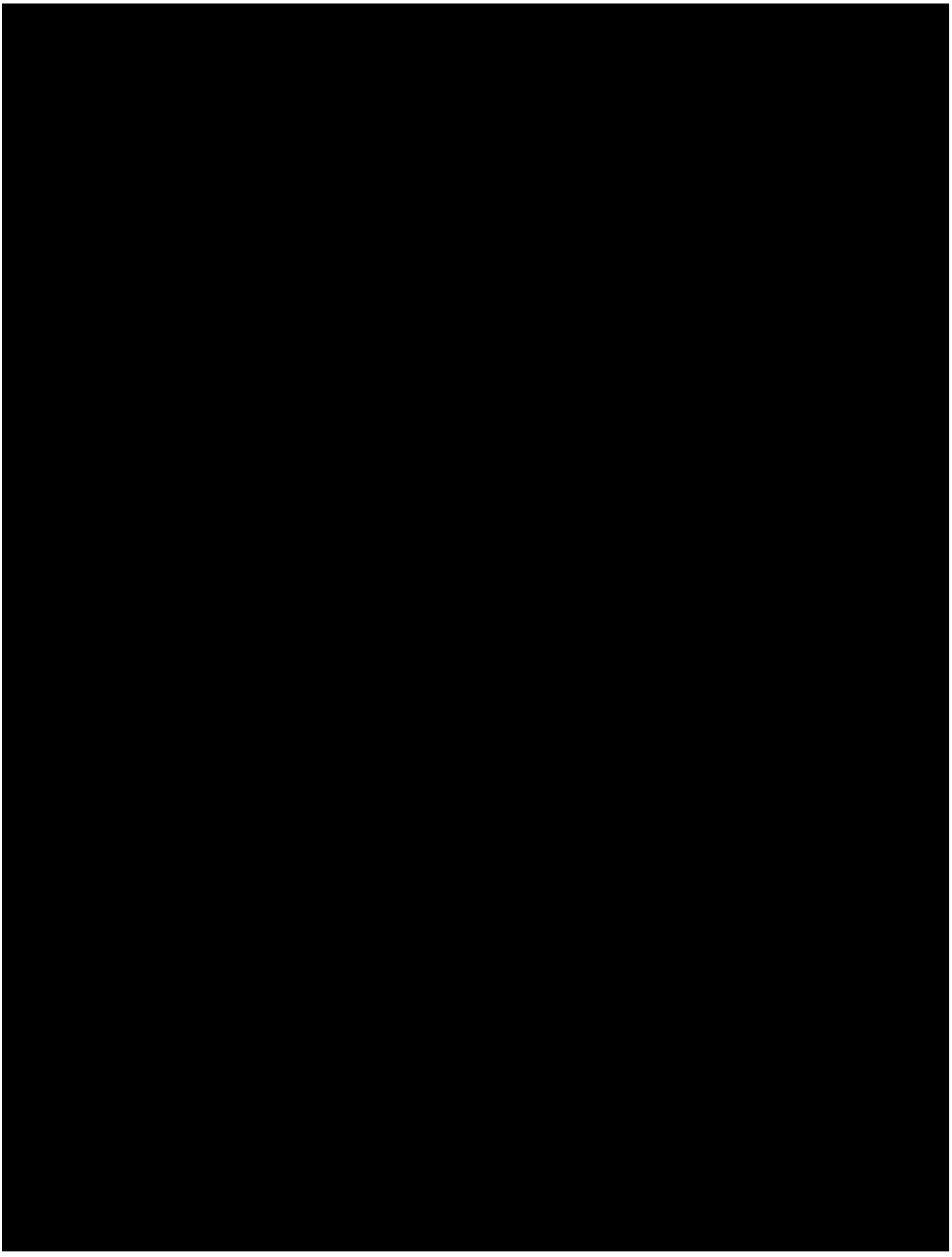
Figure 52. Access road and intermittent drainage to the south of Site 1Gr162. View south.

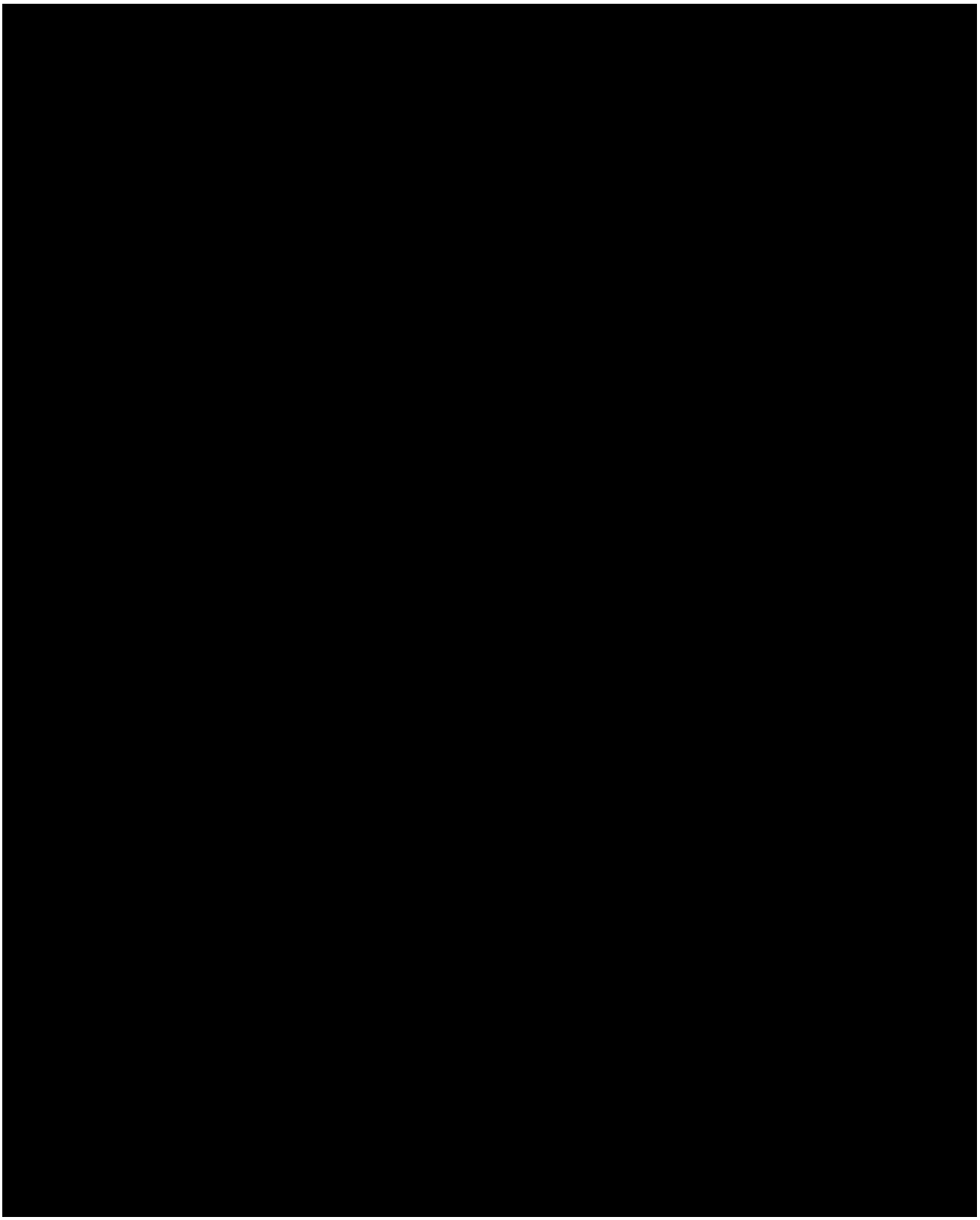
Figure 53. Railroad to the north of Site 1Gr162. View north.

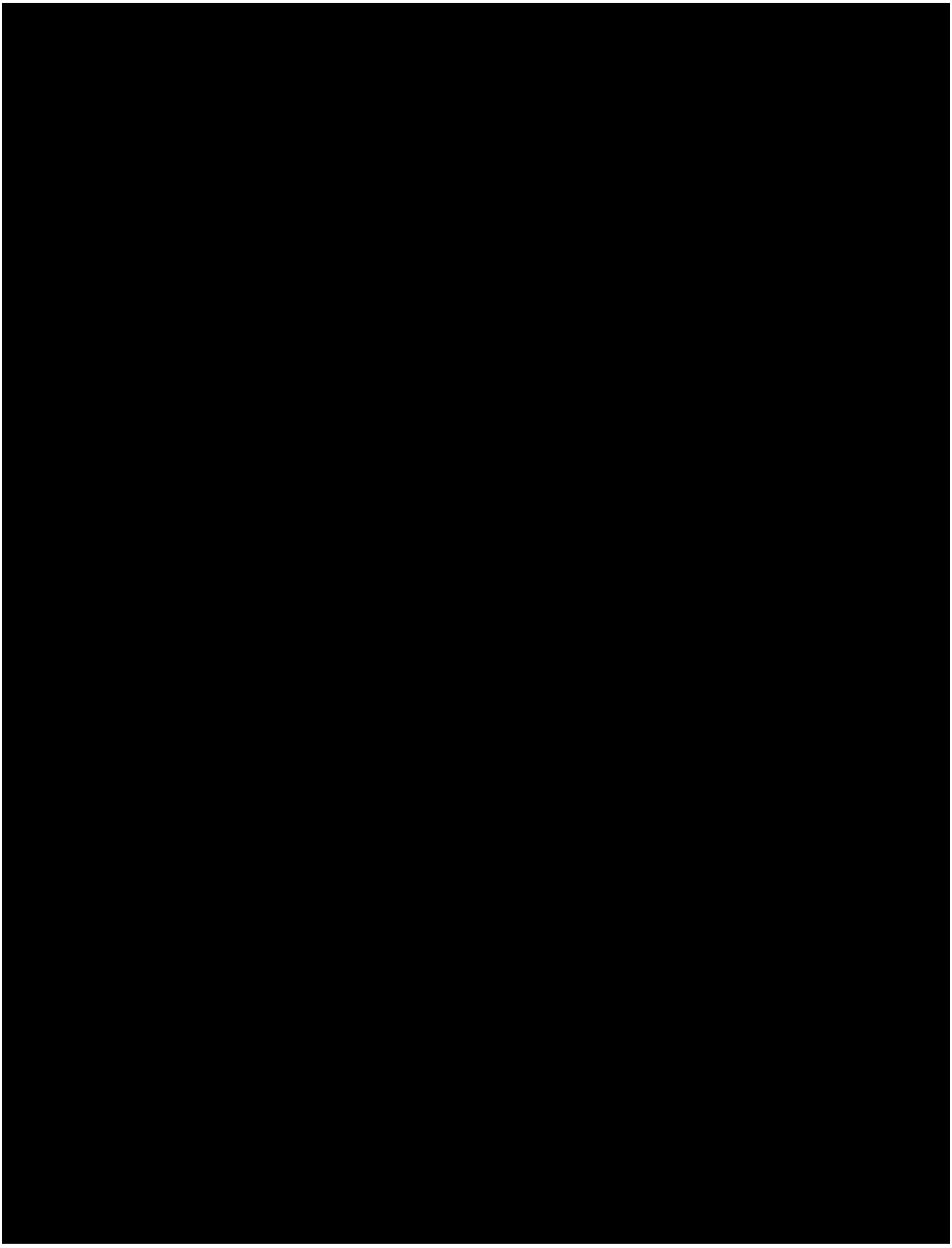
Figure 54. Shovel Test 547 from Site 1Gr162.

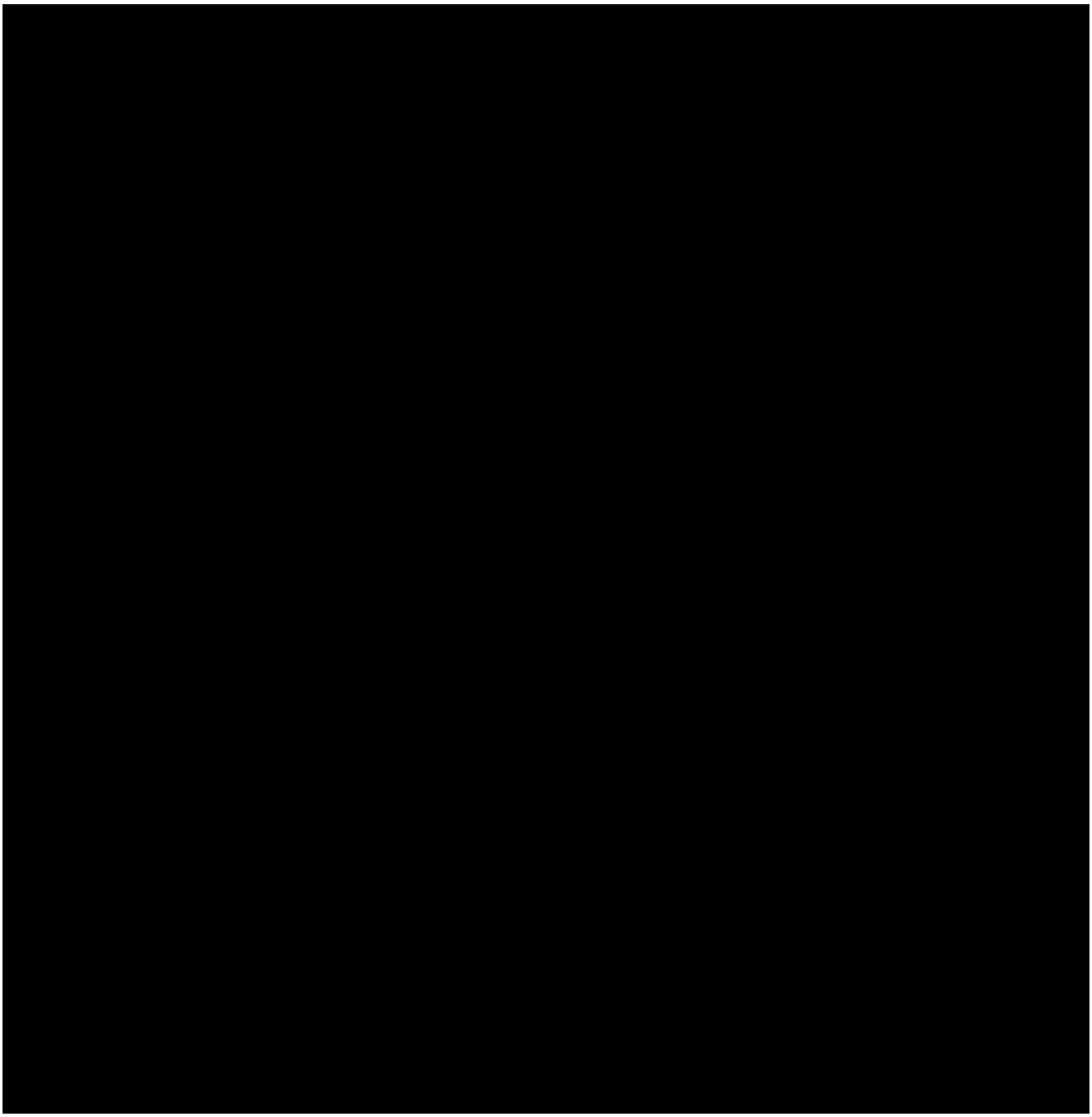


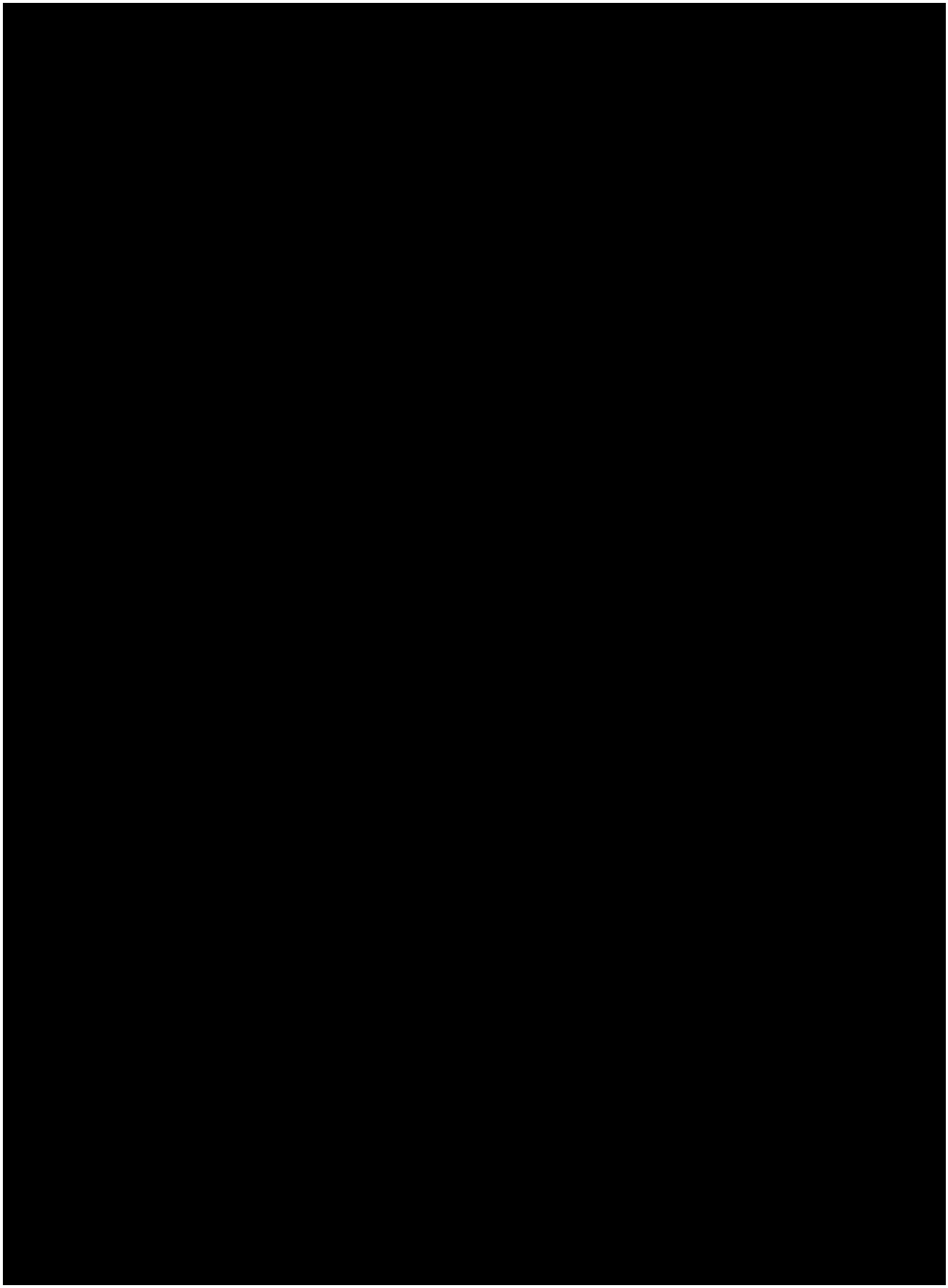


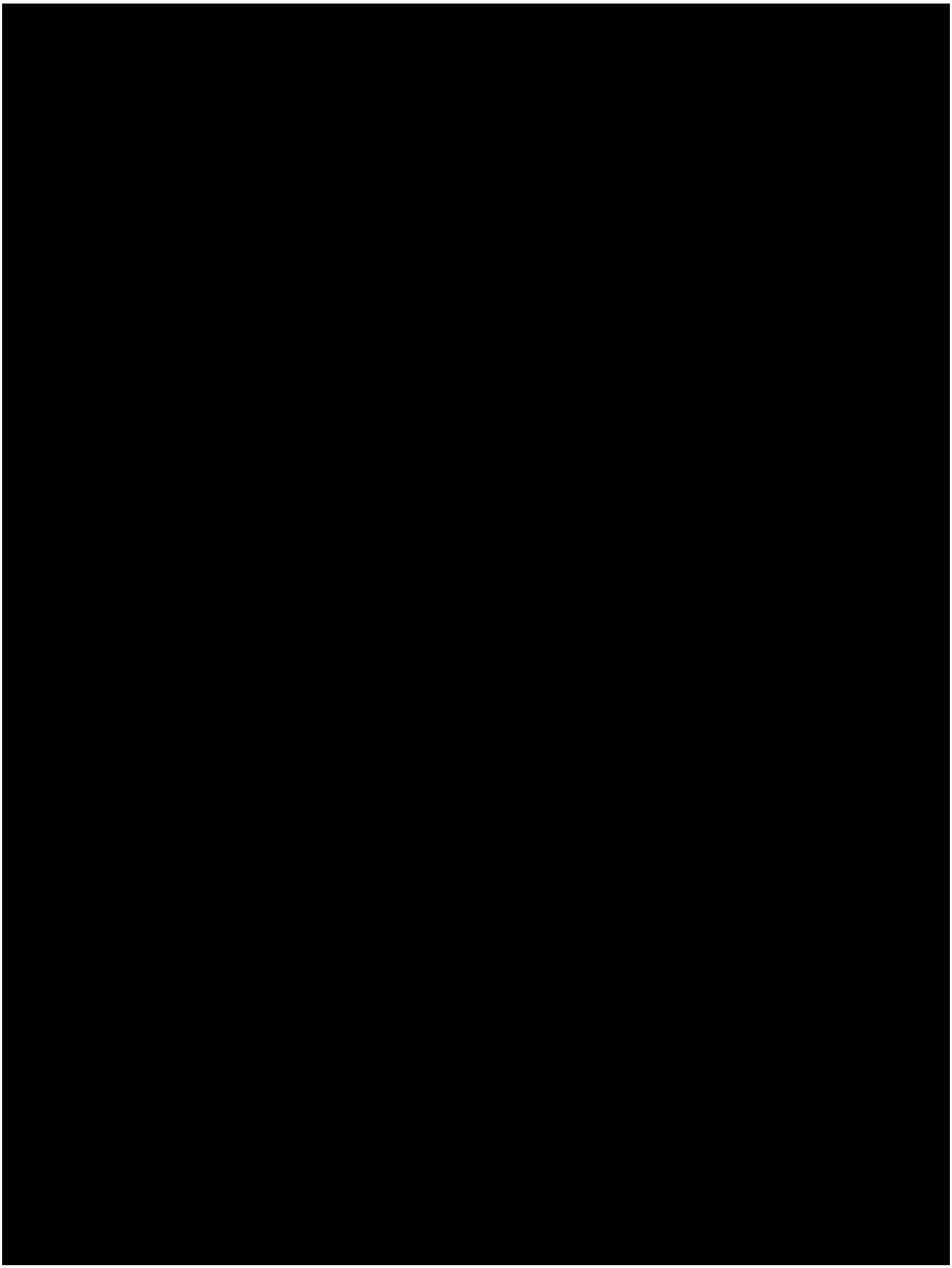


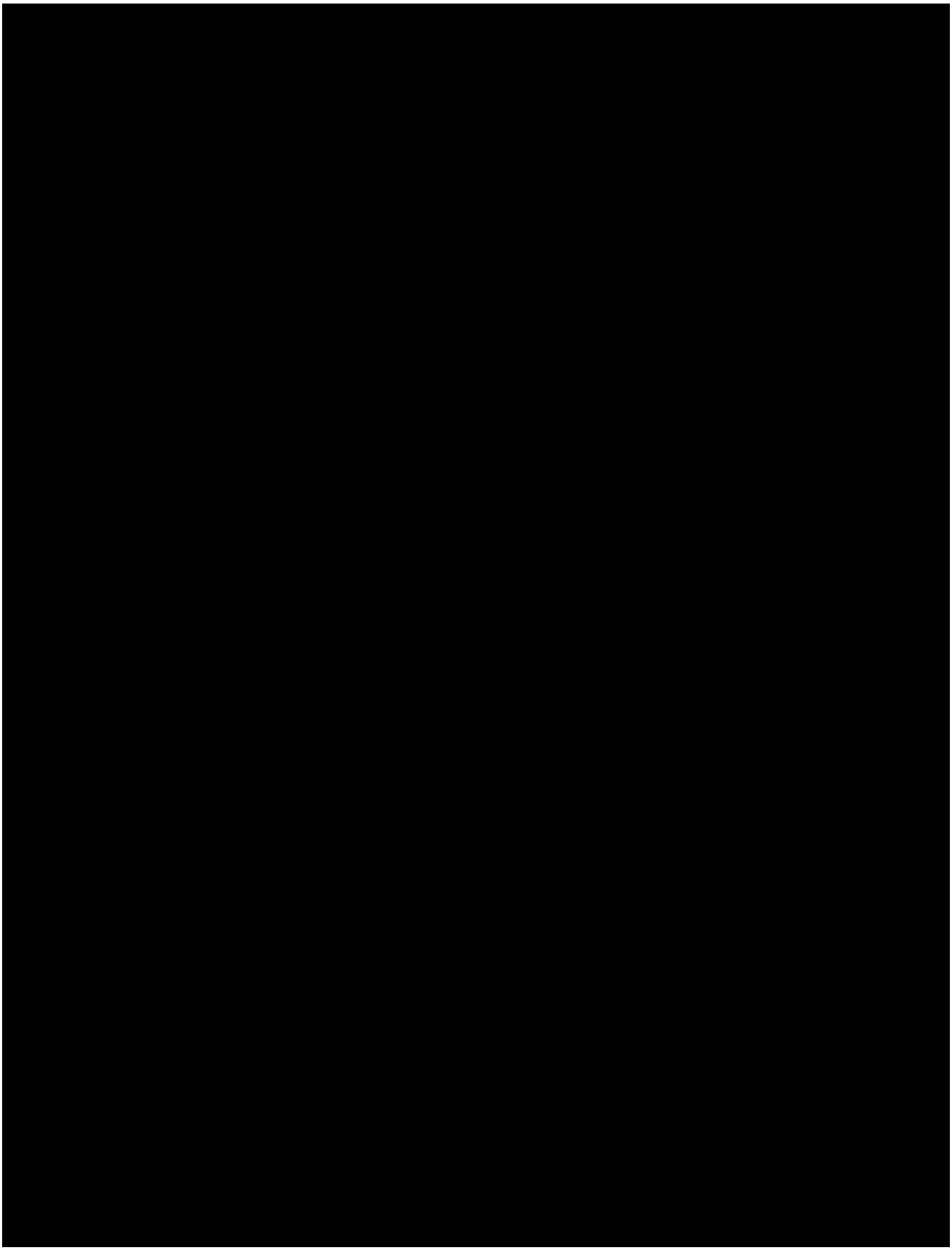


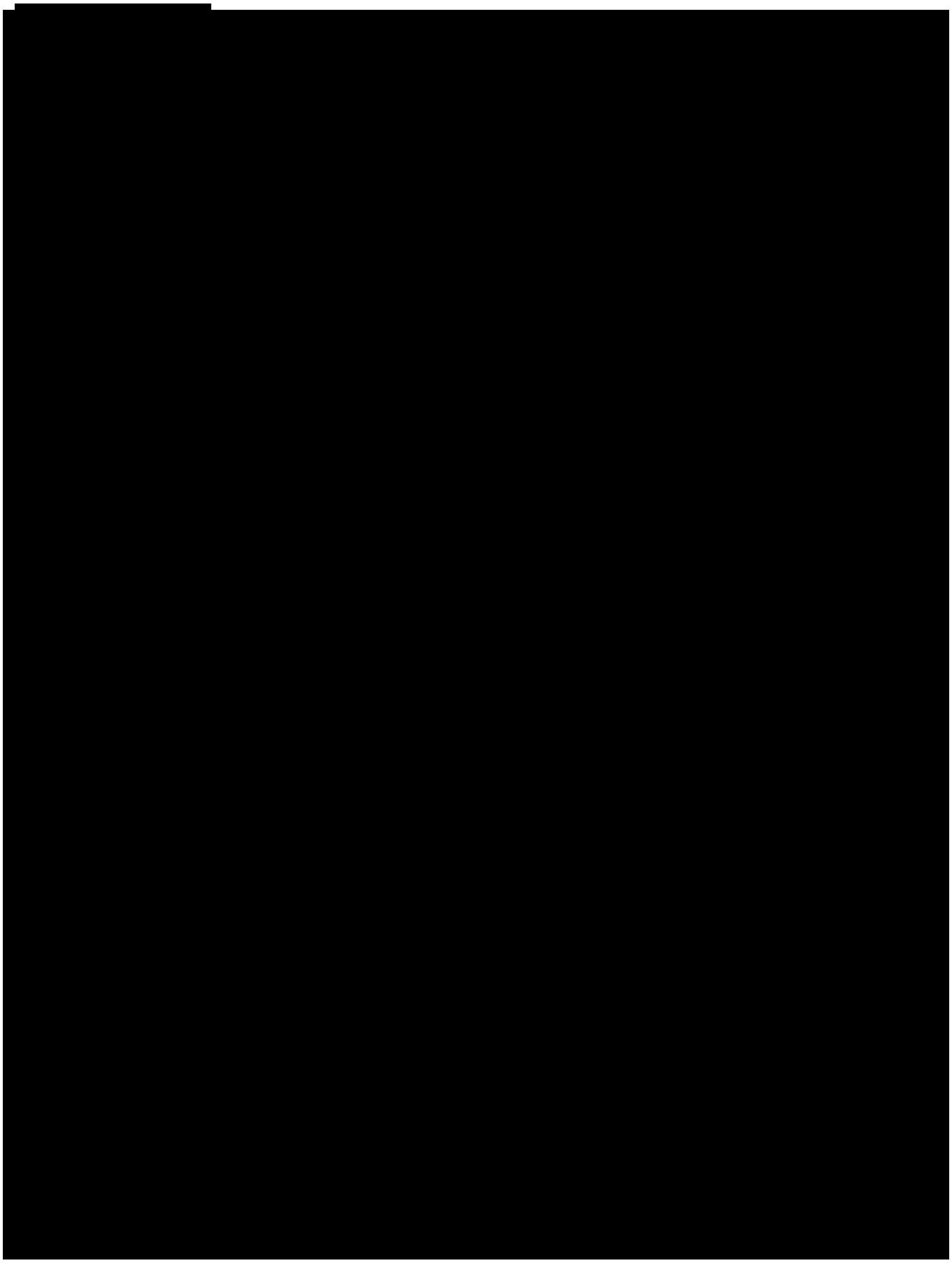


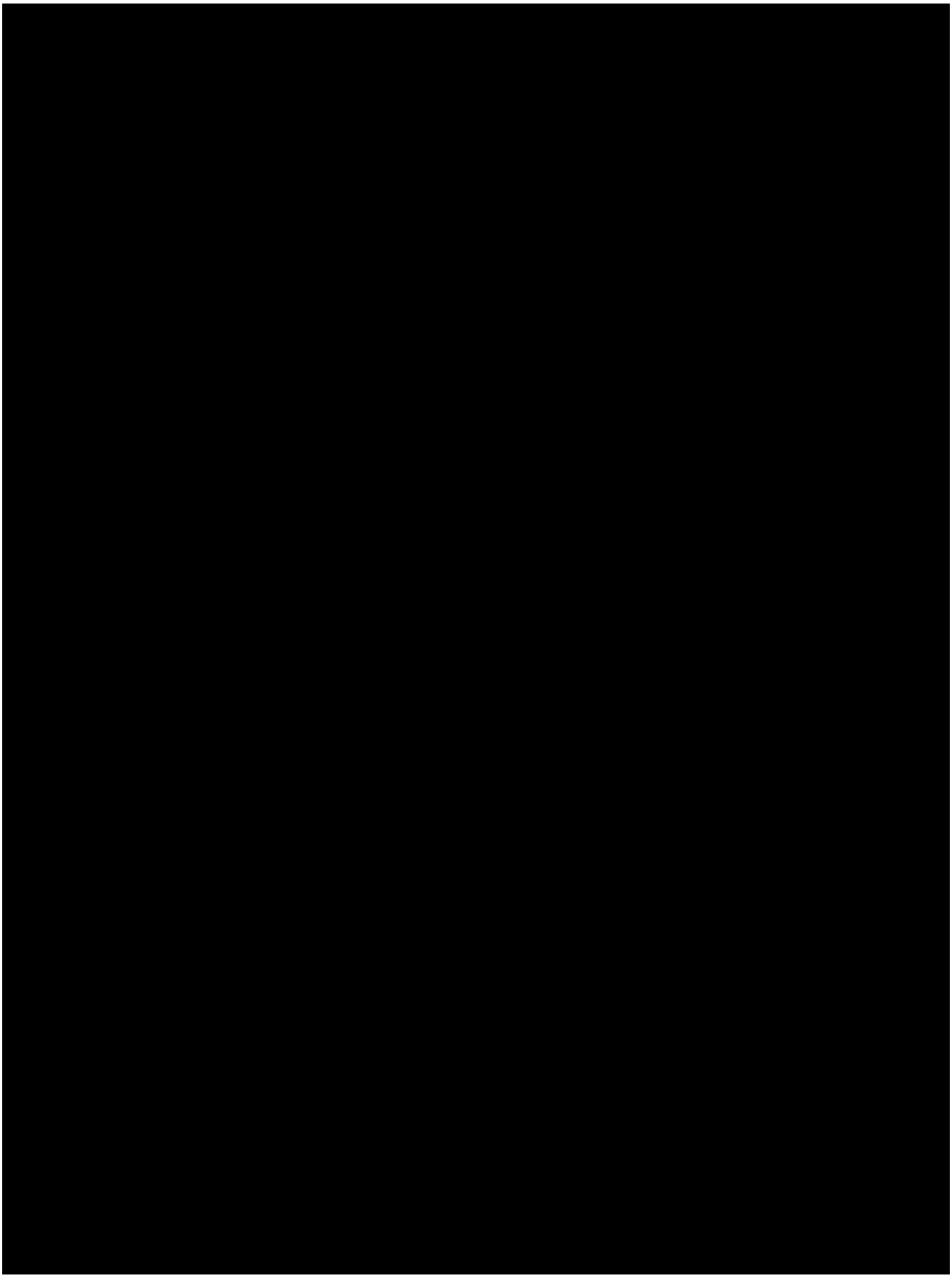


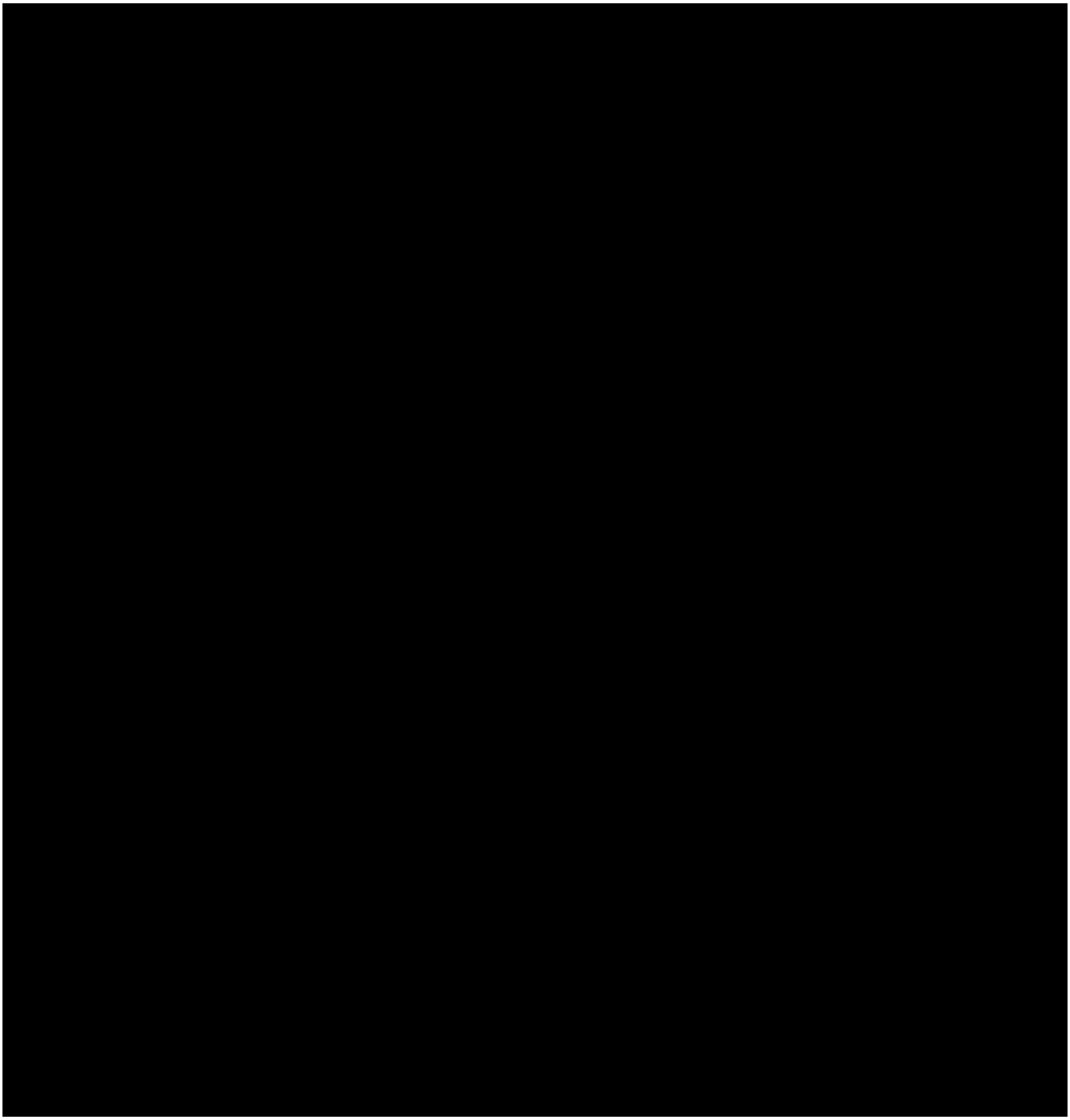


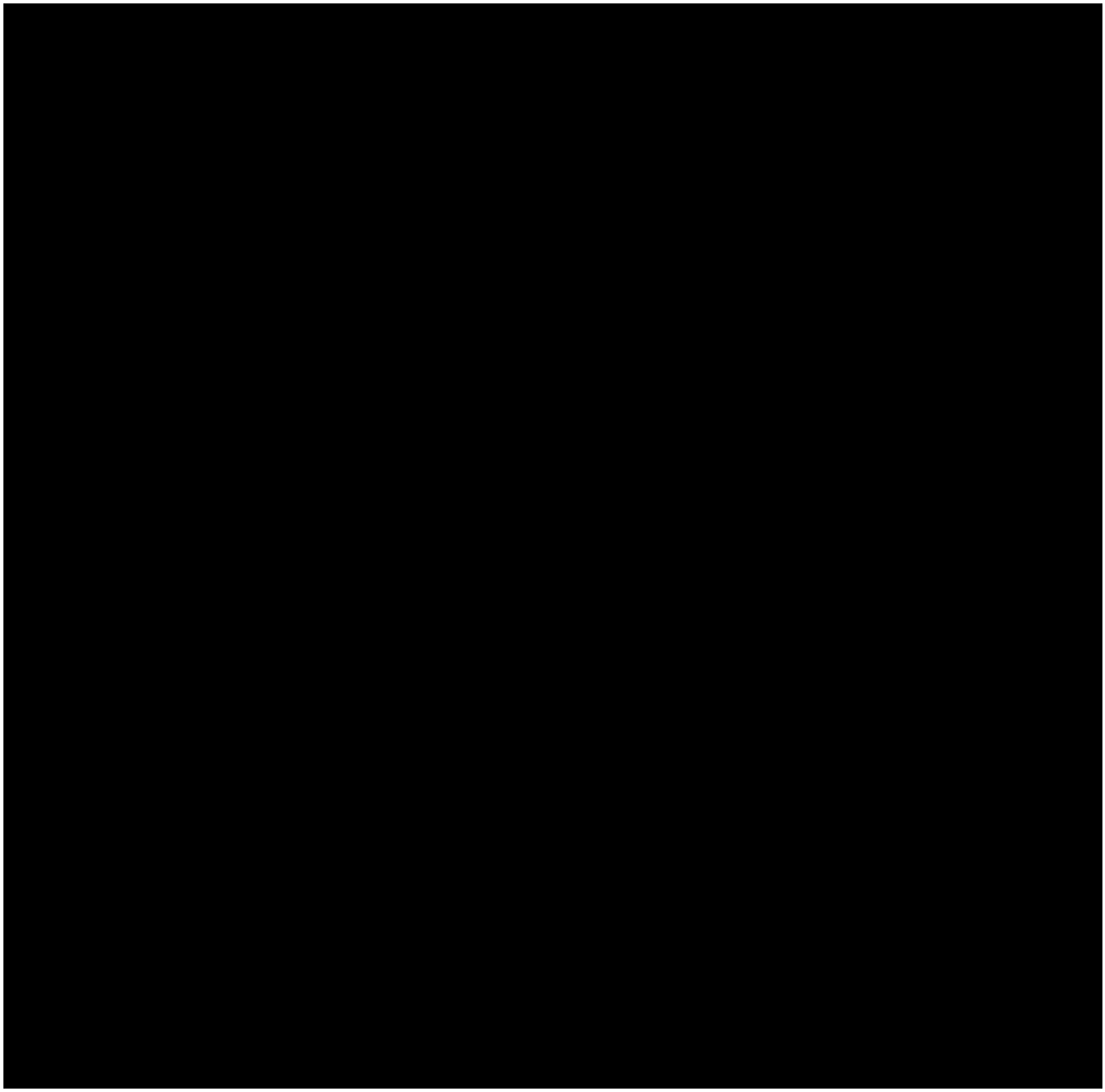


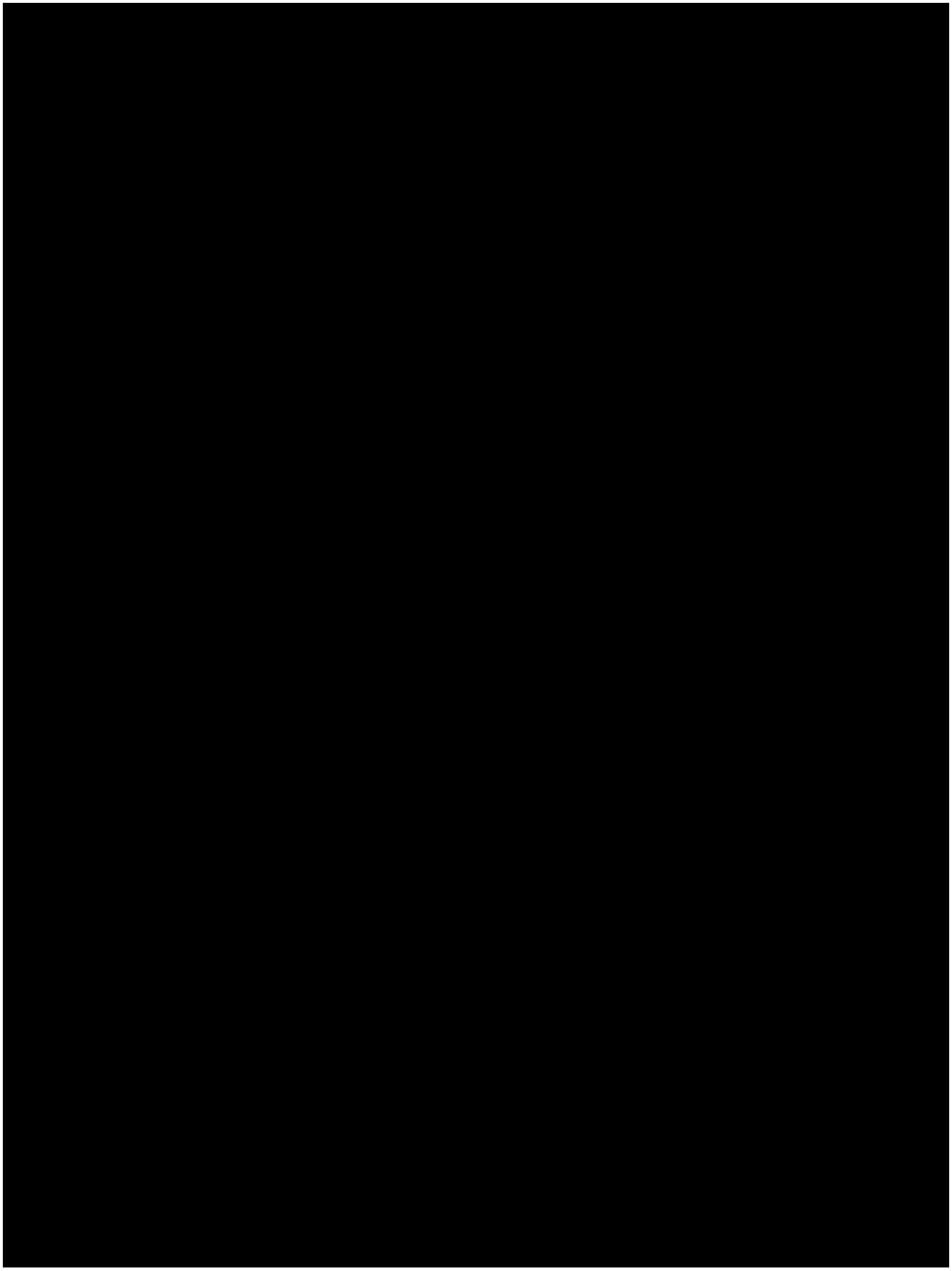


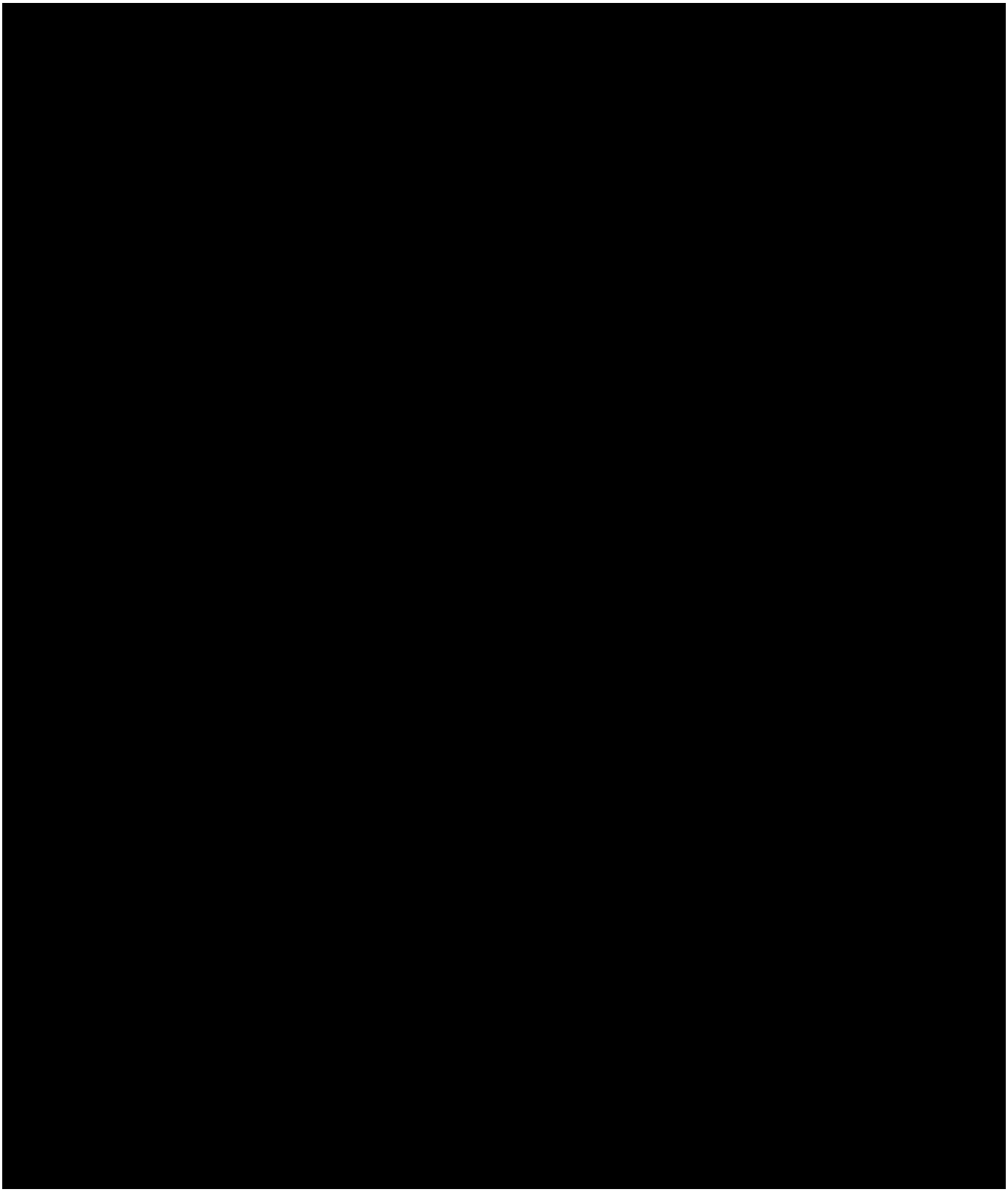


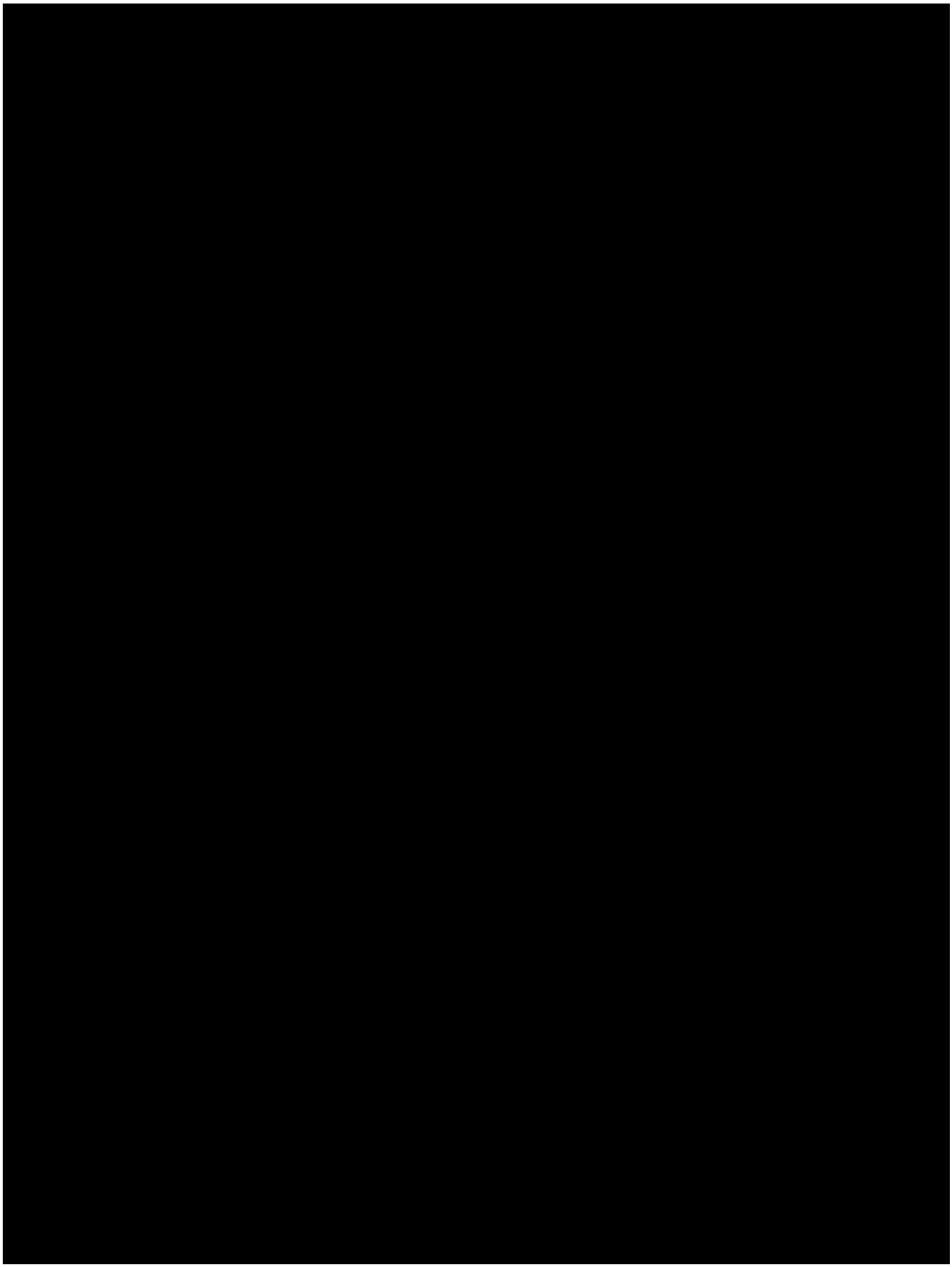


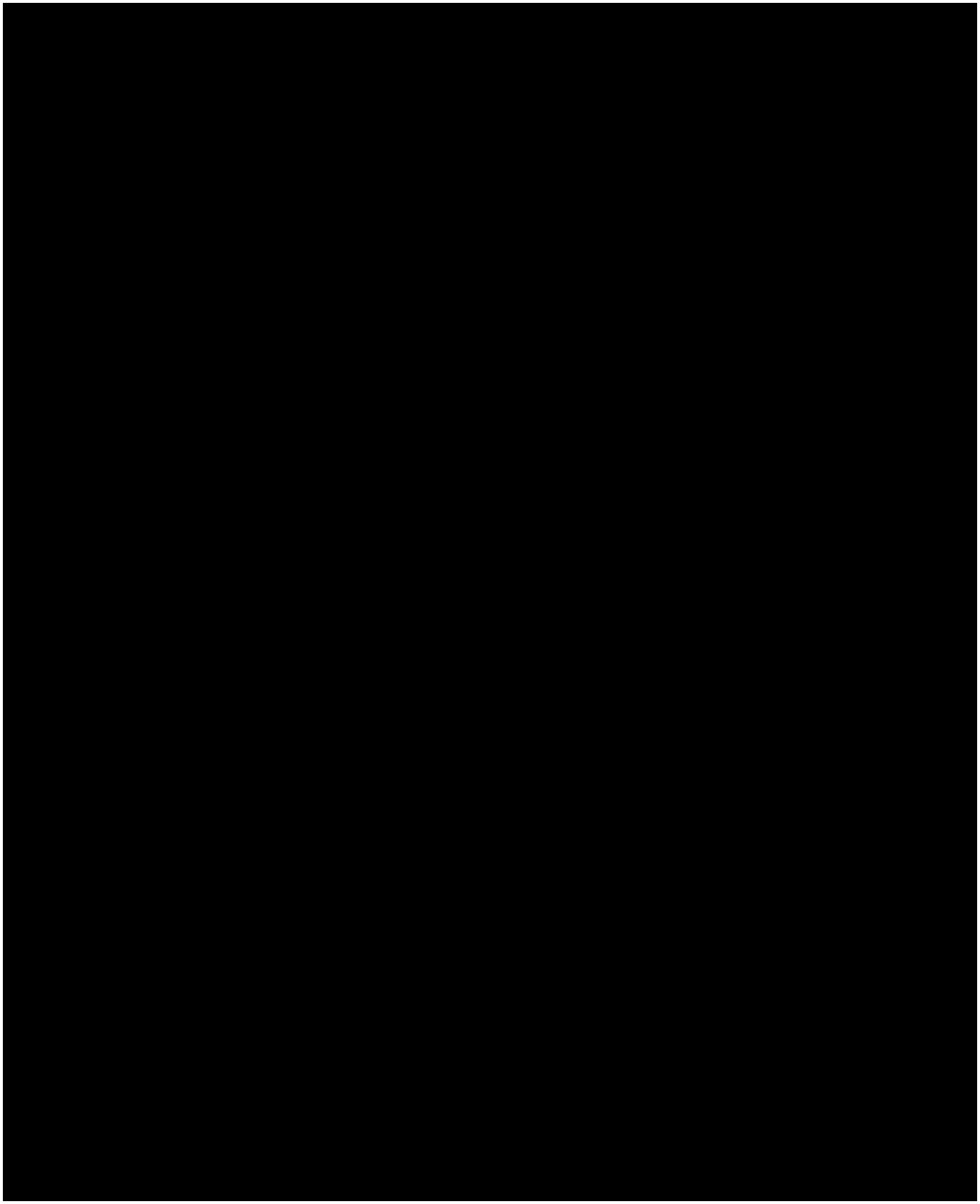


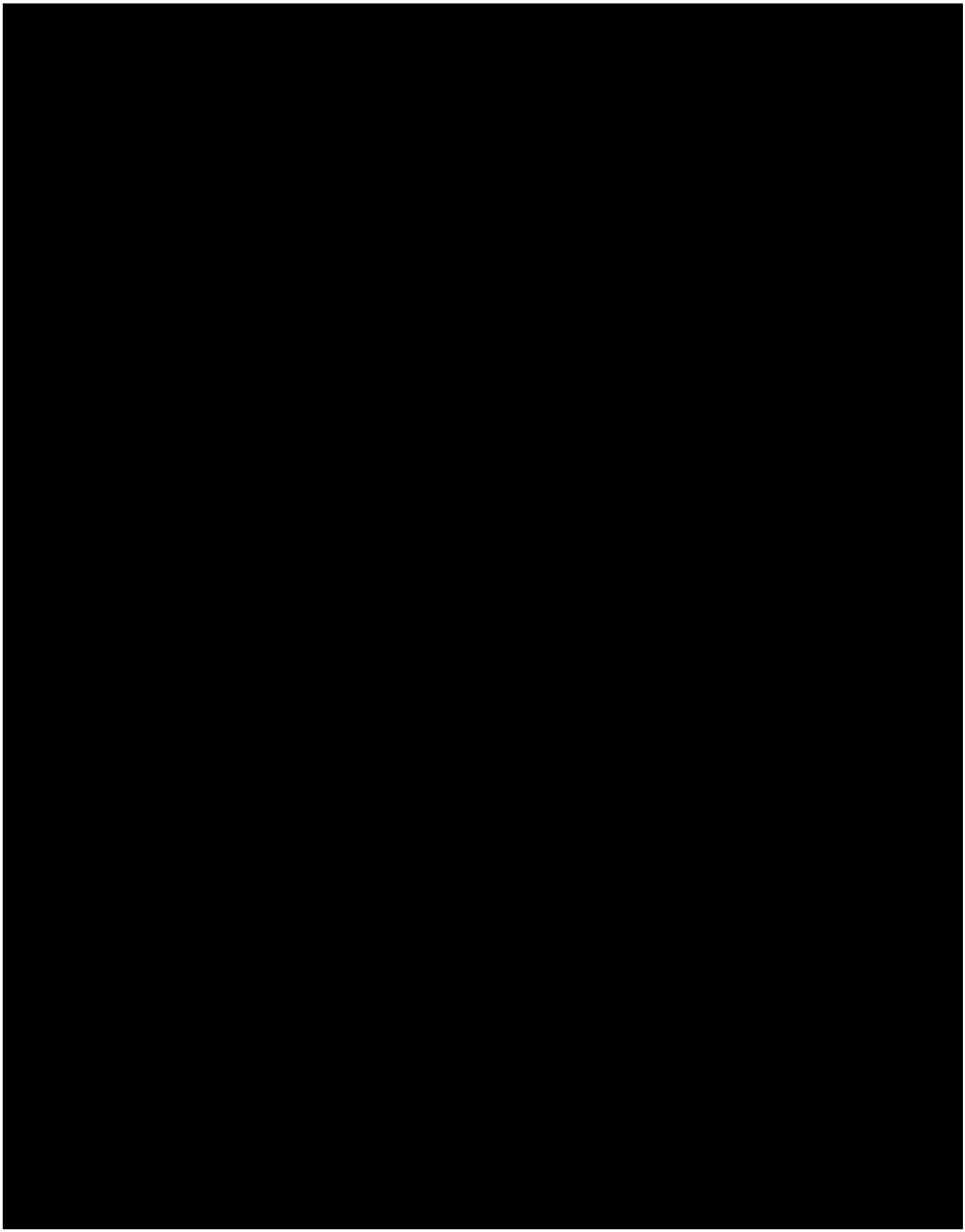


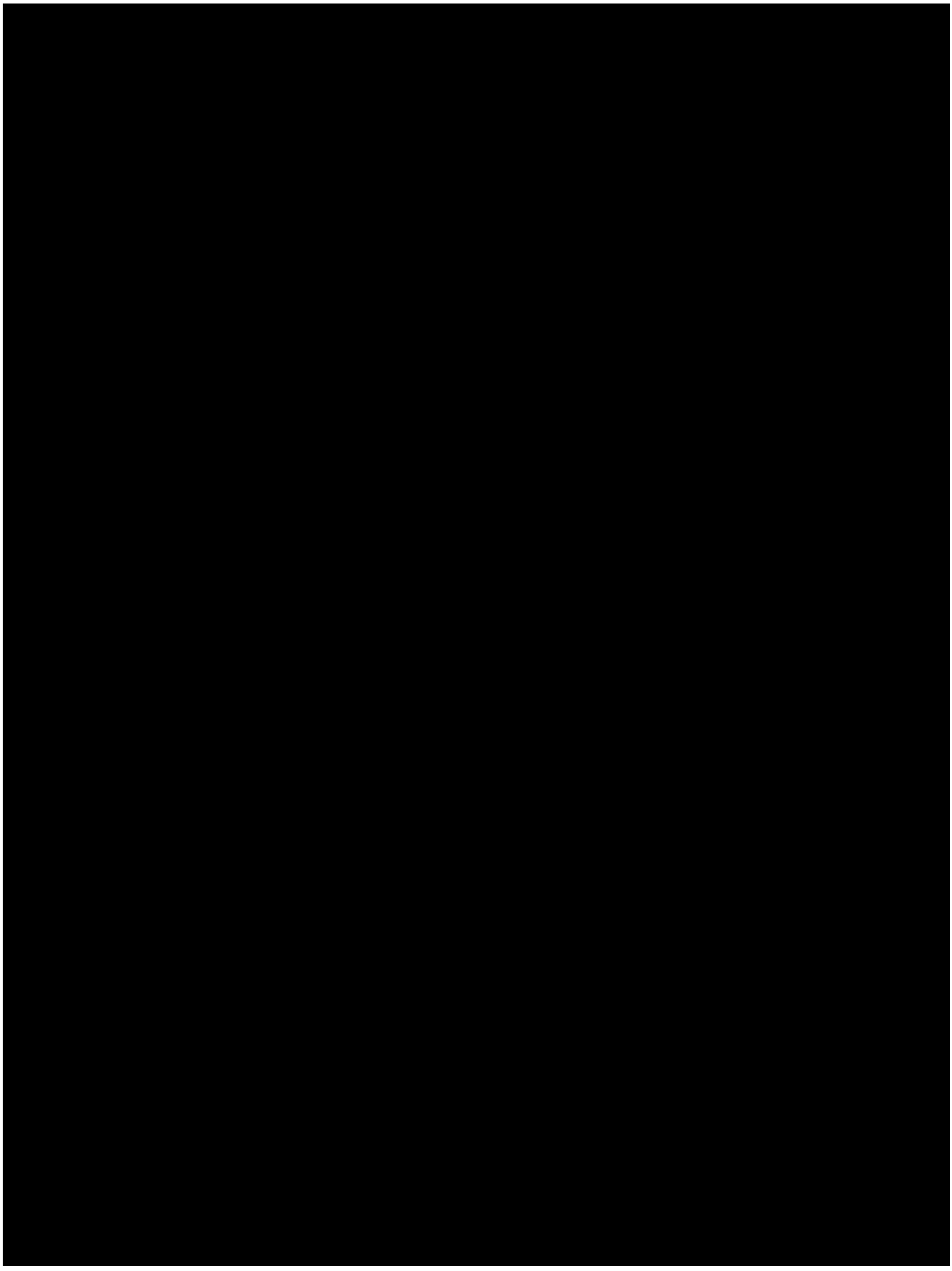












Site 1Gr114

Topographic Map: Boligee
Township: 21N Range: 1W
Elevation: 125 ft
Maximum Depth: 10 cm
Percentage Disturbed: 95%
Topographic Association: Upland Slope
Direction to Water: W
Ground Cover: Cultivation
Soil Texture: Fine sandy loam

Easting: 401638 *Northing*: 3628414
Section: SW¼, NW¼, NE¼ of Section 24
Site Size: 110 m by 50 m
Preservation State: Cultivation
NRHP Status: Ineligible
Nearest Water Source: Lake
Distance to Water: 20 m
Soil Types: Ruston
Components: Middle Woodland (Miller I); Late 19th-Mid 20th Century Nonaboriginal

Comments: Site 1Gr114 was originally recorded by Mistovich (1981) as a small, early Woodland artifact scatter along the western edge of a broad upper terrace in a cultivated field. Mistovich (1981) also noted a scatter of historic artifacts in the northwest portion of the site associated with a tenant house that, at the time, had only recently been vacated. The original site boundaries were determined to be 30 m by 20 m. Cultural materials recovered during this initial survey include unidentified lithic debitage, 6 sherds of Saltillo Fabric Impressed pottery, 1 sherd of Furrs Cord Marked pottery, and 6 sand tempered eroded sherds.

During the course of this survey a total of 69 shovel tests, 21 positive for cultural materials, was implemented in an attempt to locate cultural materials associated with 1Gr114 and delineate the site's boundaries (Figure 81). The site boundaries have been increased to 110 m by 50 m. The site currently lies within a cultivated wheat field with exposed surfaces and wetlands and a pond directly to the west of the site's boundaries (Figures 82-83). Due to the wetlands and pond directly adjacent to the west of site, additional shovel tests could not be conducted.

Shovel Test 214 can be seen in Figure 84 and is an example of a typical shovel test from Site 1Gr114. It was excavated to a depth of 15 cmbs. From 0 to 10 cmbs a 10 YR 7/3 very pale brown fine sandy loam was present. From 10 to 15 cmbs a culturally sterile 10 YR 6/6 brownish yellow compact silt clay was present. Cultural materials recovered during testing include a Tuscaloosa gravel and Tallahatta sandstone debitage, a single Baldwin Plain sherd, machine cut nails, wire nails, whiteware, and stoneware (Appendix B). These artifacts give Site 1Gr114 a Middle to Late Woodland occupation with a late 19th to mid 20th century nonaboriginal component. Indeed, a structure is present on the 1923 Greene County Soils Map (USDA Bureau of Soils 1923) in the area of Site 1Gr114.

Originally, Site 1Gr114 was given an ineligible NRHP status. The cultural materials recovered during this survey have increased the temporal distribution originally given to Site 1Gr114. Also, this survey confirmed the previously mapped location of Site 1Gr114 but has increased the site's boundaries. The site has been severely impacted through agricultural cultivation leaving shallow deposits within disturbed soils. Given the severe disturbance to the site, exposed ground surfaces, shallowness of deposits, there is a low probability of intact cultural deposits and features anywhere in the area. Therefore, this office concurs with the ineligible status originally assigned to Site 1Gr114 (Mistovich 1981) and no further testing is necessary.

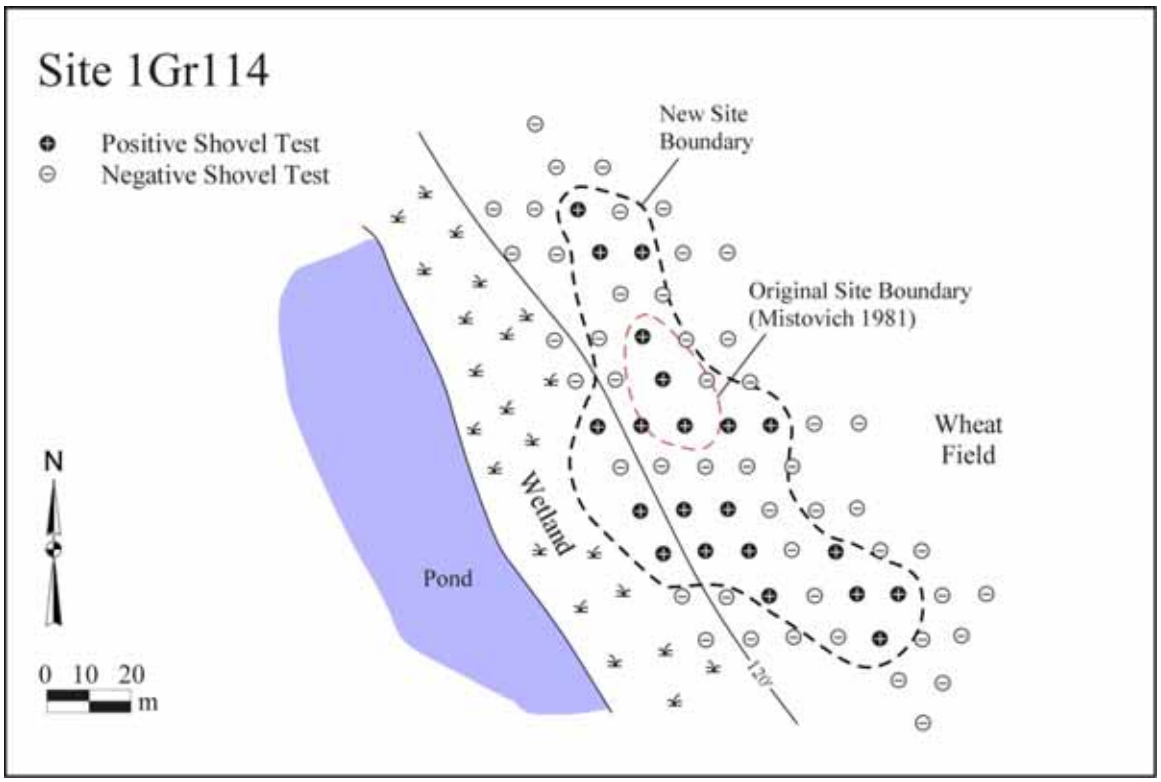


Figure 81. Sketch map of Site 1Gr114.

Figure 82. 1Gr114 from the site's southern boundary. View north.

Figure 83. Wetland and pond directly to the west of Site 1Gr114. View west.

Figure 84. Shovel Test 214 from Site 1Gr114.

Site 1Gr115

Topographic Map: Boligee
Township: 21N Range: 1W
Elevation: 125 ft
Maximum Depth: 10 cm
Percentage Disturbed: 99%
Topographic Association: Upland Slope
Direction to Water: NW
Ground Cover: Cultivation
Soil Texture: Fine sandy loam

Easting: 401638 *Northing*: 3628414
Section: SW¼, NW¼, NE¼ of Section 24
Site Size: 0 m by 0 m
Preservation State: Cultivation
NRHP Status: Ineligible
Nearest Water Source: Swamp
Distance to Water: 50 m
Soil Types: Ruston
Components: Unknown aboriginal

Comments: Site 1Gr115 was originally recorded by Mistovich (1981) as a light lithic scatter of indeterminate origin on a broad upper terrace with gravel pit remnants directly to the north. The original site boundaries were determined to be 150 m by 100 m with no depth. Cultural materials recovered during this initial survey include on 17 pieces of unidentified lithic debitage and chipped stone.

During the course of this survey a total of 23 shovel tests, with none positive for cultural materials, was implemented in an attempt to locate cultural materials associated with 1Gr115 and delineate the site's boundaries (Figure 85). The original site boundaries were surface inspected and subsurface tested but no cultural materials were located. The majority of the site lies within a cultivated field with high surface visibility (Figures 86-87). The remnants of the gravel pit to the north of the site have expanded due to erosion and have encroached within the original site boundaries (Figure 88). There is complete surface visibility and no topsoil in this portion of the site. Additional tests and inspection in the area adjacent to the original boundaries also failed to produce any cultural materials. It is probable that the encroachment of the gravel pit, the continued cultivation of the field, and the subsequent erosion associated with both activities has destroyed any cultural deposits that remained in the area.

Shovel Test 157 can be seen in Figure 89 and is an example of a typical shovel test from Site 1Gr115. It was excavated to a depth of 15 cmbs. From 0 to 10 cmbs a 7.5 YR 5/6 strong brown fine sandy loam was present. From 10 to 15 cmbs a culturally sterile 7.5 YR 4/6 strong brown compact sandy clay was present.

Originally, Site 1Gr115 was given an ineligible NRHP status. During the course of this survey, no additional cultural materials were recovered. The site has been severely impacted through agricultural cultivation, the encroachment of an abandoned gravel pit, and subsequent erosion from both activities. Given the severe disturbance to the site, exposed ground surfaces, and lack of cultural materials, there is a low probability of intact cultural deposits anywhere in the area. Therefore, this office concurs with the ineligible status originally assigned to Site 1Gr115 (Mistovich 1981) and no further testing is necessary.

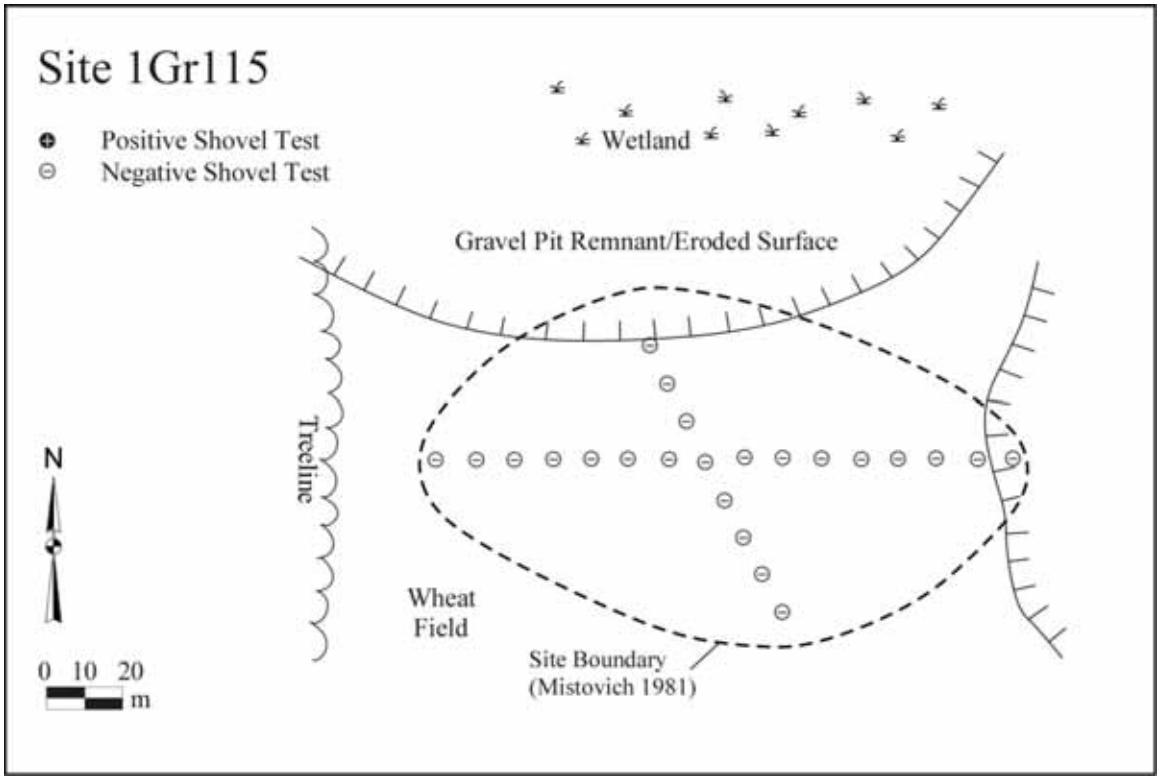


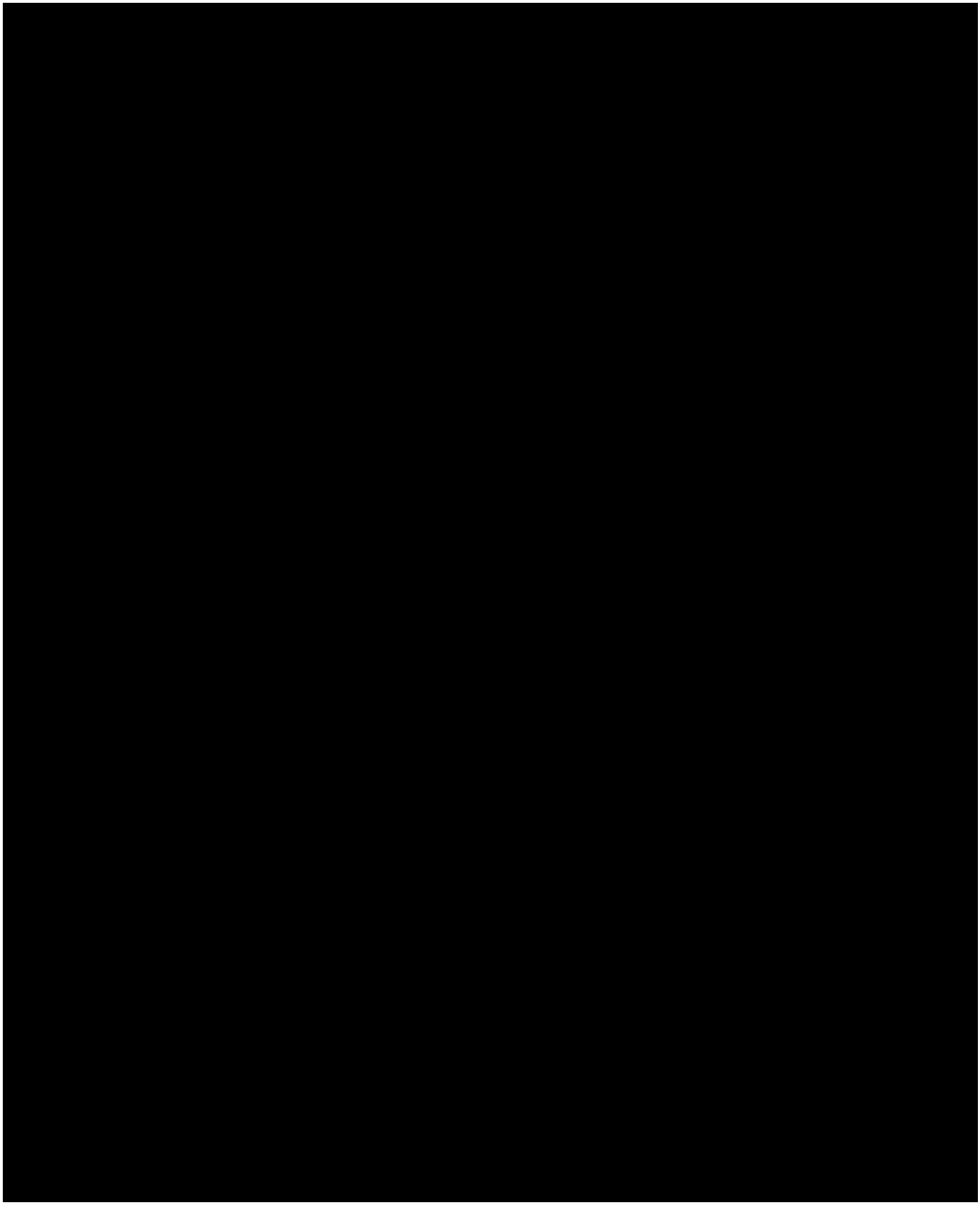
Figure 85. Sketch map of Site 1Gr115.

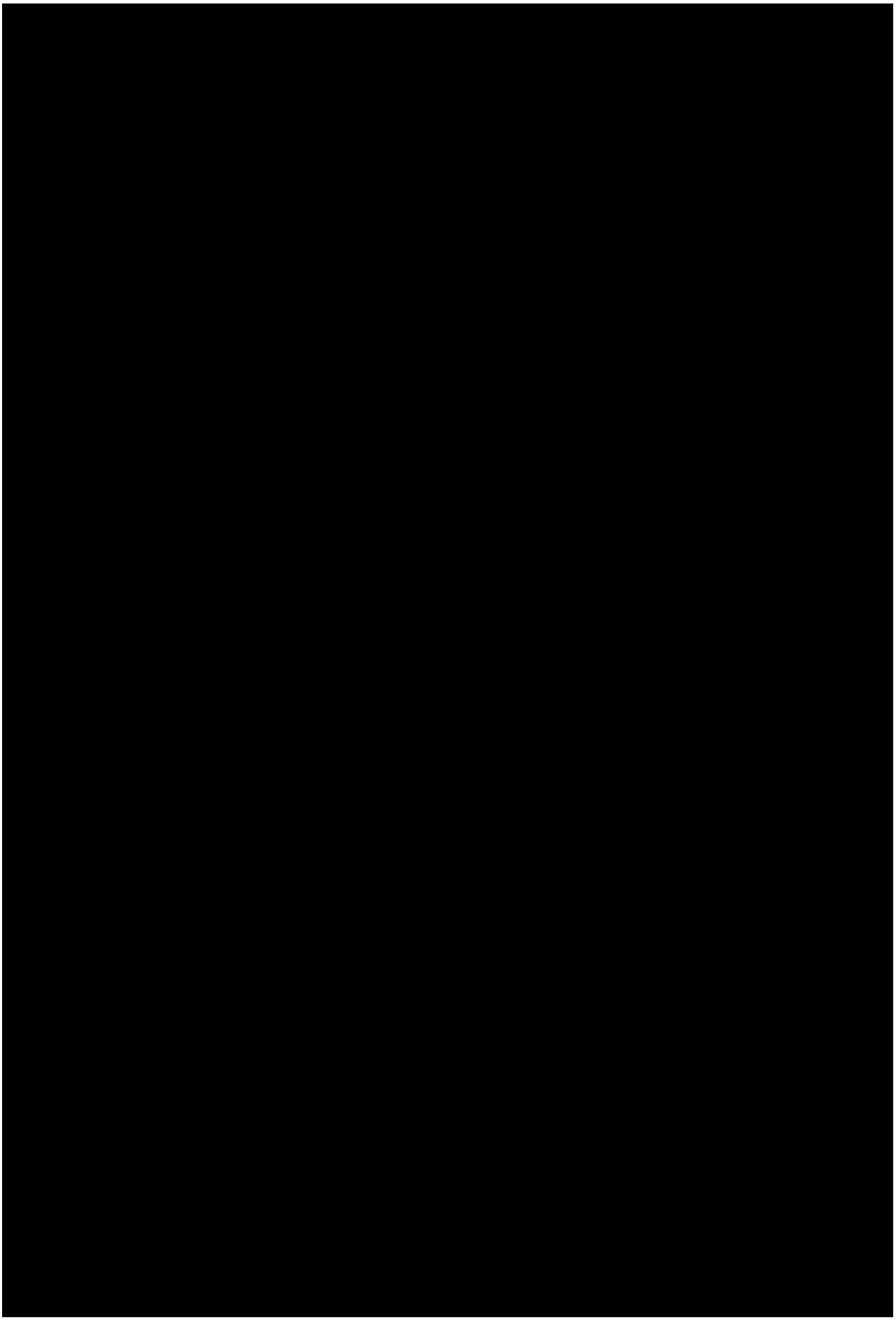
Figure 86. Site 1Gr115 from the site's southern boundary. View north.

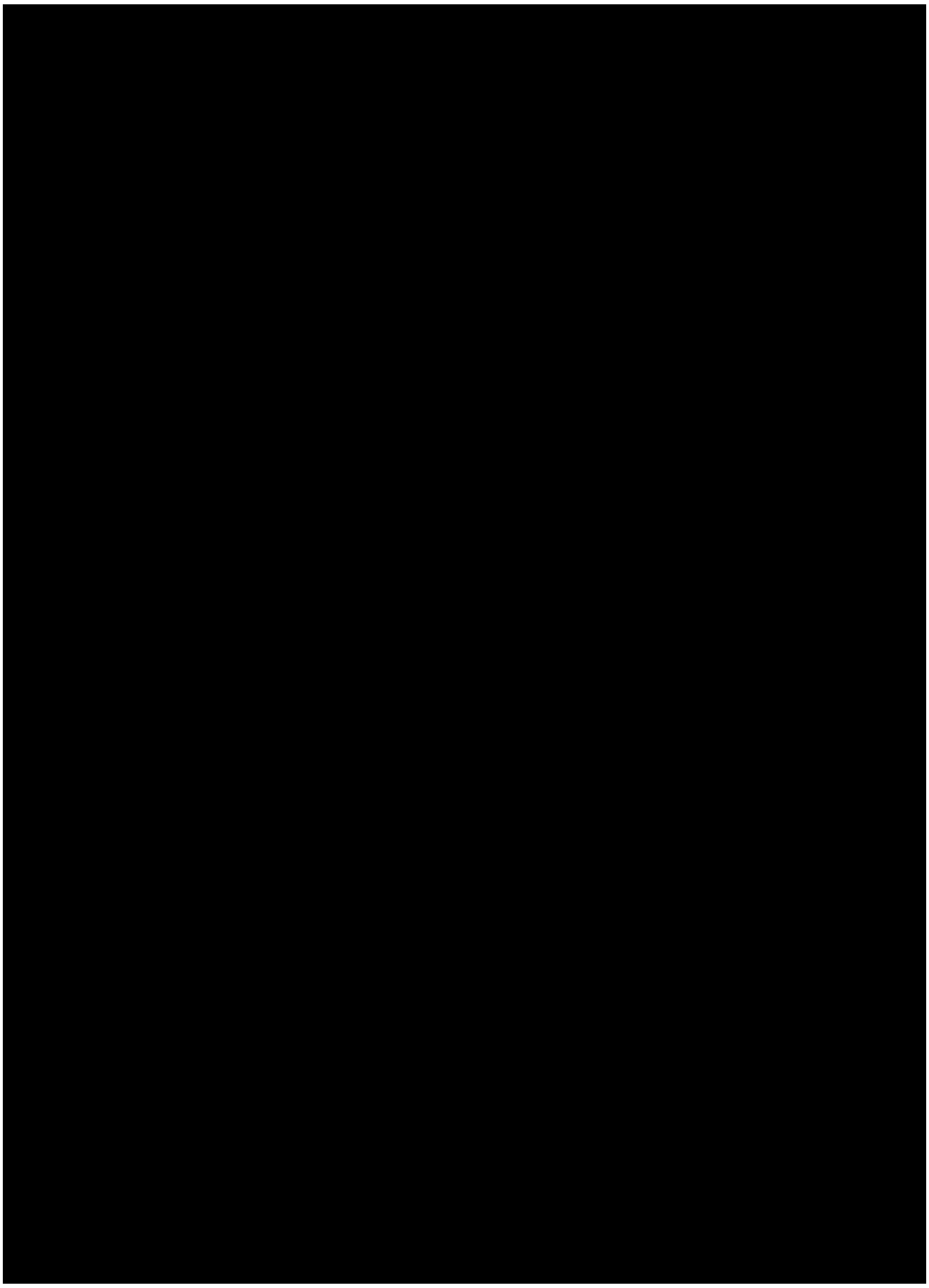
Figure 87. Example of the typical surface visibility within Site 1Gr115.

Figure 88. Encroachment and erosion associated with an abandoned gravel pit within the northern site boundaries. View west.

Figure 89. Shovel Test 157 from Site 1Gr115.







Cemetery

Although the *Historical Atlas of Alabama, Vol. 2* (Remington 1999) listed no cemeteries within close proximity or within the survey area, the 1923 Greene County soils map (USDA Bureau of Soils 1923) indicated a cemetery was present in the western portion of the survey area (Figure 95). Upon inspection of the area, the cemetery was identified and located within the NW ¼ of the NE ¼ of the NW ¼ of Section 24 on the USGS 7.5' Boligee, Alabama topographic quadrangle (Figures 21-22). The cemetery is on an elevated terrace with railroad tracks and Co. Rd 89/Boligee Park Road to the west, and wetlands and ponds to the north, east, and south (Figures 96-97). The cemetery measured, approximately, 150 m by 100 m with a total of 42 grave markers and at least 8 depressions oriented east-west (Figures 98-100). Dense, uncut grass prevented additional depressions from being recognized, however, the probability of additional, unmarked burials is high.

Grave marker types include tablet stones, tablets on bases, and in many locations, an exposed and elevated concrete vault (Figures 101-103). Granite and concrete markers are the most common grave marker types, although marble markers are also present. Based on deceased dates recorded from grave marker analysis, the cemetery dates temporally from 1907 to 2008. The most common family name observed was Outland, but other names include Anderson, Brown, Cameron, Hicks, Johnson, Pless, Moses, Weitherspoon, and Young. The presence of recently placed artificial flowers and the 2008 grave marker indicate that this cemetery is at least periodically visited and maintained. It is recommended that this cemetery be avoided during any potential future development.

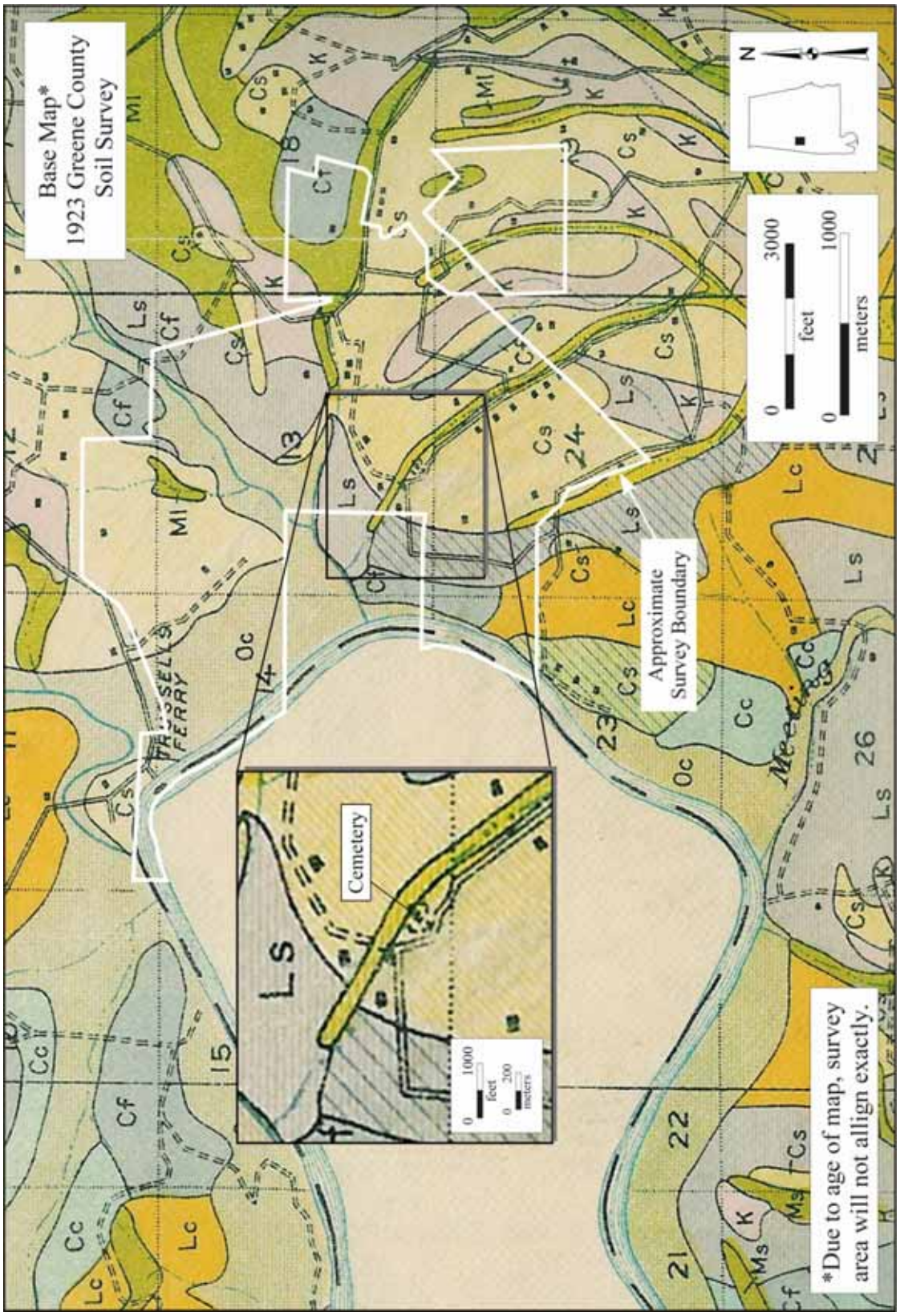


Figure 95. Cemetery as seen on the 1923 Greene County Soils Map.

Figure 96. Cemetery from Co. Rd 89/Boligee Park Road to the west. View east.

Figure 97. Pond and wetlands sound of the cemetery. View east.

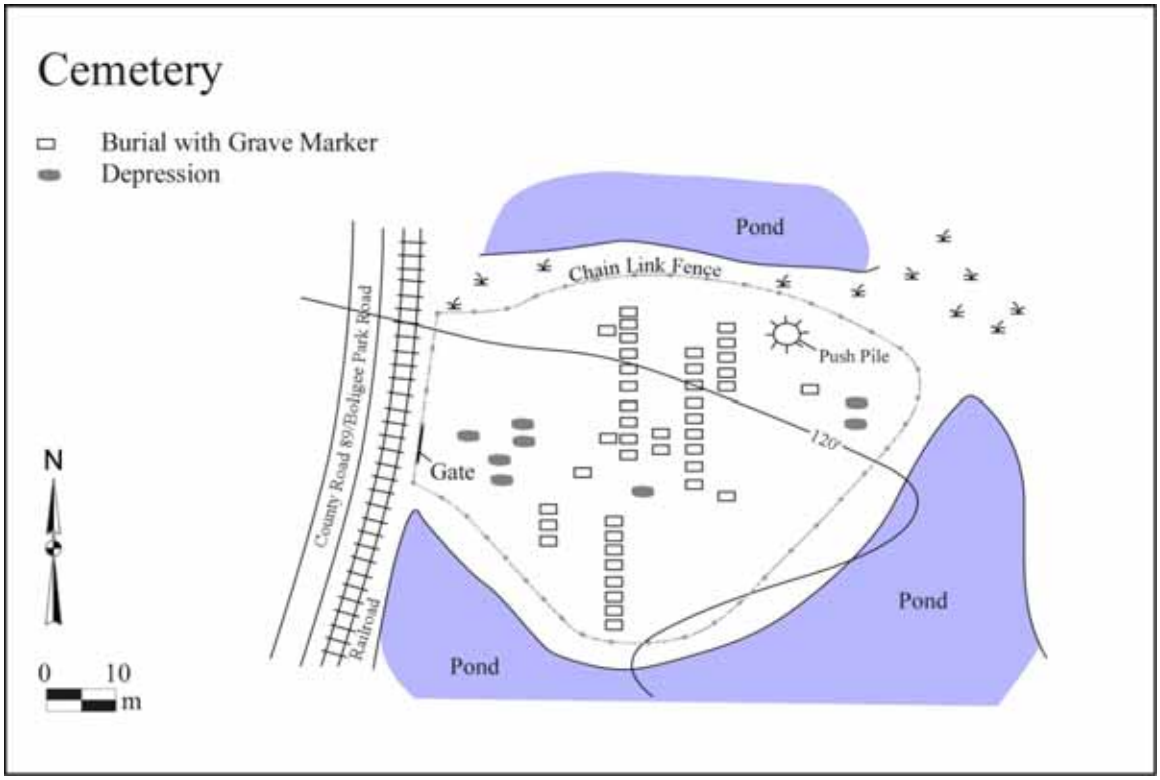


Figure 98. Cemetery sketch map.


Figure 99. Cemetery from the westernmost depression. View east.

Figure 100. Cemetery from the easternmost depression. View west.

Figure 101. Earliest concrete tablet stone grave marker from the cemetery. Deceased date of 1907.

Figure 102. Latest granite tablet on base grave marker from the cemetery. Deceased date of 2008.

Figure 103. Outland family plot in the northern section of the cemetery showing exposed concrete vaults. View north.

[redacted]

Nonhistoric Properties

Three areas with standing buildings that are not old enough to meet the requirements of being historic were examined during this survey (Figures 21-22). The first nonhistoric property, Crossroads Building West, is a large, industrial warehouse that is currently unused (Figure 105). It is located in the SW ¼of the NE ¼ of the SW ¼ of Section 24 on the 1970 (photo revised 1987) USGS 7.5' Boligee, Alabama topographic quadrangle. It dates to the late 20th to early 21st century. The second area consists of the remains of a nonhistoric farm complex featuring an abandoned grain silo and a concrete structure. It is located in the SE ¼, of the NE ¼, of the SW ¼ of Section 18 on the 1970 (photo revised 1987) USGS 7.5' Boligee, Alabama topographic quadrangle (Figures 106-108). The grain silo and dilapidated concrete structure are relatively recent, being constructed within the past 50 years, and are in poor, deteriorating condition. Furthermore, there is no historic house site in the vicinity. Currently, the location of the complex is within the boundaries of a wetland. The third nonhistoric property is a circa 1960s hunting lodge, located in the NW ¼ of the SW ¼ of the SW ¼ of Section 18 on the USGS 7.5' Boligee, Alabama topographic quadrangle (Figures 109-110). It does not appear on any map until the 1970 USGS 7.5' Boligee, Alabama topographic quadrangle. Based on this and its recent construction materials, it is not considered historic.

Figure 105. Industrial warehouse, Crossroads Building West, in the southern section of the survey area. View south.

Figure 106. Nonhistoric farm complex in the eastern section of the survey area. View east.

Figure 107. A grain silo associated with a deteriorated farm complex. View northwest.

Figure 108. A deteriorating cinderblock farm structure in the easternmost survey area. View northeast.

Figure 109. Circa 1960s nonhistoric hunting lodge in the east section of the survey area. View south.

Figure 110. Circa 1960s nonhistoric hunting lodge in the east section of the survey area. View east.

Conclusions and Recommendations

The University of Alabama, Office of Archaeological Research conducted a Phase I cultural resources reconnaissance survey of an approximate 1,500 acre (2.34 mi²; 6.07 km²) proposed industrial park and wetland mitigation, near the town of Boligee, in west Greene County, Alabama. As stated in the introduction, the cultural resources survey focused on locating and identifying any archaeological sites or historic standing structures within the survey boundaries, assessing their archaeological significance, and providing recommendations with regard to guidelines set forth by the National Historic Preservation Act.

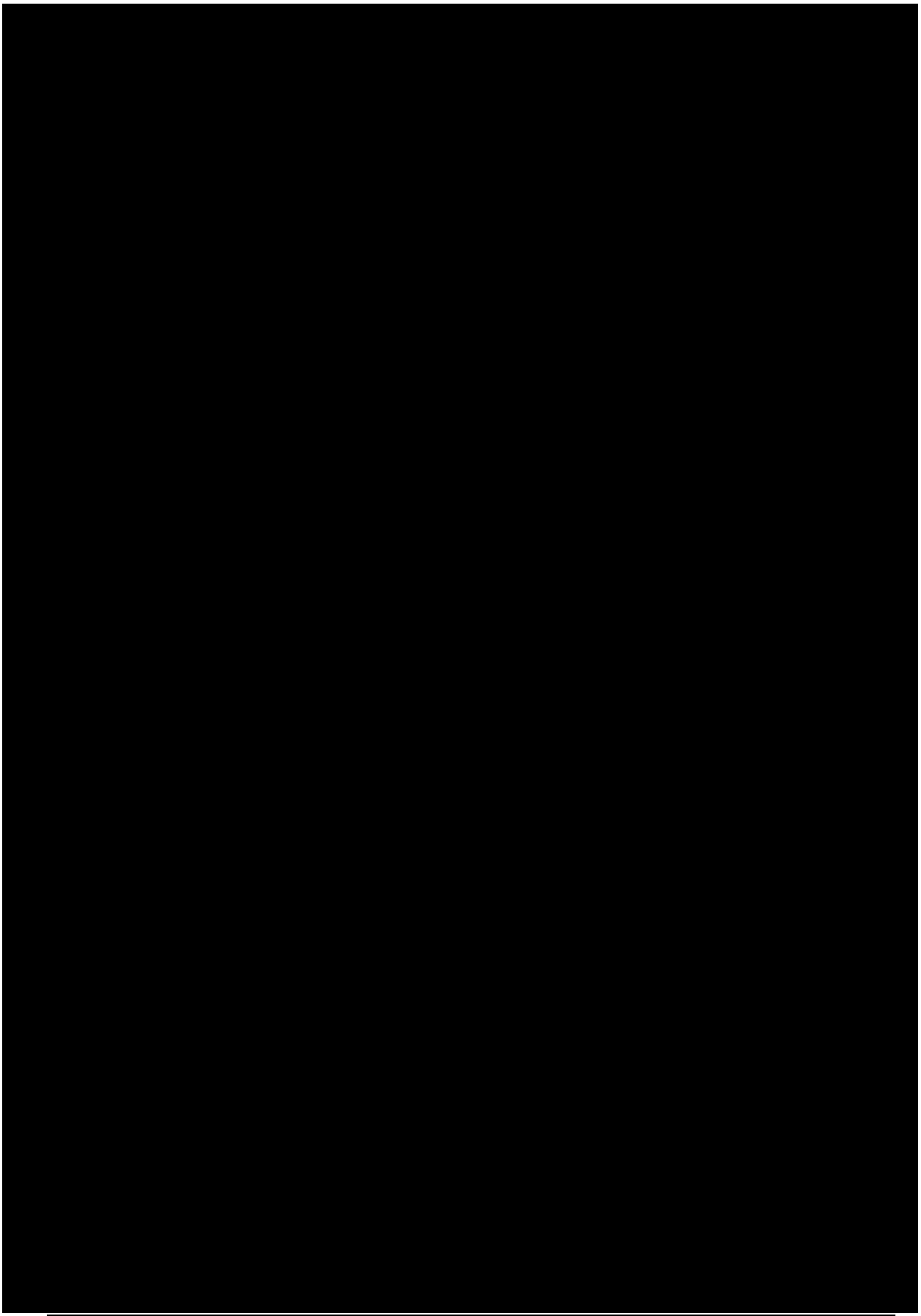
Although much of the survey area lies within wetlands and cultivated wheat fields with access roads and railroads in several locations, the majority of the survey area would have been an ideal location for prehistoric and historic peoples due to the desirable land in the form of terraces along the first-order streams, the close proximity to permanent water sources including Brush Creek and the Tombigbee River, and the plentiful food resources that the land would have provided. This is confirmed by the presence of the previously recorded prehistoric and historic sites within the survey area, especially Site 1Gr31, a multicomponent mound site along the Tombigbee River. Areas within the wetlands and cultivated fields have a low probability for

intact cultural deposits; however, elevated areas adjacent to permanent water sources have a moderate to high probability for intact cultural deposits.

During the course of the survey, 10 new archaeological sites (Sites 1Gr158-1Gr167) were located, recorded, and added to the ASSF and five previously recorded sites (Sites 1Gr110, 1Gr111, 1Gr114, 1Gr115, and 1Gr157) were revisited and delineated, and ASSF forms were updated (Appendix A). The cemetery in the western section of the survey area was also observed and documented.

Site 1Gr159 is a late 19th to mid 20th century nonaboriginal historic refuse scatter in a cultivated wheat field. It does not meet the minimum criteria for inclusion into the NRHP due to heavy disturbance from cultivation, exposed and eroded ground surfaces, and lack of depth in disturbed soils. Further testing is not warranted.

Site 1Gr162 is as an early to mid 20th century nonaboriginal historic refuse scatter located in on the second terrace south of a first order stream in the center of the survey area. It does not meet the minimum criteria for inclusion into the NRHP due to heavy disturbance from cultivation, exposed and eroded ground surfaces, and lack of depth in disturbed soils. Further testing is not warranted.



[redacted]

Site 1Gr114 was originally recorded by Mistovich (1981). It represents a Middle to Late Woodland occupation with a late 19th to mid 20th century nonaboriginal component on the edge of a broad upper terrace in a cultivated field in the center of the survey area. The site has been severely impacted through agricultural cultivation leaving shallow deposits within disturbed soils. Given the severe disturbance to the site, exposed ground surfaces, shallowness of deposits, there is a low probability of intact cultural deposits and features anywhere in the area. Therefore, this office concurs with the ineligible status originally assigned to Site 1Gr114 (Mistovich 1981) and no further testing is necessary.

Site 1Gr157 was originally recorded by Finney (OAR 2002) as an early to mid 20th century nonaboriginal house site. The site has been severely impacted through agricultural cultivation and the placement of a gas pipeline leaving shallow deposits within disturbed soils. Given the severe disturbance to the site and shallowness of deposits, there is a low probability of intact cultural deposits anywhere in the area. Therefore, this office concurs with the ineligible status originally assigned to Site 1Gr157 and no further testing is necessary.

The cemetery in the western section of the survey area contains 42 marked burials, at least 8 depressions, and spans from at least 1907 to 2008. There is a high probability for additional unmarked burials. Avoidance of this cemetery is recommended. Due to the proposed construction of the outfall line to the river (Appendix C), our office would suggest any ground disturbing activities within 50 meters of the cemetery boundary as currently defined be monitored by a professional archaeologist.

None of the four sites within or adjacent to the flagship boundary (Appendix C) or the outfall line are considered to meet the eligibility criteria for listing on the NRHP (1Gr114, 1Gr115, 1Gr159, and 1Gr 162).

[redacted]

References Cited

Ahler, Stanley A.
1989 Mass Analysis of Flaking Debris: Studying the Forest Rather than the Tree. In *Alternative Approaches to Lithic Analysis*, edited by Donald O. Henry and George H. Odell, pp. 85-118. Archeological Paper 1. American Anthropological Association, Washington.

Cotton, James A.
1971 *Soil Survey of Greene County, Alabama*. United States Department of Agriculture, Washington.

Curren, Caleb, and Janet Lloyd
1987 *Archaeological Survey in Southwest Alabama: 1984 – 1987*. Report submitted to the Alabama Historical Commission, Montgomery by the Alabama-Tombigbee Regional Commission, Camden. Technical Report 1. Alabama-Tombigbee Regional Commission, Camden.

Ensor, H. Blaine
1981 *Gainesville Lake Area Lithics: Chronology, Technology, and Use*. Archaeological Investigations in the Gainesville Lake Area of the Tennessee-Tombigbee Waterway, vol. 3. Report submitted to the United States Army Corps of Engineers, Mobile by the Office of Archaeological Research, University of Alabama, University. Report of Investigations 13. Office of Archaeological Research, University of Alabama, University.

Gilliland, J. Eric
1995 *A Cultural Resources Survey of a Proposed Factory Site and Access Road near the Community of Lizzieville in Greene County, Alabama*. Report submitted to Greene County, Alabama, Eutaw by the Office of Archaeological Services, University of Alabama Museums, Tuscaloosa.

Mistovich, Tim S.
1980 *A Cultural Resource Survey of the Proposed Boligee Industrial Park, Greene County, Alabama*. Report submitted to Greene County, Alabama, Eutaw by the Office of Archaeological Research, University of Alabama, University.

Mistovich, Tim S.
1981 *A Cultural Resource Survey of the Proposed Boligee Industrial Site, Greene County, Alabama*. Report submitted to Greene County, Alabama, Eutaw by the Office of Archaeological Research, University of Alabama, University.

Moore, Clarence B.
1901 Certain Aboriginal Remains of the Tombigbee River. *Journal of the Academy of Natural Sciences of Philadelphia* 11(4):496-516.

Nielsen, Jerry J., John W. O'Hear, and Charles W. Moorehead
1973 *An Archaeological Survey of Hale and Greene Counties, Alabama*. Report submitted to the Alabama Historical Commission, Montgomery by the Alabama Museum of Natural History, University of Alabama, University.

Office of Archaeological Research, University of Alabama Museums (OAR)
2002 Alabama State Site File. Secure electronic document, accessed May 25, 2010.

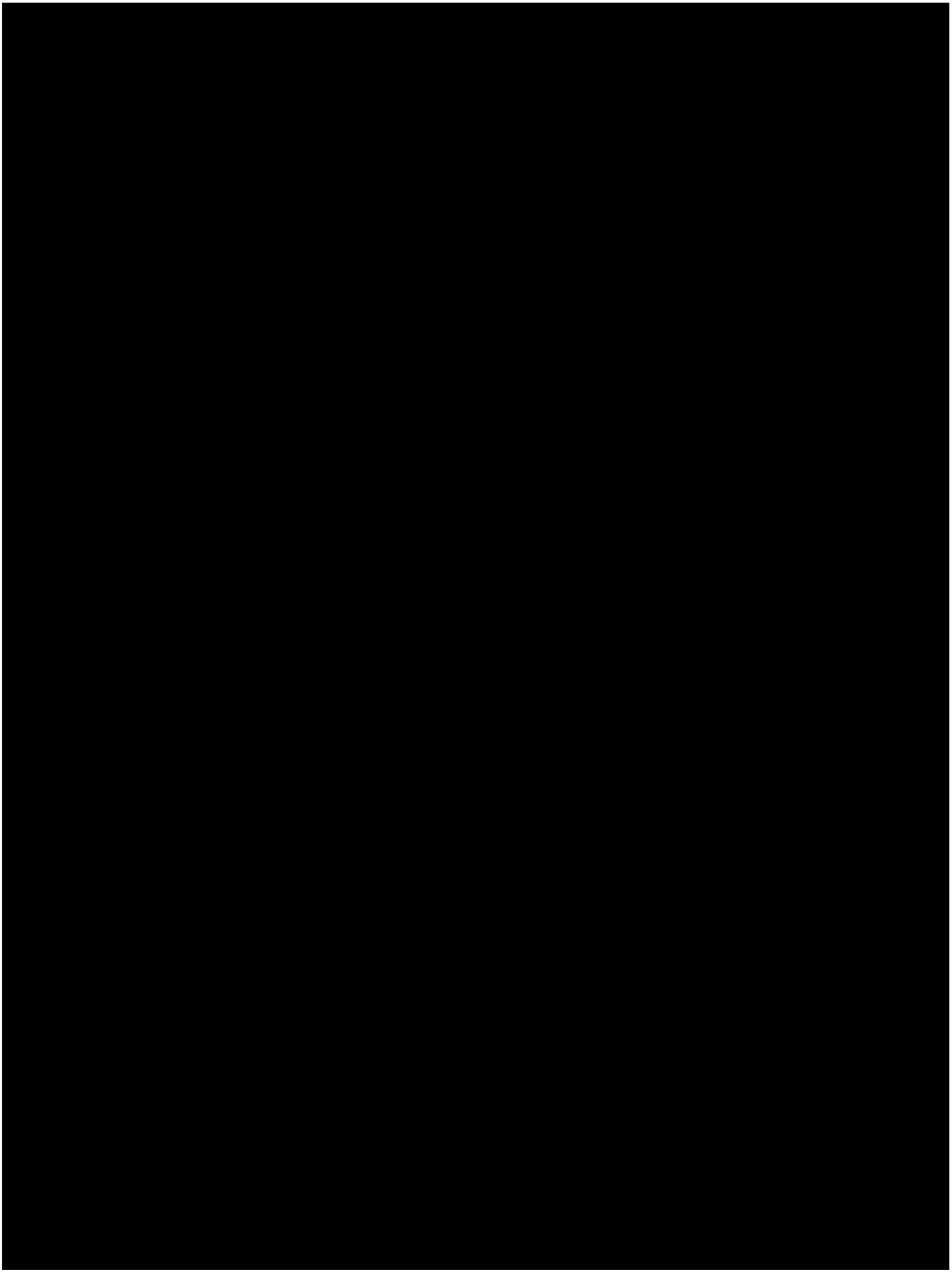
Remington, Craig W. (Editor)
1999 C*emetery Locations by County. Historical Atlas of Alabama, Volume 2.* Department of Geography, University of Alabama, Tuscaloosa, Alabama.

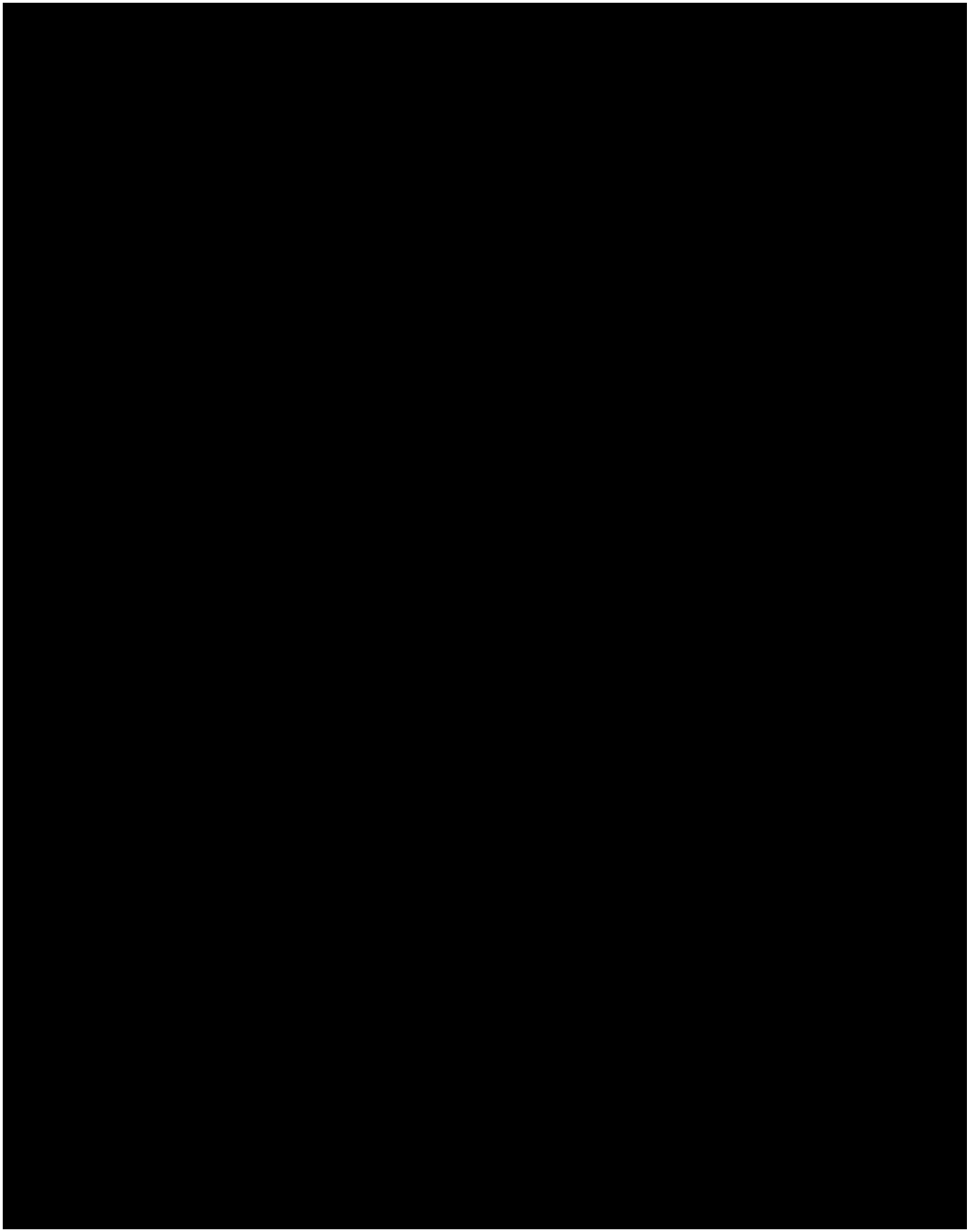
Sapp, C. Daniel, and Jacques Emplaincourt
1975 *Physiographic Regions of Alabama*. Map 168. Geological Survey of Alabama, University.

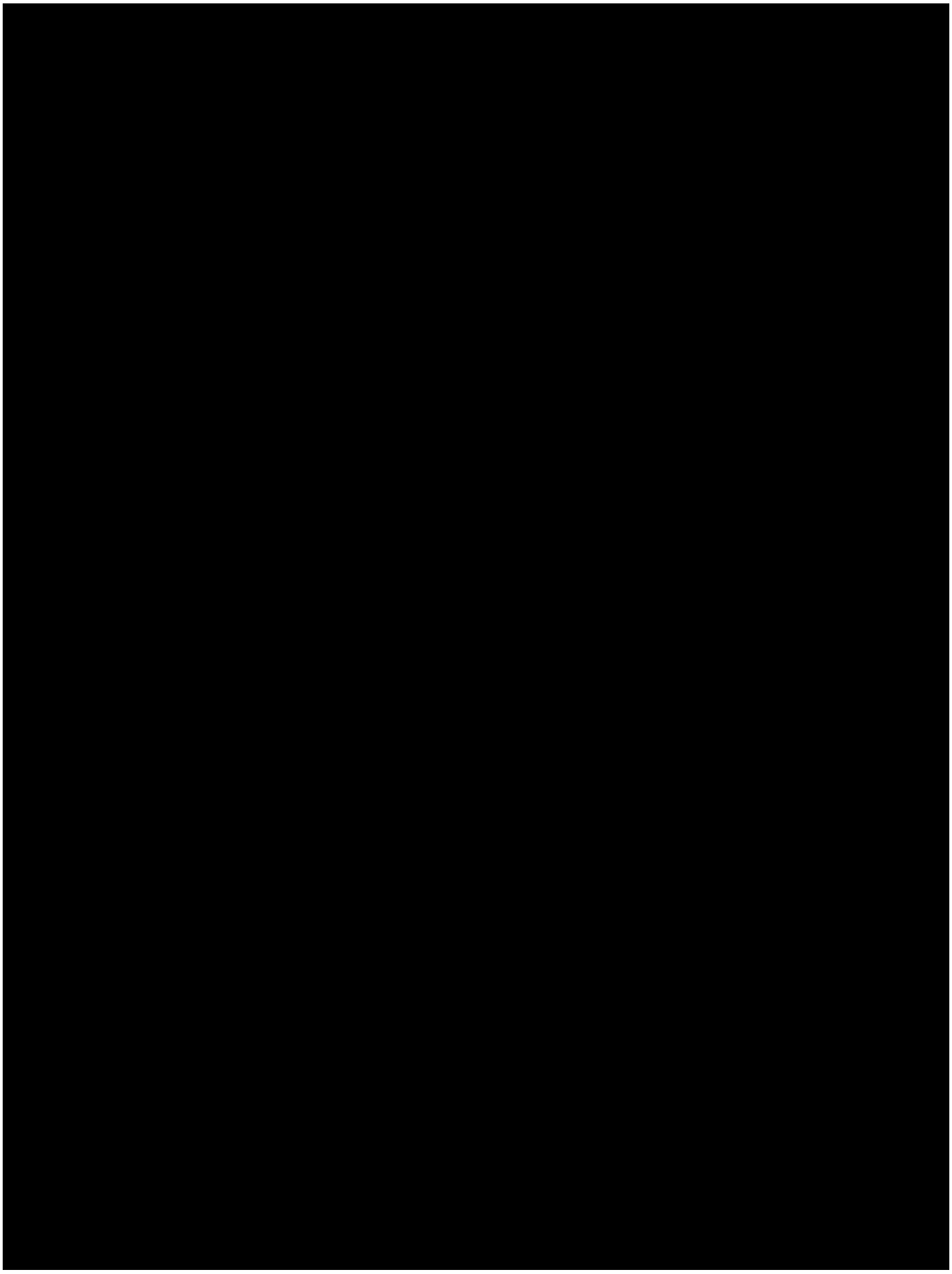
United States Department of Agriculture (USDA)
2008 Natural Resources Conservation Service Web Soil Survey. Electronic document, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, Accessed May 10, 2010.

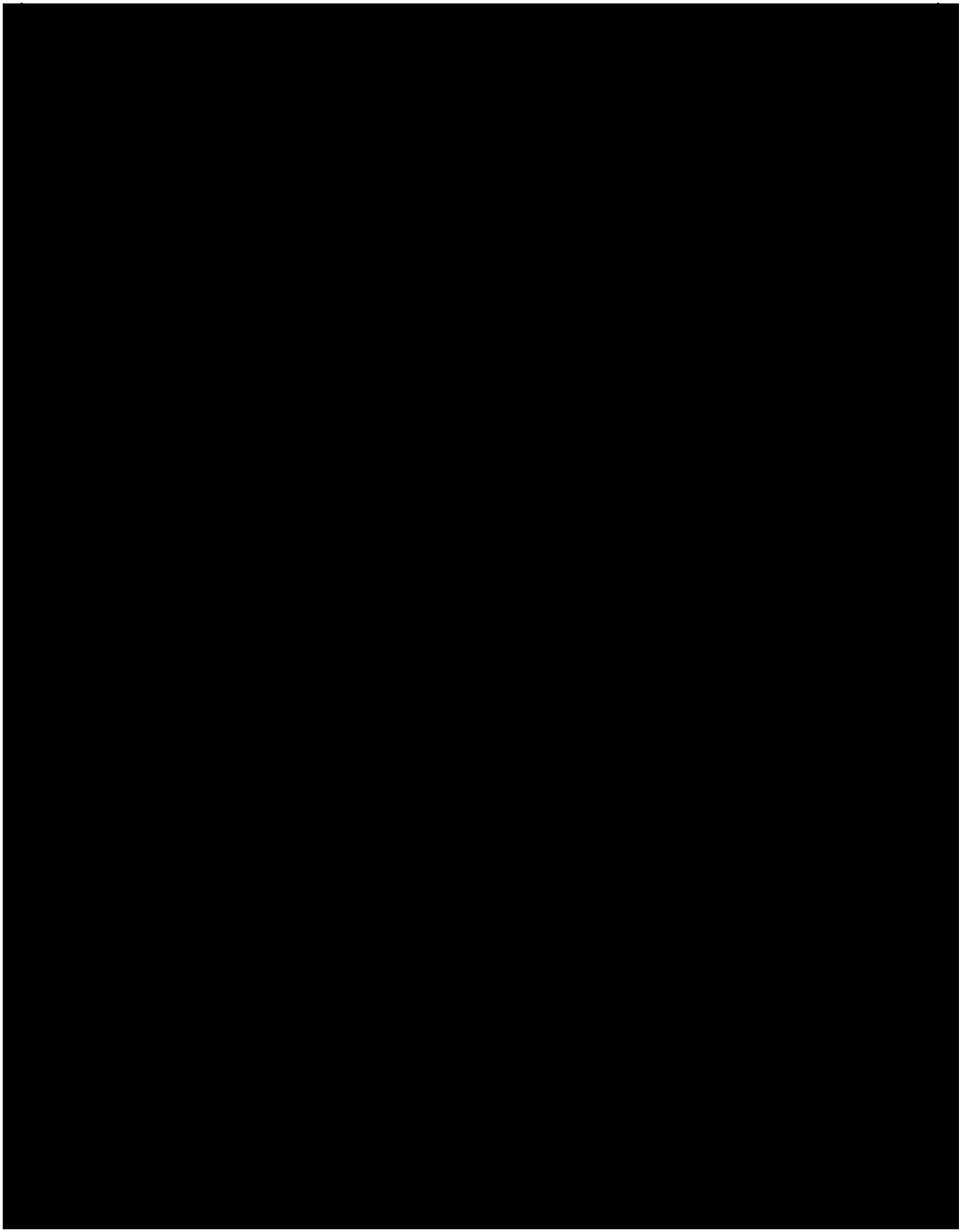
United States Department of Agriculture Bureau of Soils
1923 Soil Map of Greene County, Alabama. Washington.

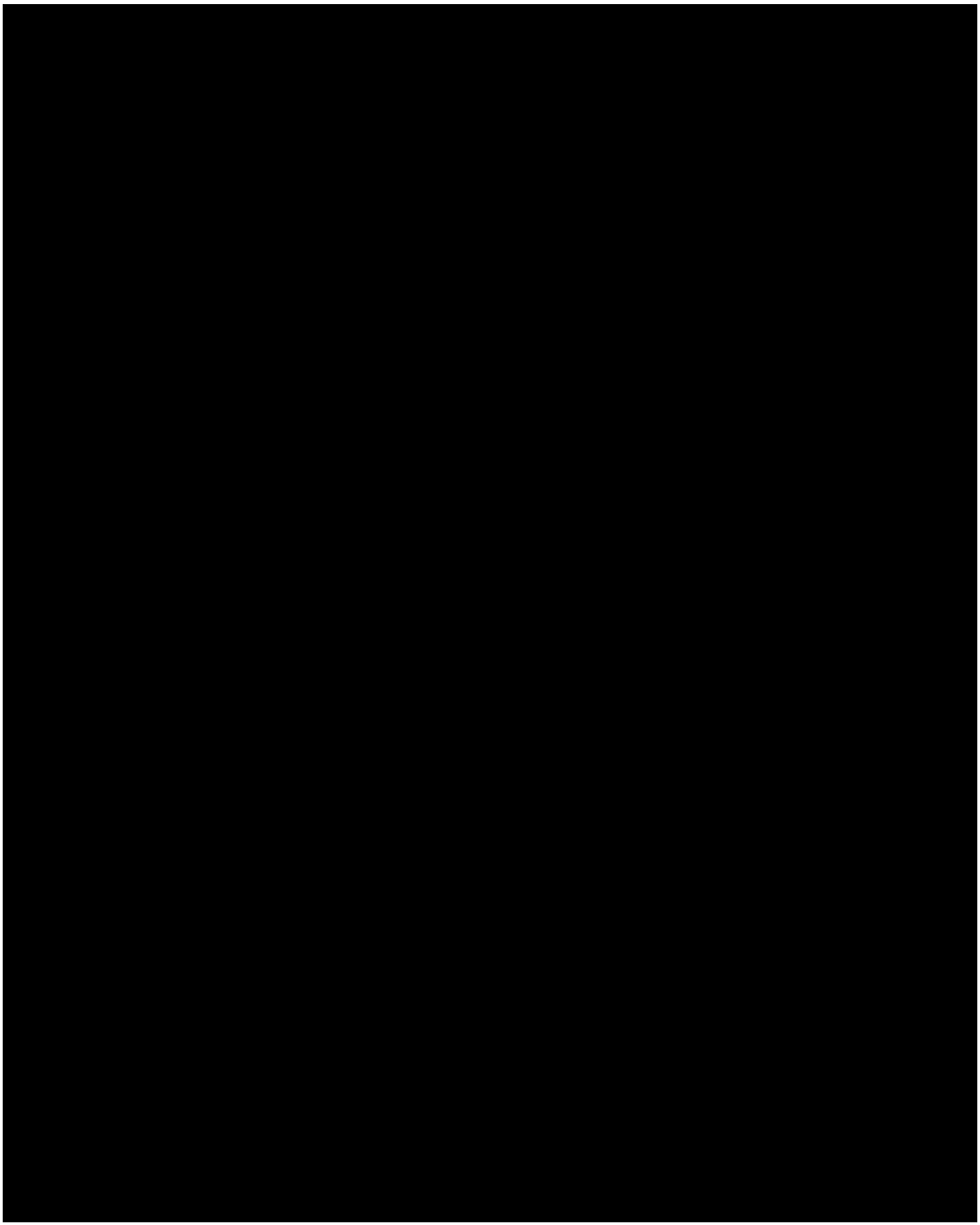
APPENDIX A











Site: GR114 Retrieve Site

Site Name: UNNAMED

Location and Size

Easting: 401638 Northing: 3628414 Elevation: 125

Township: 21N Range: 01W Section: 24

SW 1/4 of NW 1/4 of NE 1/4

Major Axis: 110 Minor Axis: 50 Max Depth: 10

Location and Size

Preservation State: CULTIVATION

Immediate Destruction Pending: N Looting/Vandalism: N % Destroyed: 95

National Register Status: NO

Archaeological Information

Level of Investigation: INTENSIVE

Excavation Status: SURFACE & SHOVEL

Topographic Association: UPLAND SLOP

Physiographic District: FALL

Physiographic Section: COASTAL

Nearest Water Source: LAKE

Direction To: W Distance To: 20 At Confluence: N

Drainage Basin: TOMBIGBEE

Ground Cover: CULTIVATION

Soil Type: RUSTON

Soil Texture Class: FINE SANDY LOAM

County Soil Survey: 1971

Degree of Disturbance: ENTIRE

Characteristics

☐ Human Remains	☐ Stone Mound(s)
☐ Features	☐ Weir
☐ Petroglyph/Pictrograph	☐ Quarry
☐ Rockshelter	☐ Standing Historic Structure
☐ Cave	☐ Historic Structure Site
☑ Artifact Scatter	☐ Historic Cemetery
☐ Midden	☐ Still
☐ Shell Midden	☐ Mill
☐ Single Earthen Mound	☐ Engineering
☐ Multiple Earthen Mound	☐ Other

Components

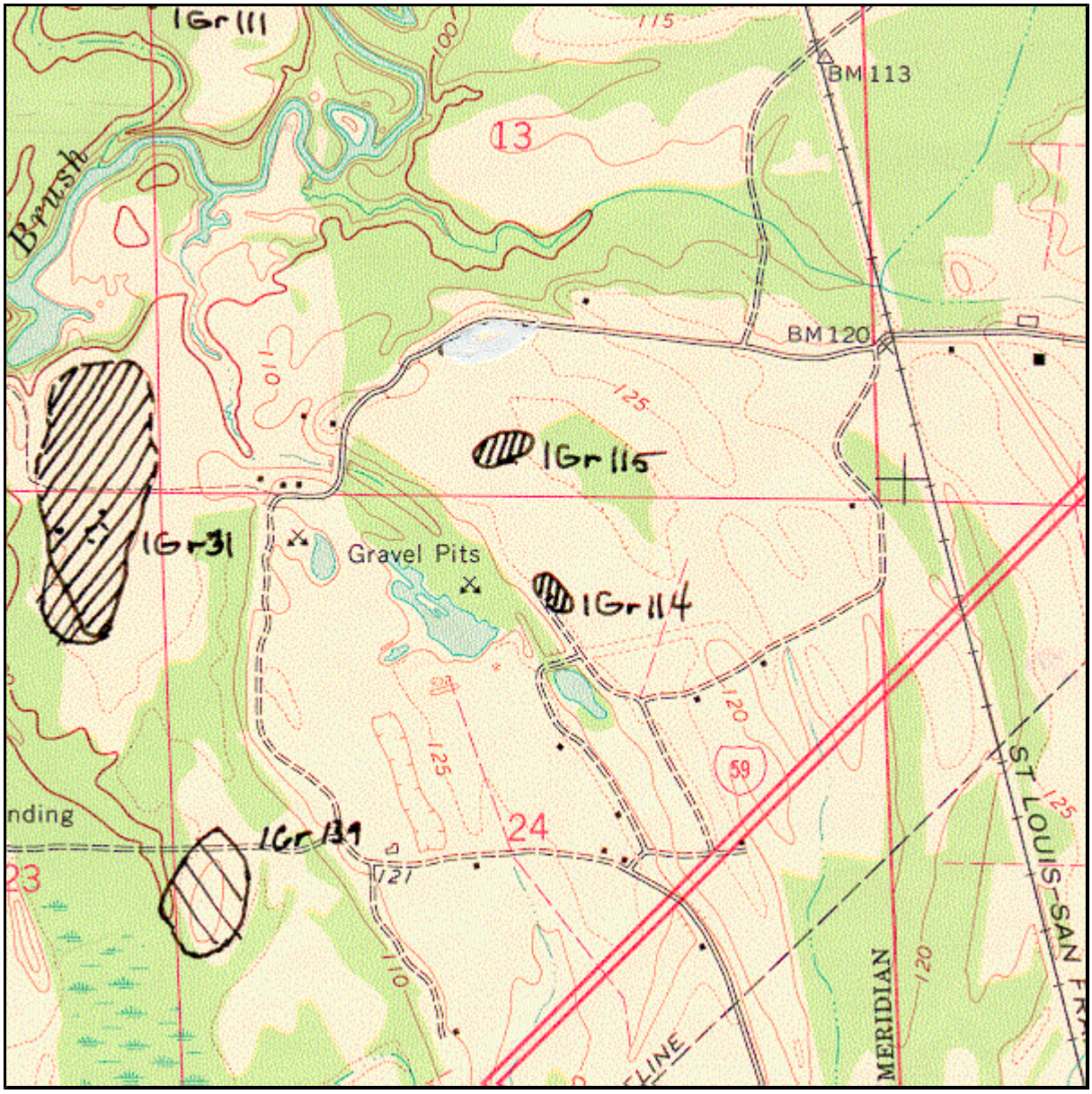
EARLY WOODLAND, SAND TEMPERED, MIDDLE WOODLAND, MILLER I PHASE, 19TH AND 20TH CENTURY NONABORIGINAL

UNVERIFIED

Comments

SITE 1GR114 WAS RECORDED BY TIM MISTOVICH, UNIVERSITY OF ALABAMA, UNIVERSITY, ALABAMA. THE SITE CONSISTS OF A SMALL SCATTER OF ARTIFACT LOCATED AT THE WESTERN EDGE OF A BROAD UPPER TERRACE IN A CULTIVATED FIELD. THE SITE IS CONFINED TO A HIGHLY DISTURBED PLOWZONE AND EXHIBITS LITTLE CULTURAL MATERIAL. SITE 1GR114 CANNOT BE CONSIDERED SIGNIFICANT FROM A CULTURAL RESOURCE PERSPECTIVE AND IS CONSIDERED INELIGIBLE FOR THE NRHP.

SITE 1GR114 WAS ORIGINALLY RECORDED BY MISTOVICH (1981) AS A SMALL, EARLY WOODLAND ARTIFACT ALONG THE WESTERN EDGE OF A BROAD UPPER



USGS 7.5' Topographic Map: BOLIGEE

Record Type: ☑ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☑ Verified ☐ New

Form Completion: ☐ Final ☑ Map Search ☐ Literature Search

Sponsor Type: STA Sponsored By: GREENE COUNTY, AL

Recorder Type: ACA Recorded By: UAL

Date Submitted: 1981-02-28 Date Revised: 2010-05-26

Top of Page

Site: GR115 Retrieve Site

Site Name: UNNAMED

Location and Size

Easting: 401557 Northing: 3628551 Elevation: 125

Township: 21N Range: 01W Section: 13

SE 1/4 of SE 1/4 of SW 1/4

Major Axis: 0 Minor Axis: 0 Max Depth: 0

Location and Size

Preservation State: CULTIVATION

Immediate Destruction Pending: N Looting/Vandalism: N % Destroyed: 99

National Register Status: NO

Archaeological Information

Level of Investigation: INTENSIVE

Excavation Status: SURFACE & SHOVEL

Topographic Association: UPLAND SLOP

Physiographic District: FALL

Physiographic Section: COASTAL

Nearest Water Source: SWAMP

Direction To: NW Distance To: 150 At Confluence: N

Drainage Basin: TOMBIGBEE

Ground Cover: CULTIVATION

Soil Type: RUSTON

Soil Texture Class: FINE SANDY LOAM

County Soil Survey: 1971

Degree of Disturbance: ENTIRE

Characteristics

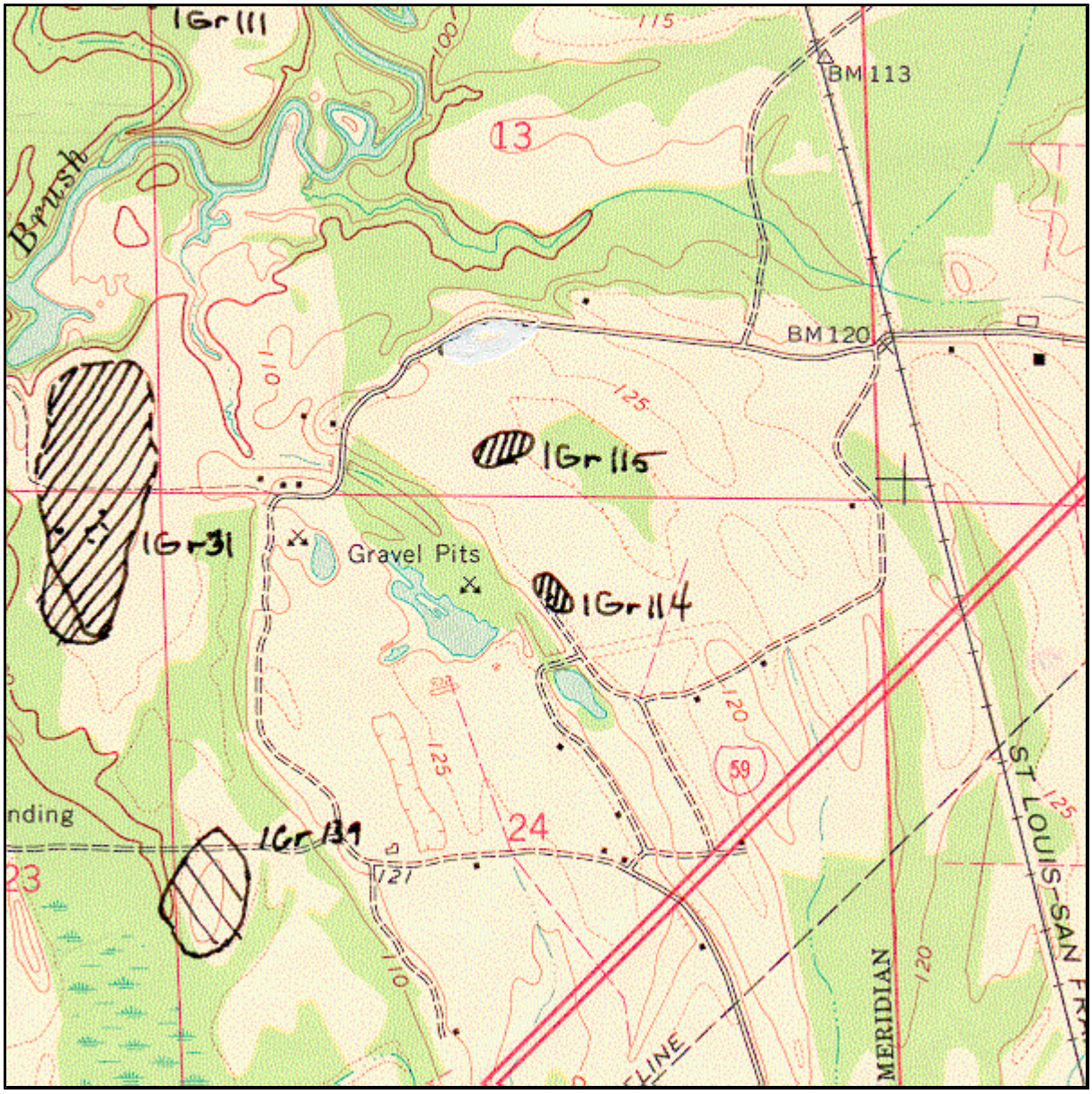
- ☐ Human Remains
- ☐ Features
- ☐ Petroglyph/Pictrograph
- ☐ Rockshelter
- ☐ Cave
- ☐ Artifact Scatter
- ☐ Midden
- ☐ Shell Midden
- ☐ Single Earthen Mound
- ☐ Multiple Earthen Mound
- ☐ Stone Mound(s)
- ☐ Weir
- ☐ Quarry
- ☐ Standing Historic Structure
- ☐ Historic Structure Site
- ☐ Historic Cemetery
- ☐ Still
- ☐ Mill
- ☐ Engineering
- ☐ Other

Components

Unknown Aboriginal

Comments

SITE 1GR115 WAS RECORDED BY TIM MISTOVICH, UNIVERSITY OF ALABAMA, UNIVERSITY, ALABAMA. THE SITE CONSISTS OF A LARGE SCATTER OF LITHIC MATERIAL LOCATED IN A CULTIVATED FIELD ON A BROAD UPPER TERRACE. THE SITE IS 300 M SOUTH OF 1GR114 AND IS BORDERED ON THE WEST BY A LARGE ABANDONED GRAVEL PIT. SUBSURFACE TESTING REVEALED FEW ARTIFACTS WITHIN A 20 CM PLOWZONE AND NO EVIDENCE OF MIDDEN DEPOSITS. THE PAUCITY OF MATERIAL PRESENT AND THE LACK OF UNDISTURBED CULTURAL DEPOSITS REDUCE THE SITE TO A LEVEL CONSIDERED INELIGIBLE FOR THE NRHP.



USGS 7.5' Topographic Map: BOLIGEE

Record Type: ☑ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☑ Verified ☐ New

Form Completion: ☐ Final ☑ Map Search ☐ Literature Search

Sponsor Type: STA Sponsored By: GREENE COUNTY, AL

Recorder Type: ACA Recorded By: UAL

Date Submitted: 1981-02-28 Date Revised: 2010-05-26

Top of Page

Site: GR159 Retrieve Site

Site Name: UNNAMED

Location and Size

Easting: 401694 Northing: 3628103 Elevation: 125

Township: 21N Range: 01W Section: 24

NW 1/4 of SW 1/4 of NE 1/4

Major Axis: 50 Minor Axis: 40 Max Depth: 10

Location and Size

Preservation State: CULTIVATION

Immediate Destruction Pending: Y Looting/Vandalism: N % Destroyed: 95

National Register Status: NO

Archaeological Information

Level of Investigation: RECONNAISSANCE

Excavation Status: SURFACE & SHOVEL

Topographic Association: FLOOD PLAIN

Physiographic District: FALL

Physiographic Section: COASTAL

Nearest Water Source: LAKE

Direction To: E Distance To: 20 At Confluence: ?

Drainage Basin: TOMBIGBEE

Ground Cover: CULTIVATION

Soil Type: RUSTON

Soil Texture Class: FINE SANDY LOAM

County Soil Survey:

Degree of Disturbance: ENTIRE

Characteristics

- ☐ Human Remains
- ☐ Features
- ☐ Petroglyph/Pictrograph
- ☐ Rockshelter
- ☐ Cave
- ☑ Artifact Scatter
- ☐ Midden
- ☐ Shell Midden
- ☐ Single Earthen Mound
- ☐ Multiple Earthen Mound
- ☐ Stone Mound(s)
- ☐ Weir
- ☐ Quarry
- ☐ Standing Historic Structure
- ☐ Historic Structure Site
- ☐ Historic Cemetery
- ☐ Still
- ☐ Mill
- ☐ Engineering
- ☐ Other

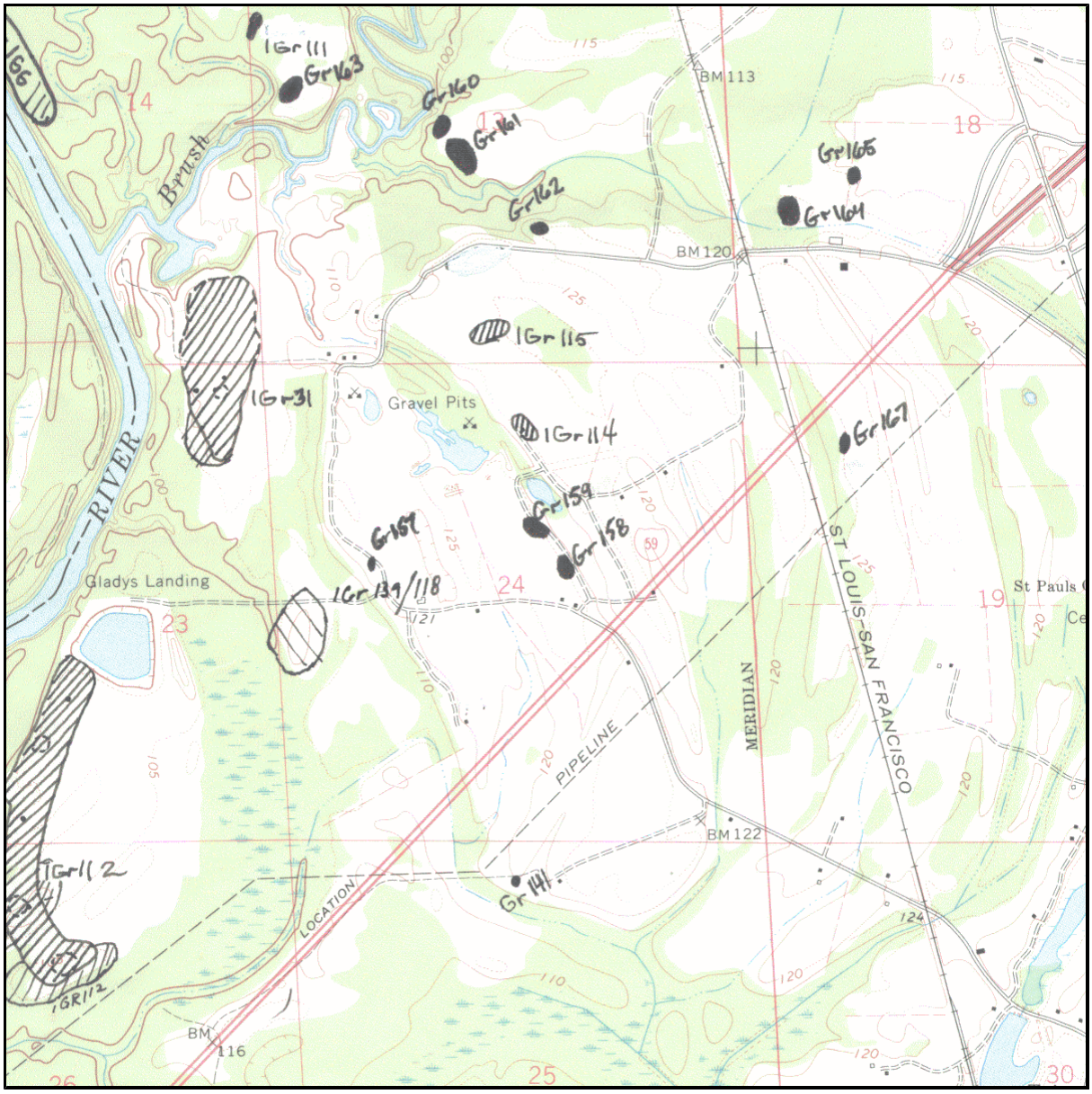
Components

LATE 19TH TO MIDDLE 20TH CENTURY NONABORIGINAL

UNVERIFIED

Comments

1GR159 WAS DISCOVERED BY BRANDON THOMPSON OF THE UNIVERSITY OF ALABAMA. SITE 1GR159 IS LOCATED IN A FLOODPLAIN ADJACENT TO A SMALL POND ALONG THE SOUTHERN BOUNDARY OF THE SURVEY AREA AND IS IDENTIFIED AS A LATE 19TH TO MID 20TH CENTURY NONABORIGINAL HISTORIC REFUSE SCATTER. A TOTAL OF 33 SHOVEL TESTS, 10 POSITIVE FOR CULTURAL MATERIALS, WAS EXCAVATED TO DETERMINE THE EXTENT OF CULTURAL DEPOSITS. THE SITE CURRENTLY LIES WITHIN A PERIODICALLY PLOWED WHEAT FIELD WITH AN ACCESS ROAD, WETLANDS, AND POND TO THE EAST AND WHEAT FIELDS TO THE NORTH, SOUTH, AND WEST. DUE TO THE ACCESS ROAD, WETLANDS, AND POND TO THE EAST, ADDITIONALLY SHOVEL TESTS IN THIS



USGS 7.5' Topographic Map: BOLIGEE

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

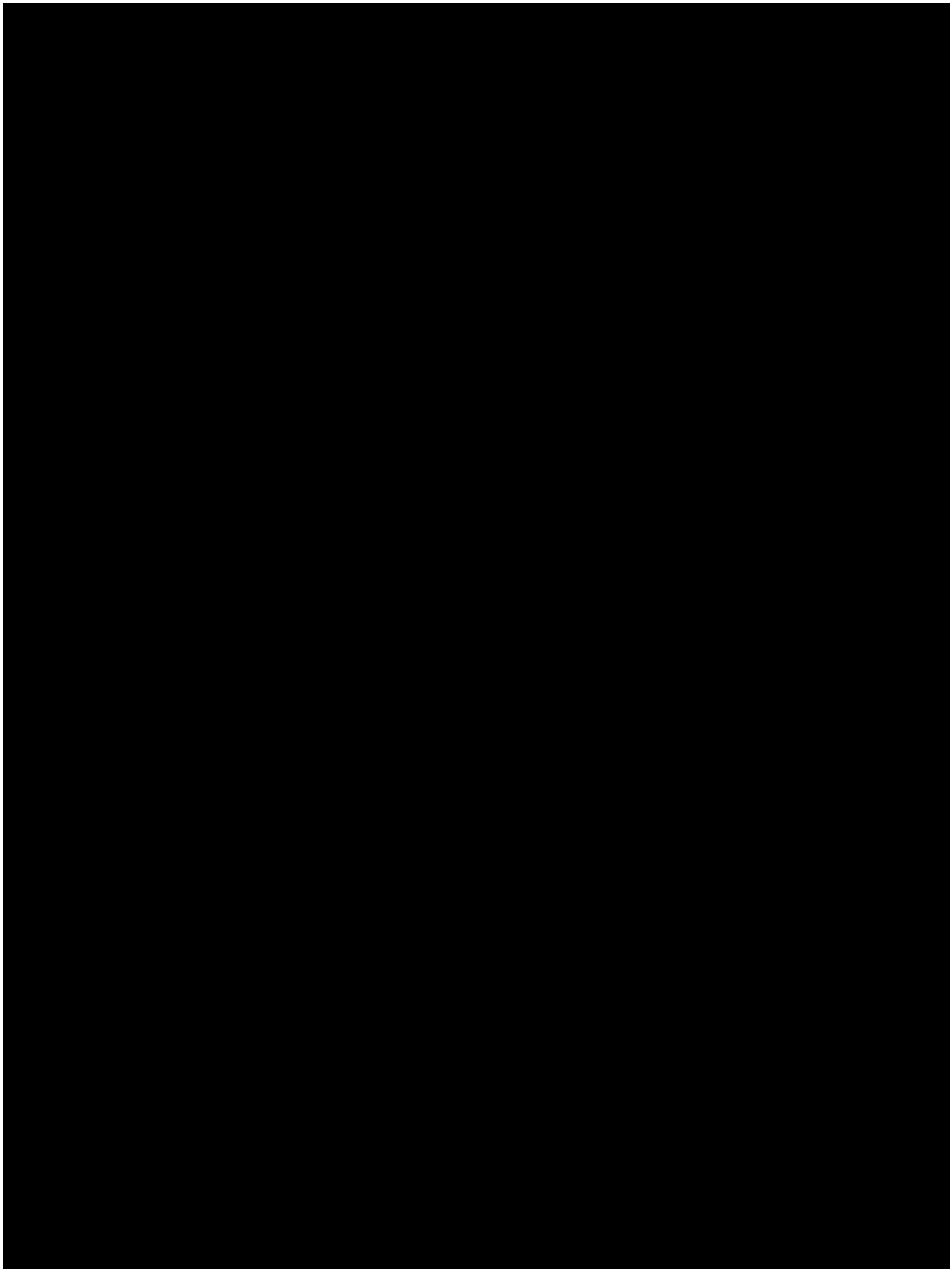
Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

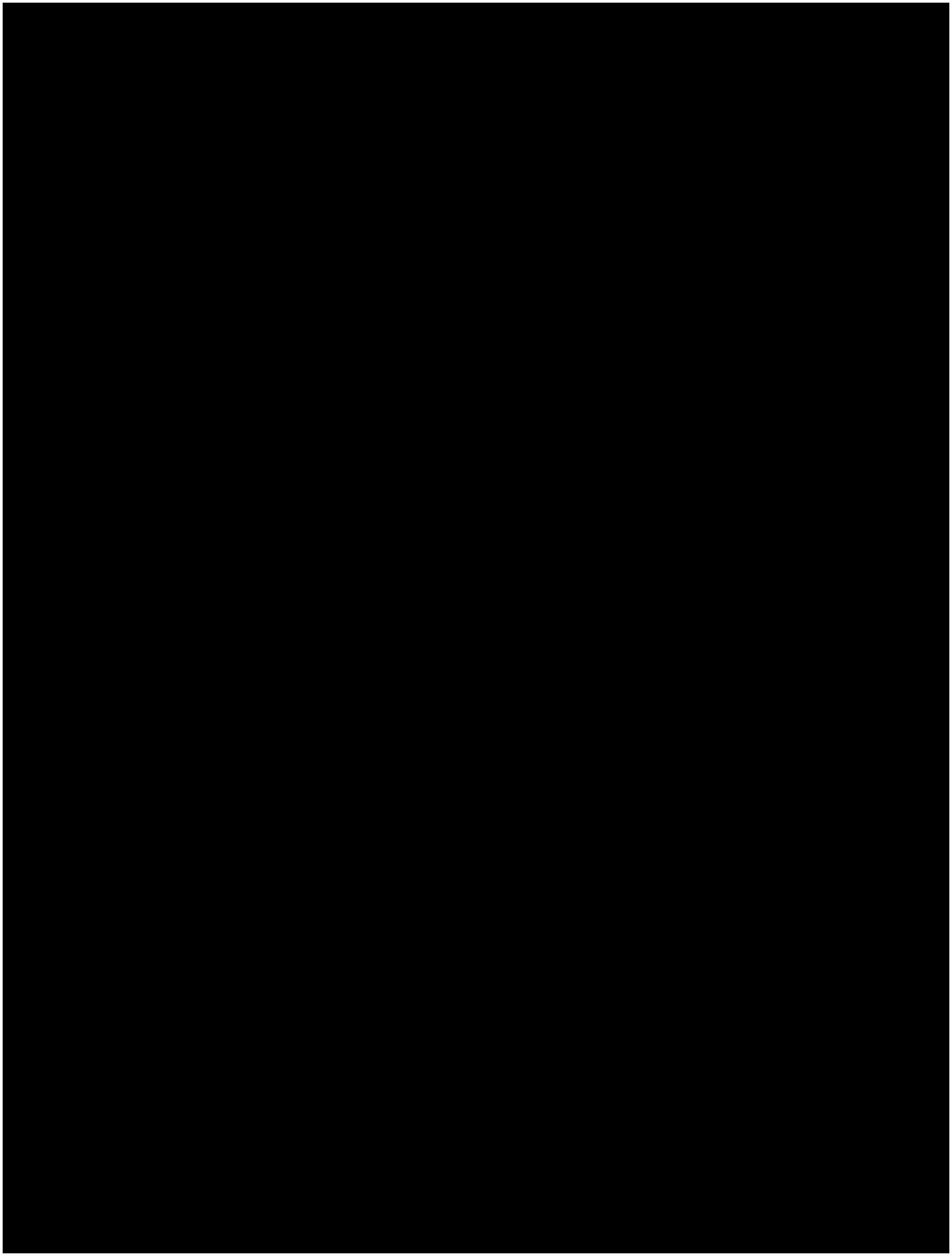
Sponsor Type: ? Sponsored By: ?

Recorder Type: ACA Recorded By: UAL

Date Submitted: 2010-05-13 Date Revised: 2010-05-25

Top of Page





Site: GR162 Retrieve Site

Site Name: UNNAMED

Location and Size

Easting: 401713 Northing: 3629080 Elevation: 125

Township: 21N Range: 01W Section: 13

SW 1/4 of NW 1/4 of SE 1/4

Major Axis: 40 Minor Axis: 10 Max Depth: 10

Location and Size

Preservation State: CULTIVATION

Immediate Destruction Pending: N Looting/Vandalism: N % Destroyed: 95

National Register Status: NO

Archaeological Information

Level of Investigation: INTENSIVE

Excavation Status: SURFACE & SHOVEL

Topographic Association: TERRACE

Physiographic District: FALL

Physiographic Section: COASTAL

Nearest Water Source: FIRST

Direction To: N Distance To: 60 At Confluence: ?

Drainage Basin: TOMBIGBEE

Ground Cover: CULTIVATION

Soil Type: RUSTON

Soil Texture Class: FINE SANDY LOAM

County Soil Survey:

Degree of Disturbance: ENTIRE

Characteristics

- ☐ Human Remains
- ☐ Features
- ☐ Petroglyph/Pictrograph
- ☐ Rockshelter
- ☐ Cave
- ☑ Artifact Scatter
- ☐ Midden
- ☐ Shell Midden
- ☐ Single Earthen Mound
- ☐ Multiple Earthen Mound
- ☐ Stone Mound(s)
- ☐ Weir
- ☐ Quarry
- ☐ Standing Historic Structure
- ☐ Historic Structure Site
- ☐ Historic Cemetery
- ☐ Still
- ☐ Mill
- ☐ Engineering
- ☐ Other

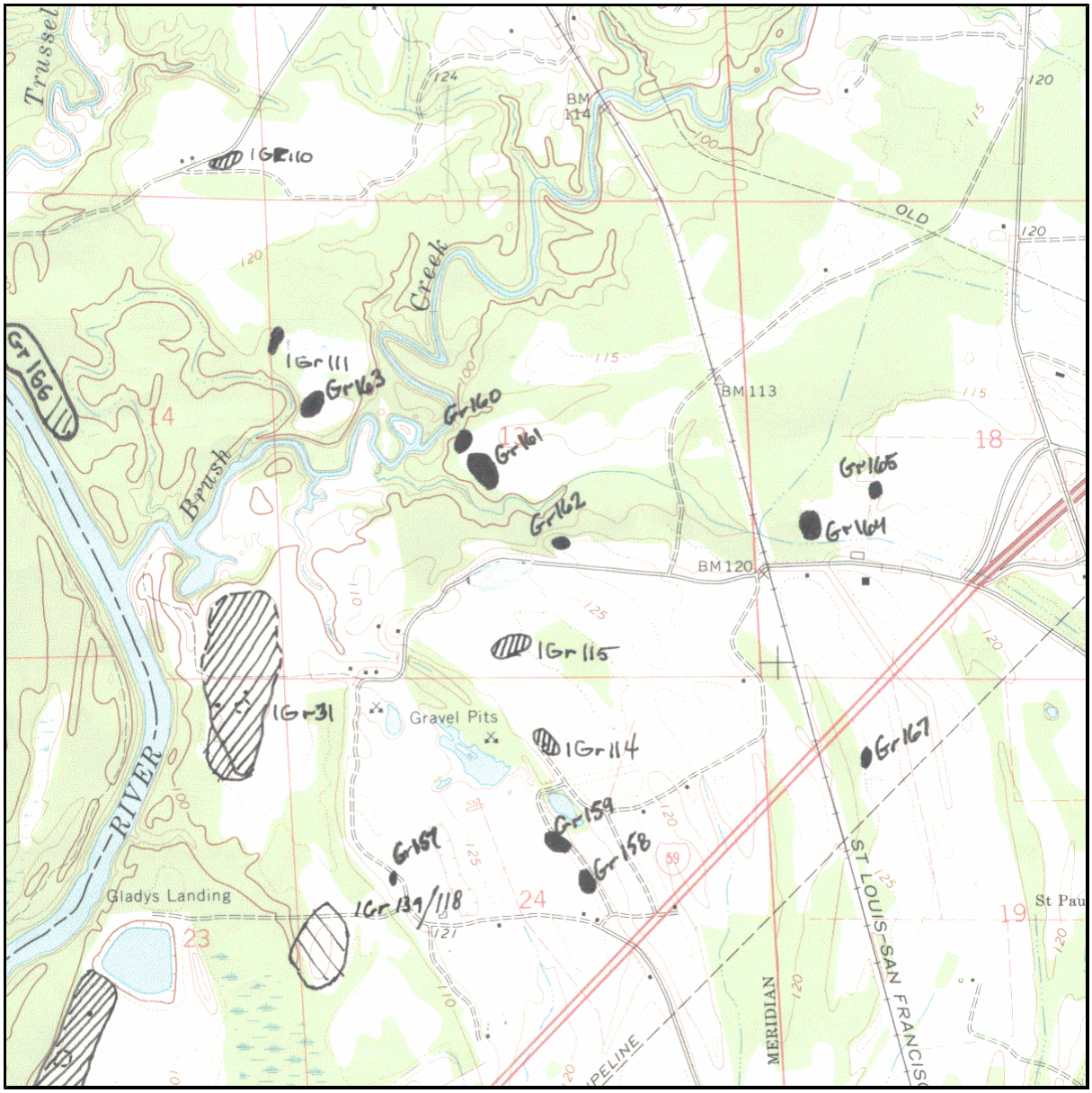
Components

20TH CENTURY NONABORIGINAL

UNVERIFIED

Comments

1GR162 WAS DISCOVERED BY BRANDON THOMPSON OF THE UNIVERSITY OF ALABAMA. SITE 1GR162 IS LOCATED IN ON THE SECOND TERRACE SOUTH OF A FIRST-ORDER STREAM IN THE CENTER OF THE SURVEY AREA AND IS IDENTIFIED AS AN EARLY TO MID 20TH CENTURY NONABORIGINAL HISTORIC REFUSE SCATTER. A TOTAL OF 16 SHOVEL TESTS, 4 POSITIVE FOR CULTURAL MATERIALS, WAS EXCAVATED TO DETERMINE THE EXTENT OF CULTURAL DEPOSITS. THE SITE CURRENTLY LIES WITHIN A PERIODICALLY PLOWED WHEAT FIELD WITH AN ACCESS ROAD TO THE SOUTH, AN INTERMITTED DRAINAGE TO THE SOUTH AND WEST, AND A RAILROAD TO THE NORTH. DUE TO THE ACCESS ROAD, WETLANDS, AND POND TO THE EAST, ADDITIONALLY SHOVEL TESTS IN



USGS 7.5' Topographic Map: BOLIGEE

Record Type: ☐ Clear ☐ Master ☐ Synonym

Form Status: ☐ Final ☐ Verified ☑ New

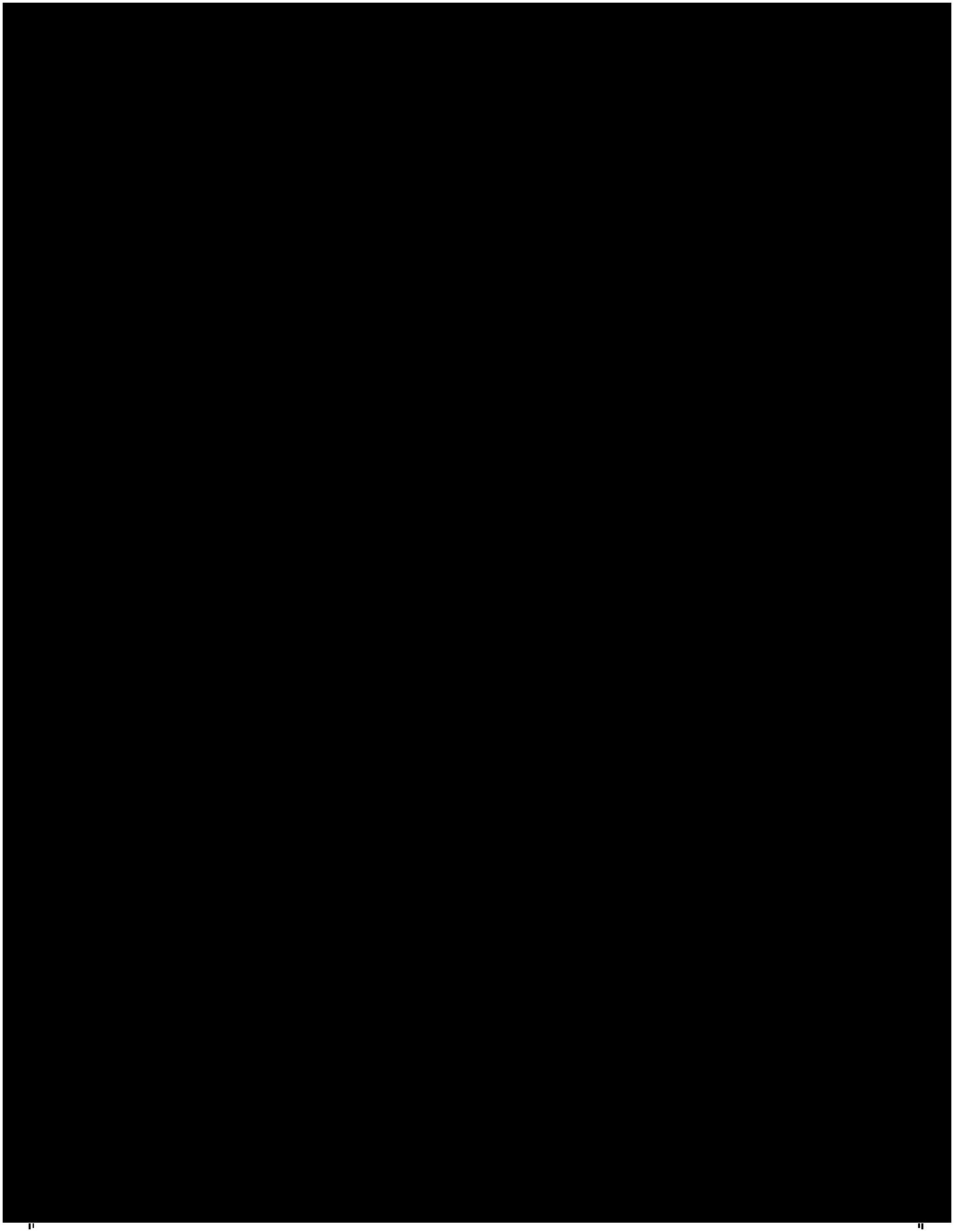
Form Completion: ☐ Final ☐ Map Search ☐ Literature Search

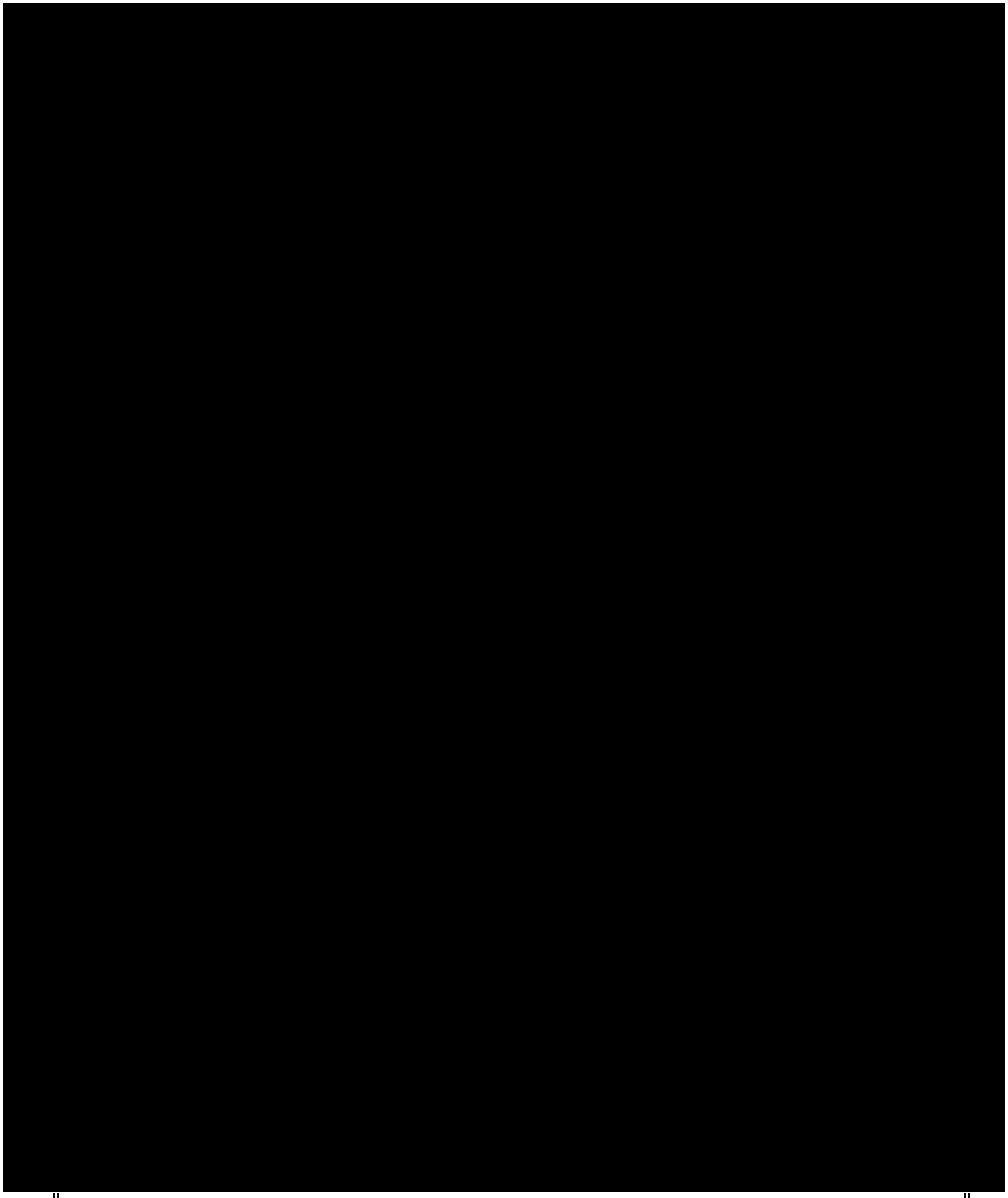
Sponsor Type: ? Sponsored By: ?

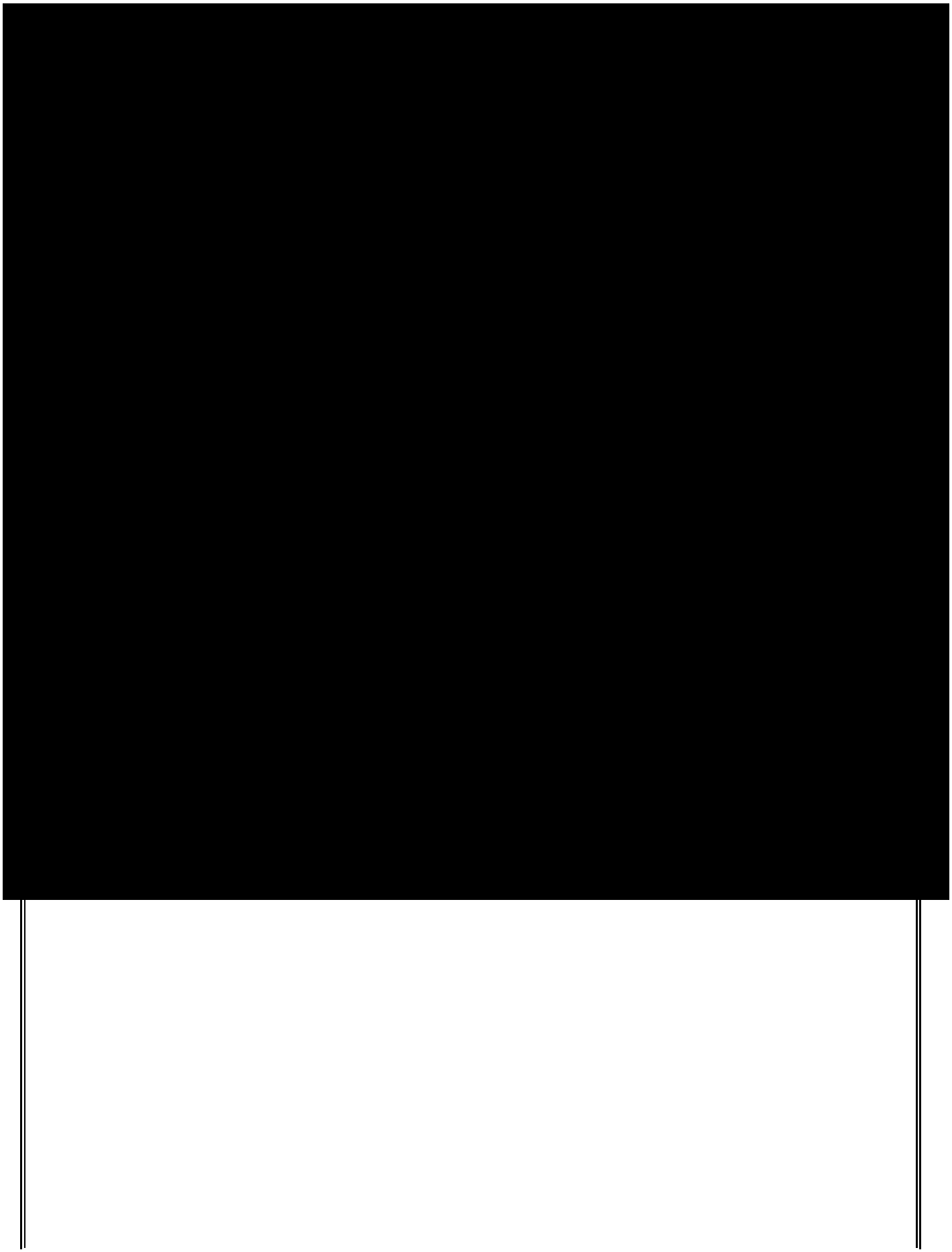
Recorder Type: ACA Recorded By: UAL

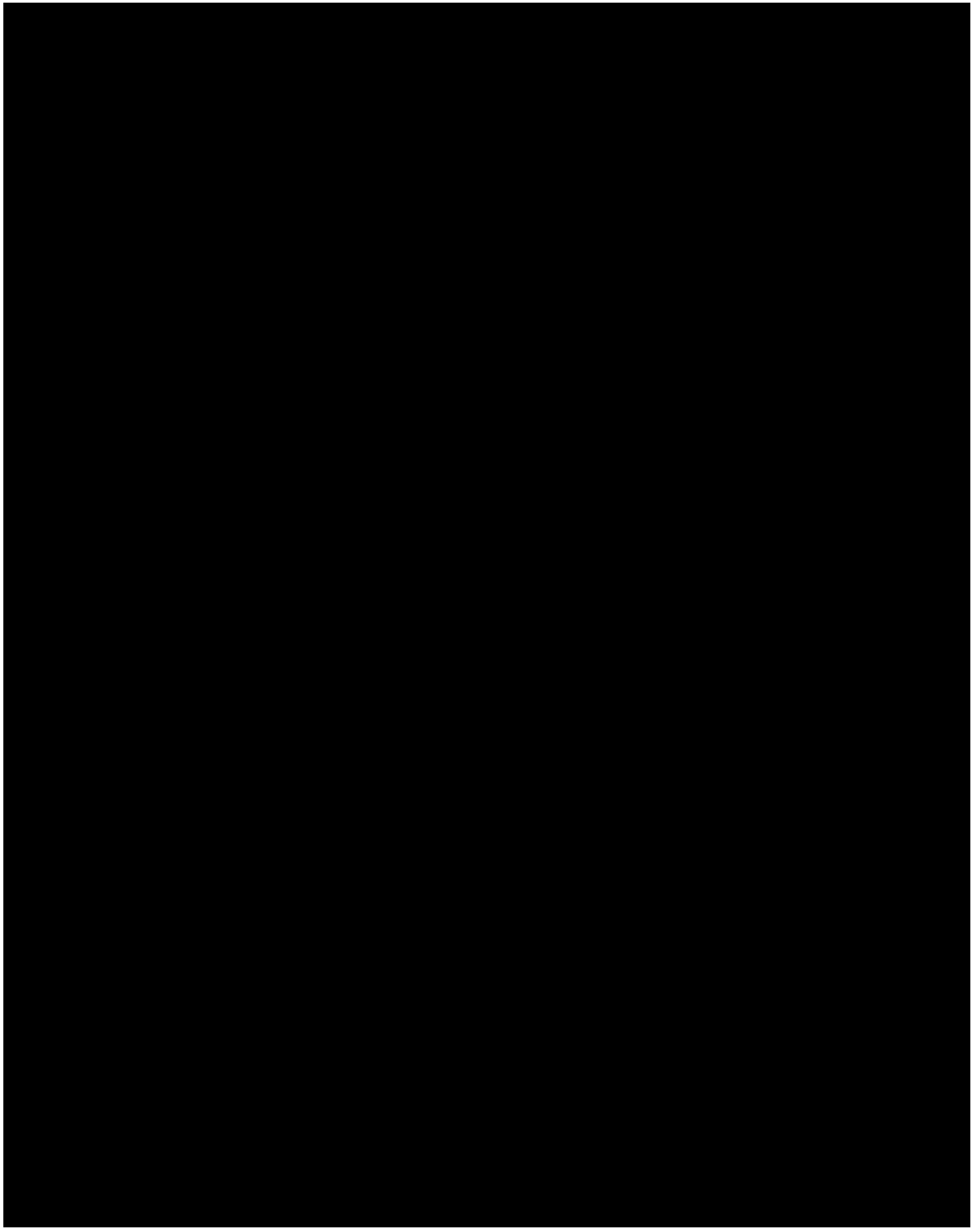
Date Submitted: 2010-05-13 Date Revised: 2010-05-25

Top of Page

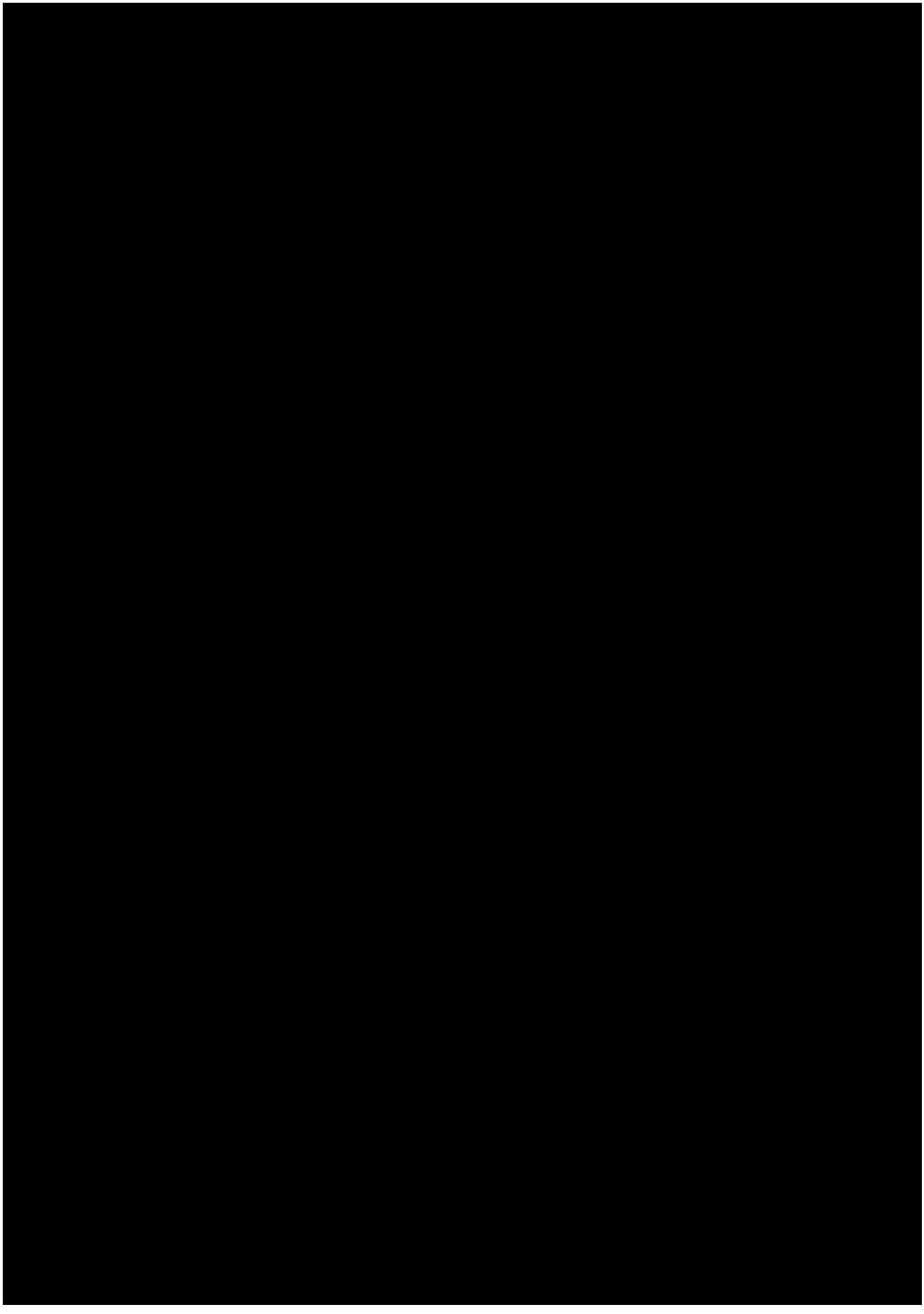


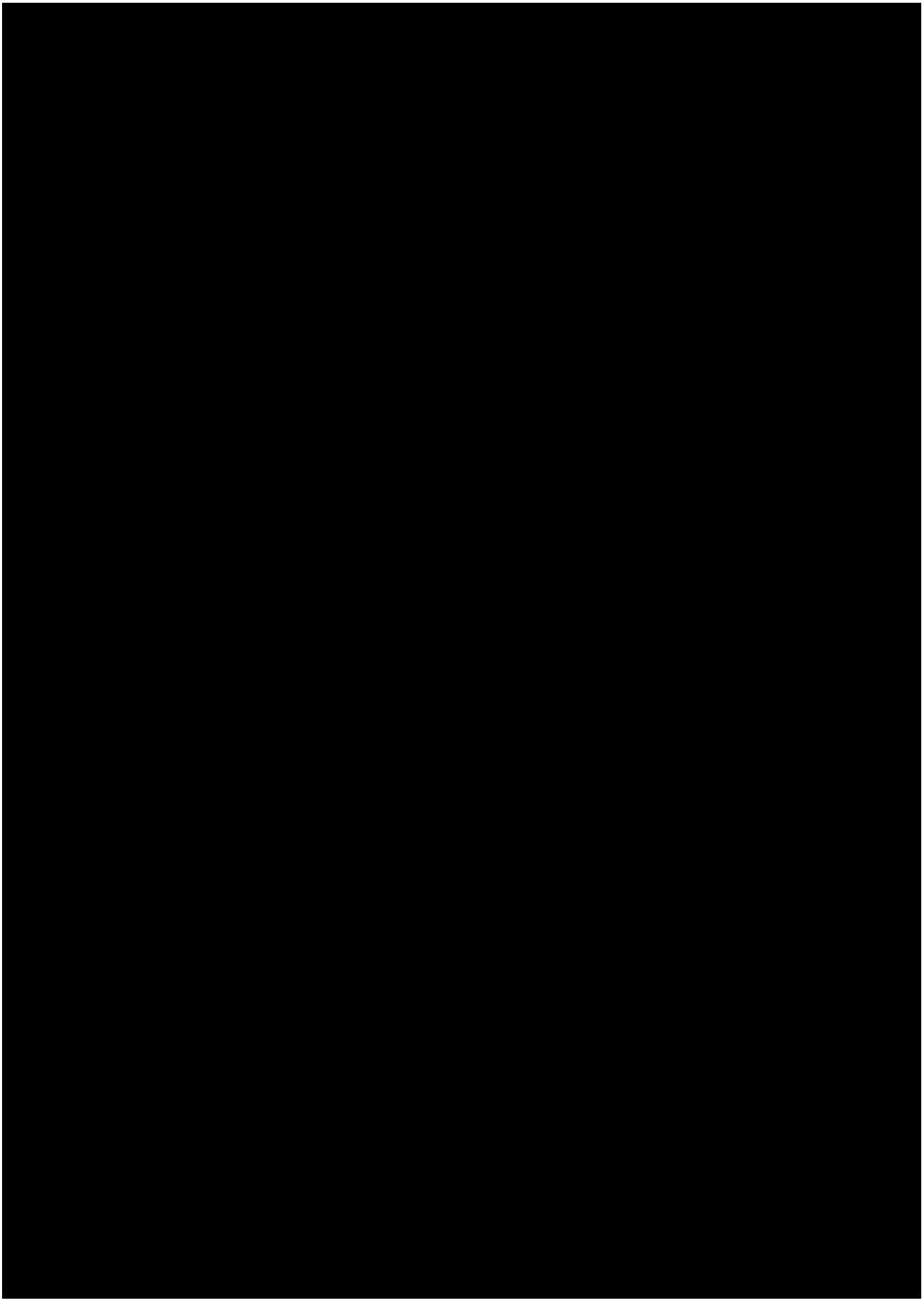


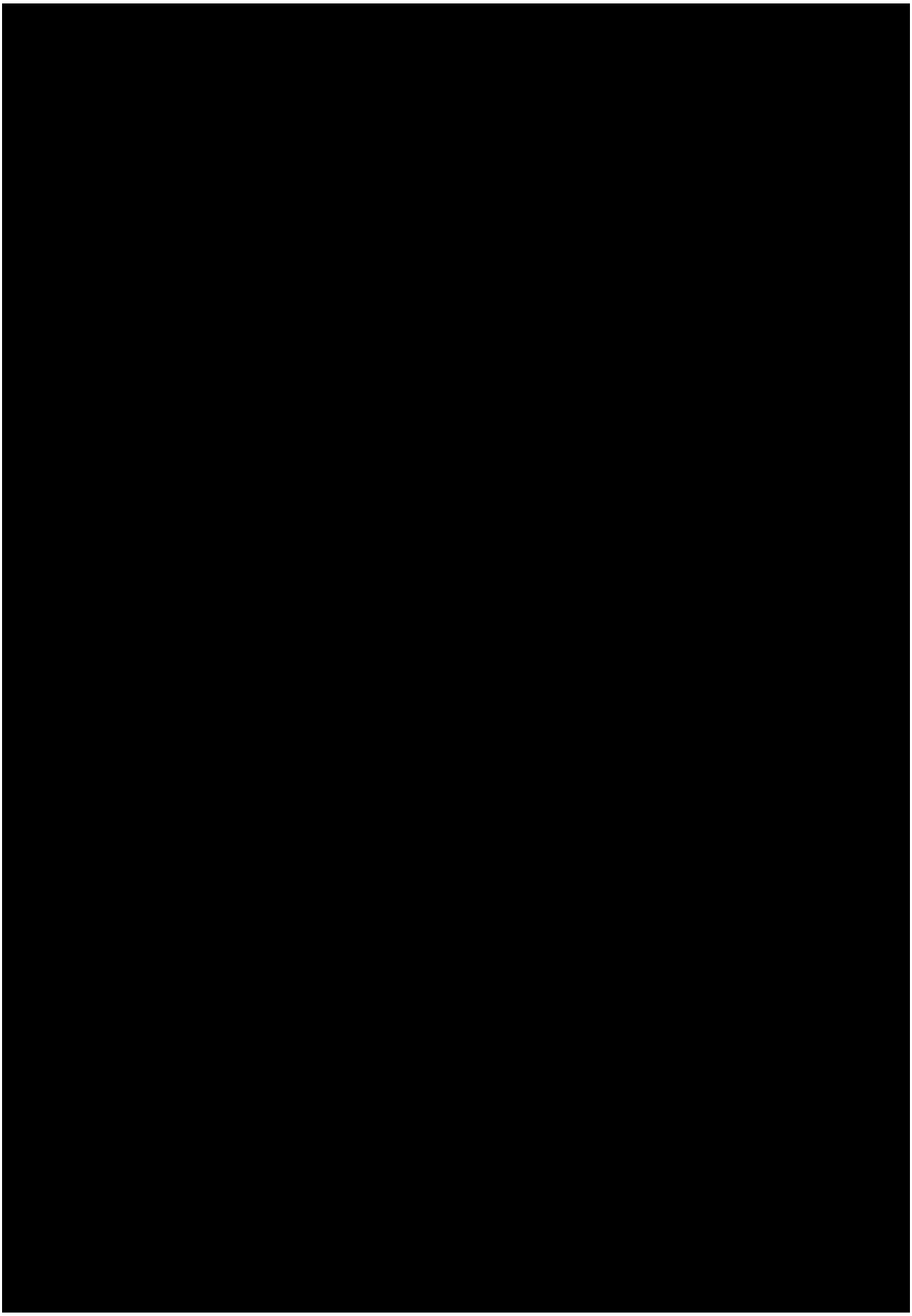


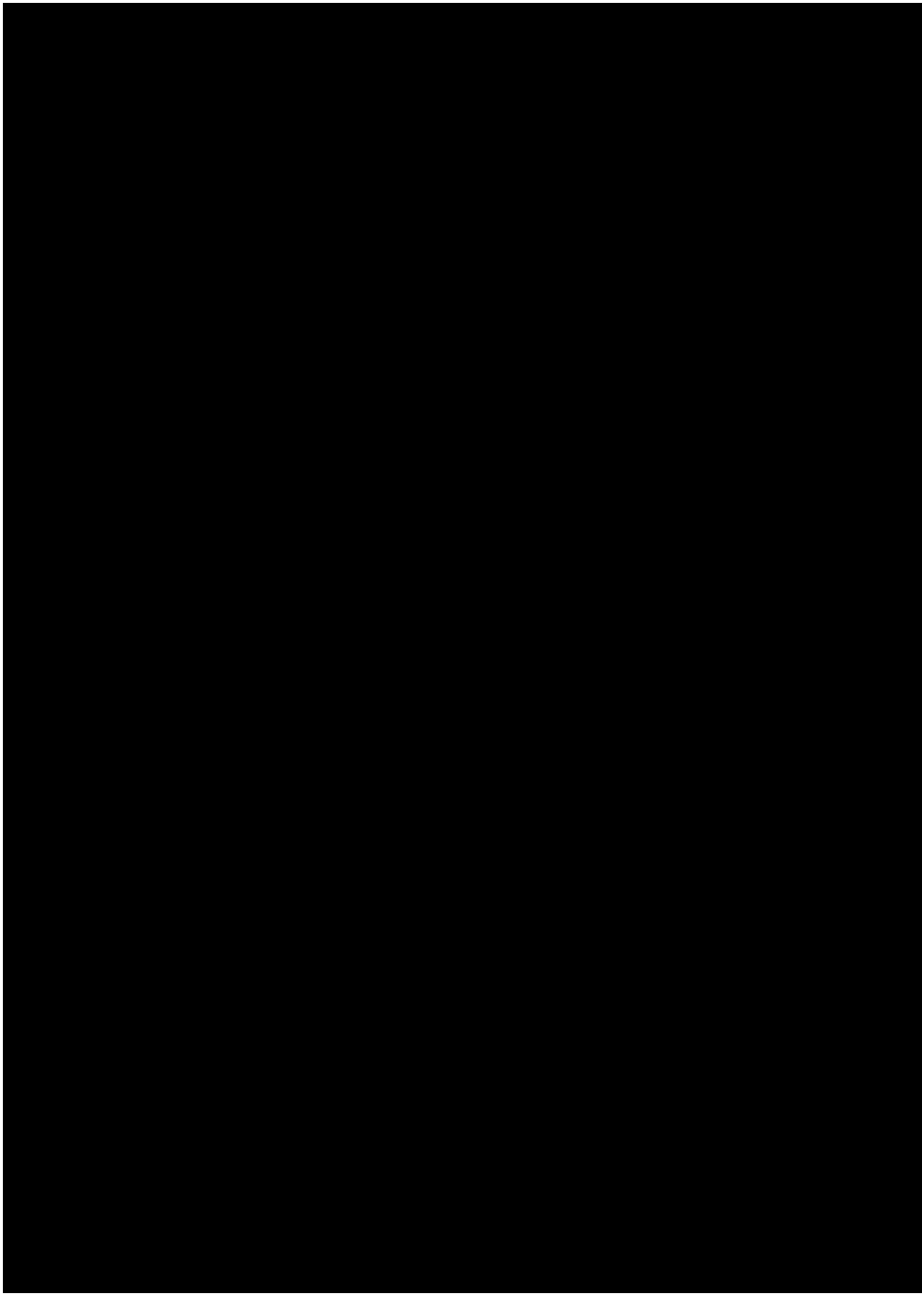


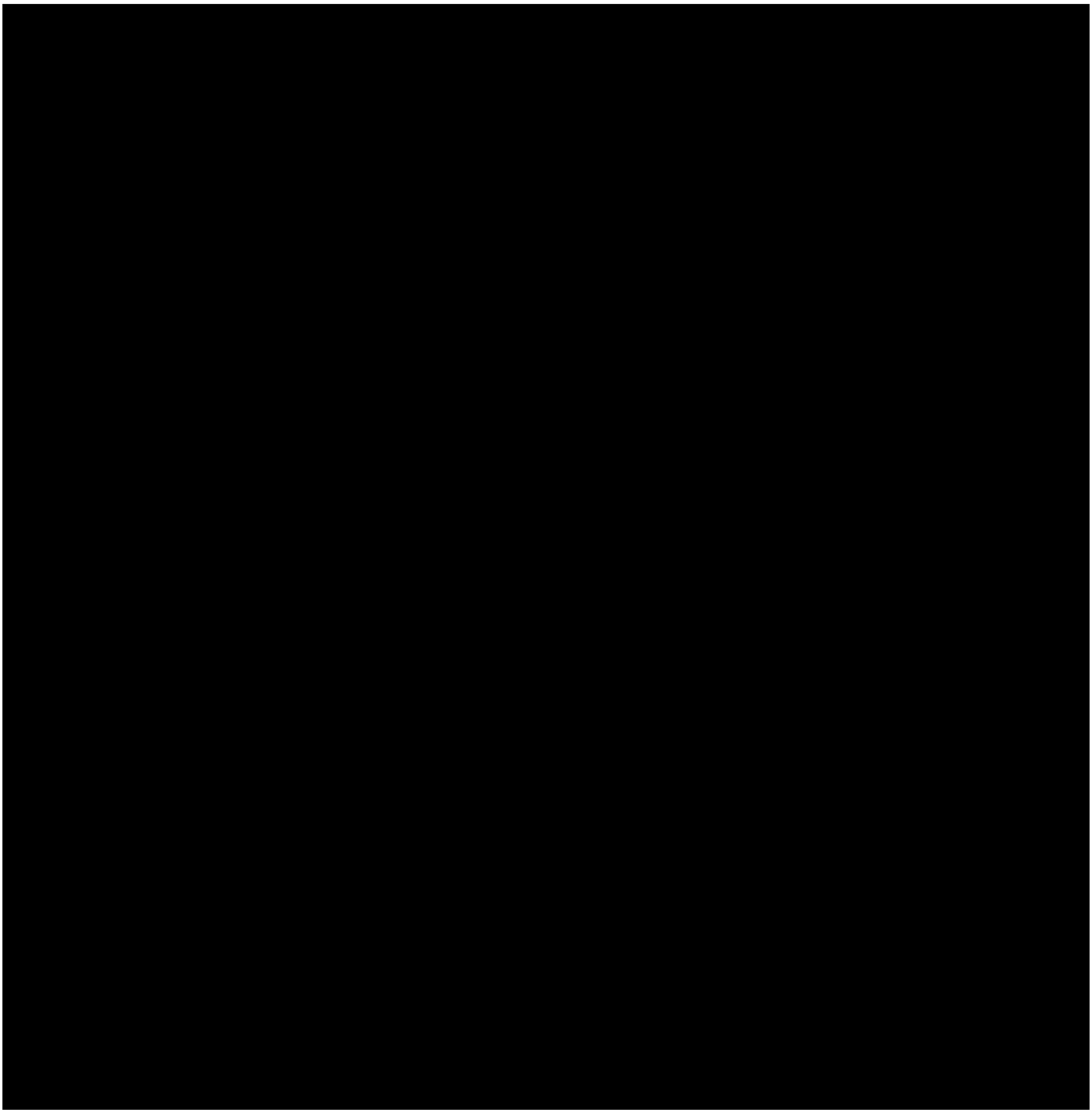
APPENDIX B



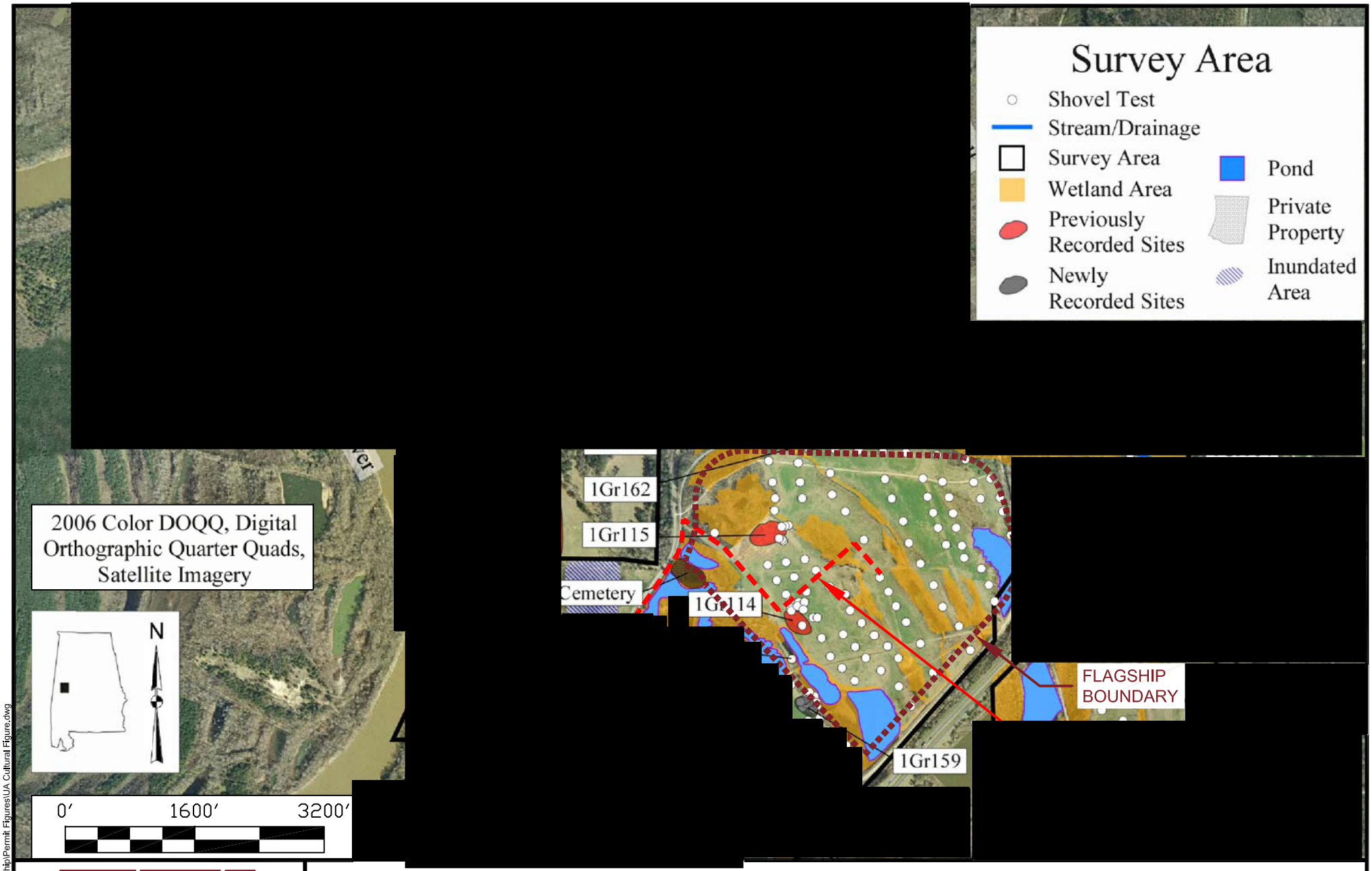








APPENDIX C



TTL
3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

TTL PROJECT NO: 600110007
PROJECT DATE: June 8, 2010

F:\Secretary\2009\600109\007 Flagship\Permit Figures\UA Cultural Figure.dwg

Figure 1. Flagship Property and Cultural Resources

Crossroads of America Industrial Park

Boligee, Greene County, Alabama

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE
CORPS OF ENGINEERS
BIRMINGHAM FIELD OFFICE
218 SUMMIT PARKWAY, SUITE 222
HOMEWOOD, ALABAMA 35209

REPLY TO
ATTENTION OF

CESAM RD-I- N
PUBLIC NOTICE NO.
SAM-2010-000672-CHE

August 2, 2010

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS AND
STATE OF ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

PROPOSED IMPACTS TO 22.6 ACRES OF WETLANDS AND OTHER WATERS OF THE UNITED STATES FOR THE CONSTRUCTION OF A FEEDSTOCK FLEXIBLE ETHANOL FACILITY

TO WHOM IT MAY CONCERN: This District has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 USC 1344). Please communicate this information to interested parties.

APPLICANT: Industrial Development Board of Greene County
Attention: Ms. Phillis Belcher
Post Office Box 70
Eutaw, Alabama 35462

AGENT: TTL, Inc.
Attention: Mr. Robert M. White
3516 Greensboro Avenue
Drawer 1128
Tuscaloosa, Alabama 35403

LOCATION: In wetlands, ephemeral streams, and unnamed intermittent streams at Boligee, Green County Alabama (32.79191,-88.049133).

WORK: The applicant proposes to fill 10.2 acres of wetlands and ephemeral drainageways and to dredge 12.4 acres of wetlands to "reactivate" a former borrow / gravel pit in association with the construction of a feedstock flexible ethanol facility, known as the "Flagship" site.

PROJECT PURPOSE: The project propose is to construct a feedstock flexible ethanol facility.

ADDITIONAL INFORMATION: The applicant has provided the following additional information: "Coskata's technology that is to be employed at Flagship, combines proprietary microorganisms and bioreactor technology with gasification and ethanol separation technologies to produce cellulosic ethanol from non-food feedstocks that are both economical and environmentally sustainable. Flagship will be the first commercial facility in the world to utilize

this innovative technology platform. It is expected that Flagship will be of interest to economic leaders worldwide as a model of how to utilize typical carbon-containing waste streams in a process to produce fuel-grade ethanol that is cost competitive with gasoline. Coskata's flexible process can utilize most carbon-containing feedstock. The feedstock would include cellulose-based energy crops such as switchgrass, miscanthus, wood chips, agricultural residues (bagasse, corn stover, etc.) as well as waste streams such as old tires and municipal and industrial organic waste. Coskata predicts that annually the facility will produce 55 million gallons of fuel-grade ethanol from woodchips. Annually, the process is expected to utilize 1.1 million green tons of wood residues which would be supplied by local producers in the Black Belt Region of Alabama. The first commercially viable feedstock flexible ethanol facility needs to be located in an area with a plentiful supply of wood biomass. Alabama has the third most timberland acreage in the 48 contiguous states. The forest industry is the state's largest manufacturing industry, producing an estimated $15.39 billion worth of products in 2005. The Forest Products Development Center, Auburn University, prepared an analysis of woody biomass resources located within a 75-mile radius of Boligee, Alabama in 2008. The Center estimated that within the 75-mile radius, there are about 3.39 million dry tons of mill residues produced annually from existing forest products manufacturing operations. The Center also estimates there are an estimated 2.44 million dry tons per year of forest residues potentially available. The study area has an estimated 8.64 million acres of timberland which equates to about 76.6 percent forest cover. Greene County Alabama is a deeply impoverished rural area in west-central Alabama. Based on 2000 Census Bureau data, Greene County ranks 67 out of the 67 Alabama counties as the most impoverished. The median income reported for a household in the County was $19,819, and the median income for a family was $24,604. The estimated mean household estimate for 2005 is $20,968 and the projected medium household income $22,689. Greene County retains distinctively higher unemployment rates as shown in the unemployment rates published by Bureau of Labor of Statistics for July 2009. Greene County unemployment rate was 13.8 percent. The State of Alabama had an unemployment rate of 10.5 percent for that same time and the National unemployment average was 9.4 percent. The construction of Flagship should create about 300 construction jobs. The operation of Flagship would create about 125 to 130 direct jobs. Once the facility is operational, Flagship will be indirectly responsible for about 500 additional jobs that will supply the feedstock that is needed. The proposed location for the Flagship operation is a 235-acre parcel of land located in the Crossroads of America Industrial Park (COAIP) in Greene County, Alabama. The COAIP is owned by the Industrial Development Board of Greene County, who is the permit applicant. The undeveloped, agricultural parcel of land is depicted on the attached Figure 1, a portion of the U.S.G.S. 7.5-minute topographic Boligee, AL quadrangle. Figure 2 is an aerial image of the subject parcel."

Additionally, the applicant intends to seek separate verification under Nationwide Permit 7, *Outfall Structures and Associated Intake Structures*, for a diffuser that will be located in the Tombigbee River.

AVOIDANCE AND MINIMIZATION: The agent has submitted the following statement: "The Crossroads of America Industrial Park has two large (greater than 200 acres) sites located within the park that are suitable for Coskata's Flagship facility (Figure 3). The large site locations differ in present and historical use and ecological value. Located in the northwestern portion of the park is a large Greenfield area that is suitable in size for the Flagship facility. A second large site is located in the southern portion of the Industrial Park, and which is currently being leased for agriculture. The northwestern Greenfield site is undeveloped and leased for hunting. The site has been timbered in the past but is currently covered with mature mixed hardwood forest. Canopy cover in this area is greater than 90 percent and the area is contiguous with similar Greenfields outside of the Industrial Park. Within this Greenfield area, vegetation is healthy and diverse and wildlife is abundant. Aquatic resources in this area include hardwood bottom wetlands and intermittent streams. These aquatic resources are fully functional. Coskata avoided impacts of high quality aquatic resources within this Greenfield area by selecting the southern potential site location for their facility. The final site selected within the Crossroads of America Industrial Park for the Flagship Project is not a Greenfield site. The proposed location has been utilized for sand/gravel mining and agriculture for more than 50 years. The site does have remnants of emergent wetlands but the wetlands have been mostly impacted by farming. Several of the wetland features are the result of ditching to drain the farmland. The wetlands within the Coskata site are low quality as hydrology, soil, and vegetation have all been impacted by historical use. Figure 4 depicts the subject Flagship parcel and surrounding property ownership. Representatives of Coskata and Harris Group traversed the selected site location in 2008. After the site reconnaissance, Coskata, Harris Group, and the Greene County Industrial Development Board met to develop scenarios for the layout of the facility and the attendant features in a manner to avoid as much direct wetland impacts and reduce secondary impacts where possible. Figure 5 depicts the USACE verified wetland delineation upon the Flagship parcel. After considering numerous possible layout options, Coskata and Harris Group were able to produce a site layout that would allow for efficient use of space and allow for the logical sequencing of their technology process. The initial site plan would have impacted about 36.14 of wetlands. The final site layout reduced wetland impacts to about 22.6 acres of low quality wetlands or a reduction of approximately 38 percent of the originally proposed plan. Figure 6 depicts the redesigned Flagship facility layout/footprint and areas of disturbance to wetlands and waters of the U.S." *The U.S. Army Corps of Engineers has not evaluated the adequacy of the avoidance and minimization statement at this time*.

COMPENSATORY MITIGATION: The applicant is proposing off-site, in-kind permittee mitigation. In regards to the proposed mitigation, the agent has submitted the following statement: "The conceptual mitigation plan involves restoration and enhancement of [~ 45 acres of] wetlands that have been degraded through past land use and landscape modification." *The U.S. Army Corps of Engineers has not evaluated the adequacy of the mitigation proposal at this time*.

ALTERNATIVES: The agent has submitted the following statement: "Site selection for Coskata's Flagship facility was contingent, first and foremost, upon the site being located in an area that contained a plentiful supply of wood biomass. In 2008, Coskata sponsored a high level scan of the United States for regions with a plentiful supply of wood biomass and determined that the Southeast United States was the region with the highest potential. Additionally, the site needed to be located near a major transportation artery and have access to plentiful water for the ethanol production process. Alternate transportation venues (rail and water), though not a current site requirement, could be a future advantage for receiving feedstock and/or shipping of finished product. After identifying the Southeast as the region with the highest wood biomass potential, Coskata then started working with state development offices across the Southeast to identify sites within a 50-mile radius of the regions with the highest wood biomass potential. Among the Southeastern states, Alabama was the most promising because it contained five separate areas with high wood biomass potential. The potential locations within Alabama included the areas around Boligee/Tuscaloosa, Childersburg, Scottsboro, Ft. Payne, and Troy. Alabama also stood out because of the resources and support provided by Auburn University and the Alabama Development Office. The Boligee/Tuscaloosa area was identified as having the most potential of the five locations because of the potential feedstock located within each county and the plentiful feedstock located in adjacent counties. The Alabama Development Office identified and presented Coskata with three potential sites in the Boligee/Tuscaloosa area that matched their initial site selection criteria. Two sites were located in Tuscaloosa County and one site was located in the Crossroads of America Industrial Park in Boligee. Representatives from Coskata visited each of the sites in August 2008. One of the sites in Tuscaloosa was immediately eliminated from consideration because of the small size and site layout. The remaining two sites were screened and rated by Coskata using their site selection criteria, which included availability of utility and logistics infrastructure, and land features (size, layout, preparation needed, environmental risk, and price). While both sites ranked high, the Tuscaloosa site was eliminated because the owner was not willing to sell; therefore, the focus of Coskata commercial development efforts became the Crossroads of America Industrial Park in Boligee which meet all of their site selection criteria. The Crossroads of America Industrial Park also had features that would be appreciated if future expansion became desirable. Representatives of the Crossroads of America Industrial Park have shown the Coskata selection team four possible parcels located within the park that were thought suitable for site location. Figure 3 depicts the Flagship parcel of land and the three other parcels considered during alternatives analysis of near-vicinity property. It was determined that Crossroads Flagship Site 1 and Site 2 were too small in acreage to allow adequate placement of the proposed facility. There are two large parcels greater than 200 acres situated within the park. The sites labeled Flagship Site 4 "Northwest" and Flagship Site 3 "South" offered different park infrastructure advantages to Coskata. The northwest site is situated close to the Tombigbee River and adjacent to a proposed future second port facility in the park. There are existing water and sewer lines, and a frontage road along the eastern border of the northwest site. Three major areas of concern became apparent for the northwest site that included the following: 1. Rail access would require extending the existing railroad spur about ½ mile to the northwest that also would cross Brush Creek, creating both environmental issues

and large construction costs. 2. The initial layout of the facility determined that more than 50 percent of the area proposed for permanent structures lay below the 100-year flood elevation. 3. The existing frontage road to the northwest site would have to be upgraded substantially to support anticipated truck traffic. The evaluation of Flagship Site 3 "South" demonstrated very strong advantages over the northwest site. The parcel boundaries of Site 3 "South" would allow the facility layout of structures and processes to operate more efficiently and safely. A north access road to accommodate the 150 daily truck loads of wood would be totally separated from the employee and product traffic along the south frontage road. The existing rail spur borders the entire north boundary of this site. The majority of the site is relatively flat, open fields that currently contain agricultural crops. All elevation contours of the proposed areas for permanent structures are above the 100-year flood elevation. The existing topography would reduce the site grading requirements considerably as compared to the northwest parcel. The final site selected within the Crossroads of America Industrial Park for the Flagship Project is not a Greenfield site. The proposed location has been utilized for sand/gravel mining and agriculture for more than 50 years. The site does have remnants of emergent wetlands but the wetlands have been mostly impacted by farming. The wetlands within the Coskata site are low quality as hydrology, soil, and vegetation have all been impacted by historical use. By contrast, the other potential Flagship site location within the industrial park is a Greenfield site. The Greenfield site within the industrial park has aquatic resources (though not pristine), has not been as impacted by historical mining or agricultural use, and is of much higher quality. *The U.S. Army Corps of Engineers has not evaluated the adequacy of the alternatives statement at this time*.

WATER QUALITY: The applicant has applied for state certification in accordance with Section 401(a)(1) of the Clean Water Act, and has certified that the proposed activity complies with and will be conducted in a manner that is consistent with the State Coastal Zone Management Program. Upon completion of the required advertising and public comment review, a determination relative to consistency will be made by the Alabama Department of Environmental Management.

COMMENTS: This public notice is being distributed to all known interested persons in order to assist in developing facts on which a decision by the U.S. Army Corps of Engineers can be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition. The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and use of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation,

water quality, energy needs, safety, food production, and in general, the needs and welfare of the people.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state with particularity, the reasons for holding a public hearing.

Evaluation of the probable impacts involving deposits of dredged or fill material into waters of the United States will include the application of guidelines established by the Administrator of the U.S. Environmental Protection Agency.

The National Register of Historic Places has been consulted and no properties listed in or eligible for the National Register are known to exist which would be affected by the proposed work. Additionally the applicant has conducted a Phase I Study of the project site which has been submitted to the Alabama Historical Commission (*AHC 10-0911*). This review constitutes the full extent of cultural resources investigations unless comment to this notice is received documenting that significant sites or properties exist which may be affected by this work, or that adequately documents that a potential exists for the location of significant sites or properties within the permit area. Copies of this notice are being sent to the U.S. Department of the Interior, National Park Service, Division of Archeological Services.

A preliminary review of this application and the U.S. Department of the Interior List of Endangered and Threatened Wildlife and Plants indicates that the proposed activity will not affect listed endangered or threatened species, or their critical habitat. Additionally, the applicant has surveyed the site for threatened and endangered plant and animal species; however, this report has yet to be reviewed the U.S. Fish and Wildlife Service. The National Marine Fisheries Service requires the evaluation of impacts to Essential Fish Habitat (EFH) of estuarine species. The proposed project will not impact EFH.

Correspondence concerning this Public Notice should refer to Public Notice Number listed at the beginning of this document and should be directed to:

District Engineer
ATTN: Casey Ehorn
U.S. Army Engineer District, Mobile
Birmingham Field Office
218 Summit Parkway, Suite 222
Homewood, Alabama 35209

with a copy to the:

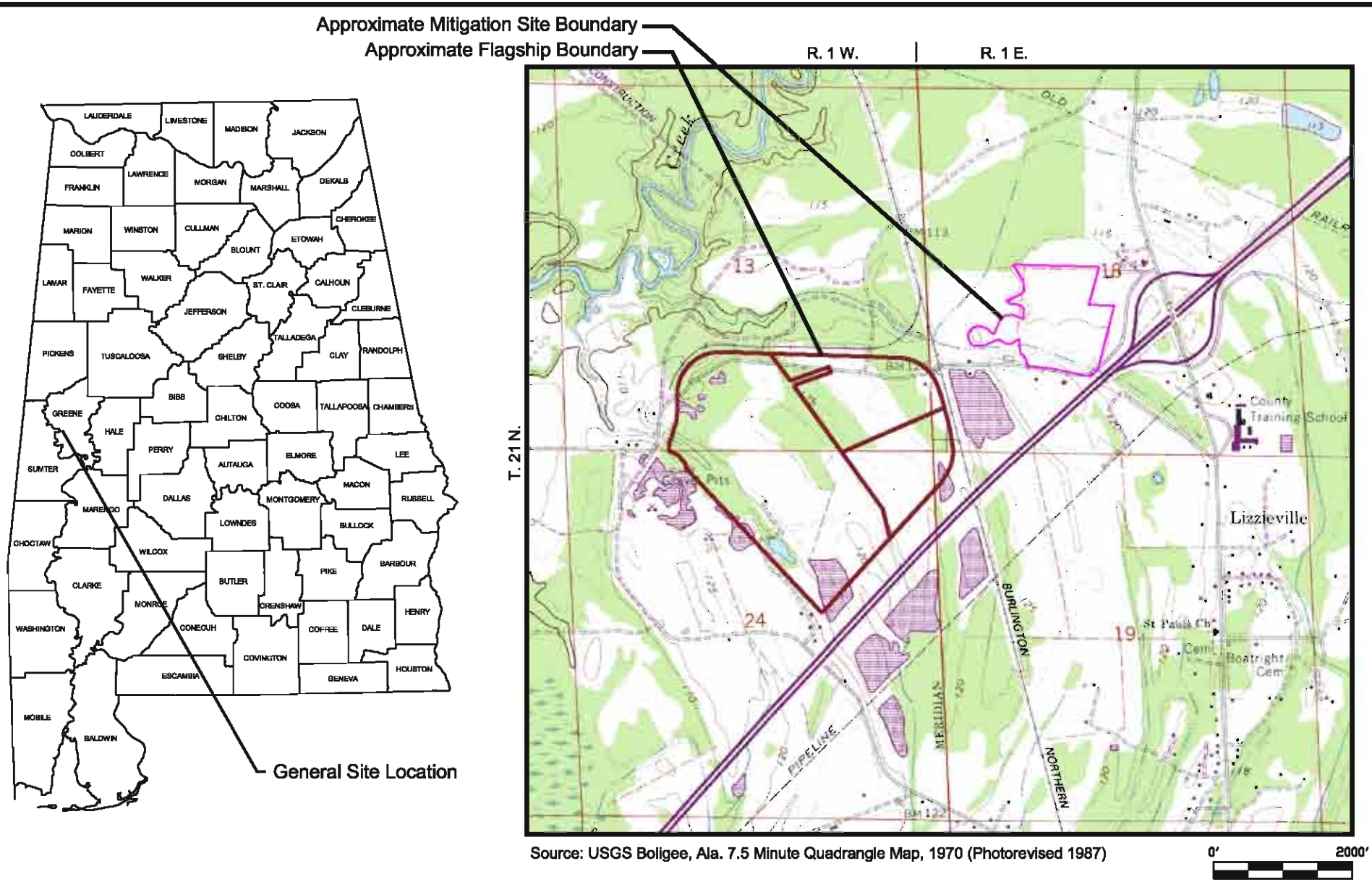
Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463

All comments must be sent in time to be received not later than 30 days from the date of this notice.

If you have any questions concerning this publication, you may contact Mr. Casey Ehorn at telephone number (205) 290-9096. For additional information about our Regulatory Program, please visit our web site at www.sam.usace.army.mil/RD/reg, and please take a moment to complete our customer satisfaction survey while you're there. Your responses are appreciated and will allow us to improve our services.

MOBILE DISTRICT
U.S. Army Corps of Engineers

Enclosure



Source: USGS Boligee, Ala. 7.5 Minute Quadrangle Map, 1970 (Photorevised 1987)

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

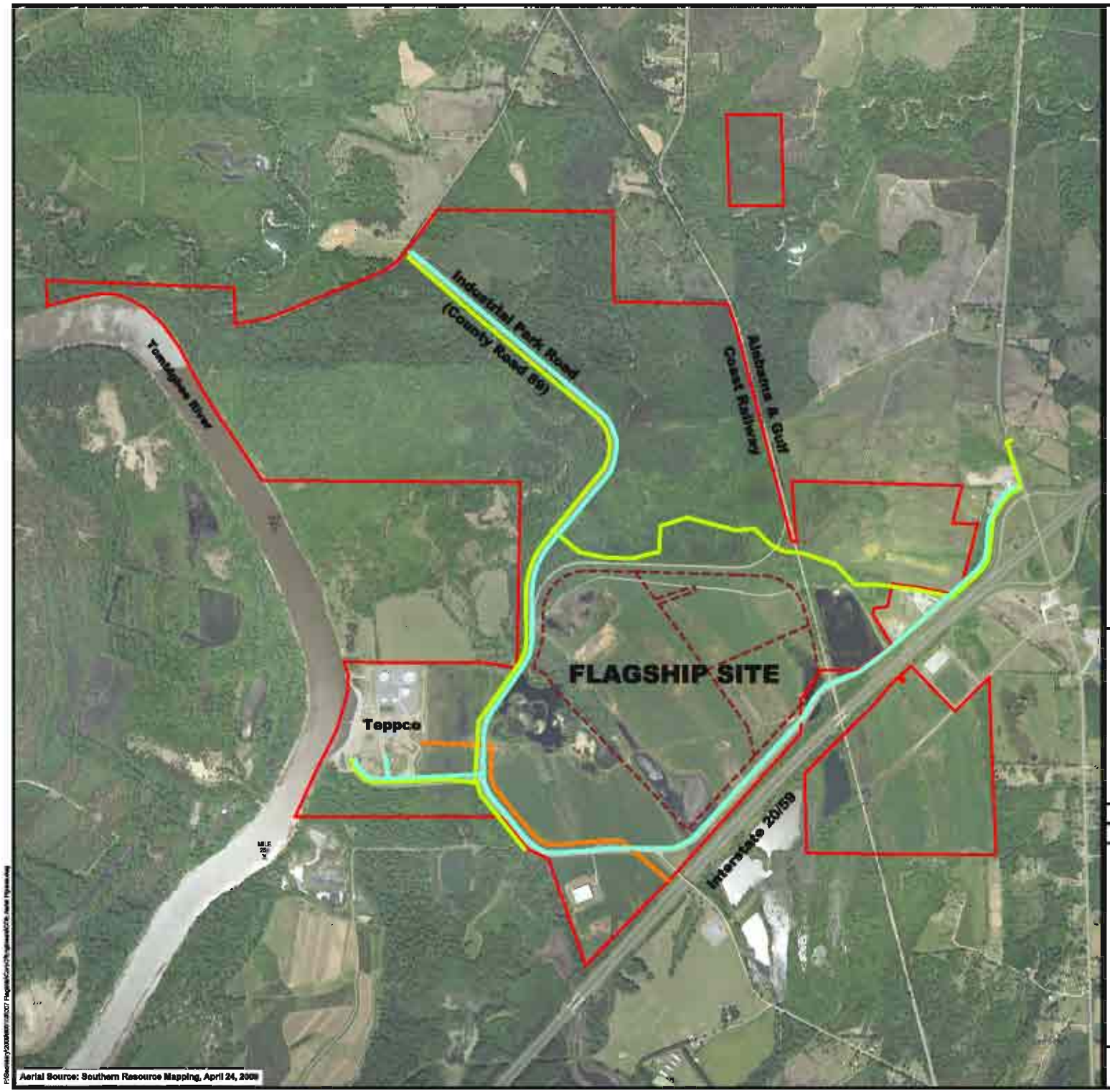
TTL PROJECT NO: 600109007
PROJECT DATE: June 16, 2010

F:\Secretary\2009\600109007 Flagship\Permit Figures\Permit Fig 1 Topo.dwg

Figure 1. Site Location and Topographic Map

Sec. 13 and 24, T. 21 N., R. 1 W., and Sec. 18 and 19, T. 21 N., R. 1 E., of the Boligee, Ala. 7.5 Minute Quadrangle Map
Proposed Flagship and Mitigation Bank Boundaries
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

1" = 2000'
(Approximate)



LEGEND

- Draft Park Boundary
- Approximate Sewer Line Locations
- Approximate Water Line Locations
- Approximate Colonial Pipeline Location
- Draft Flagship Site Boundary

Note: Utility scale and locations are shown exaggerated for clarity

0' 2000' 4000'

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

TTL PROJECT NO: 600109007

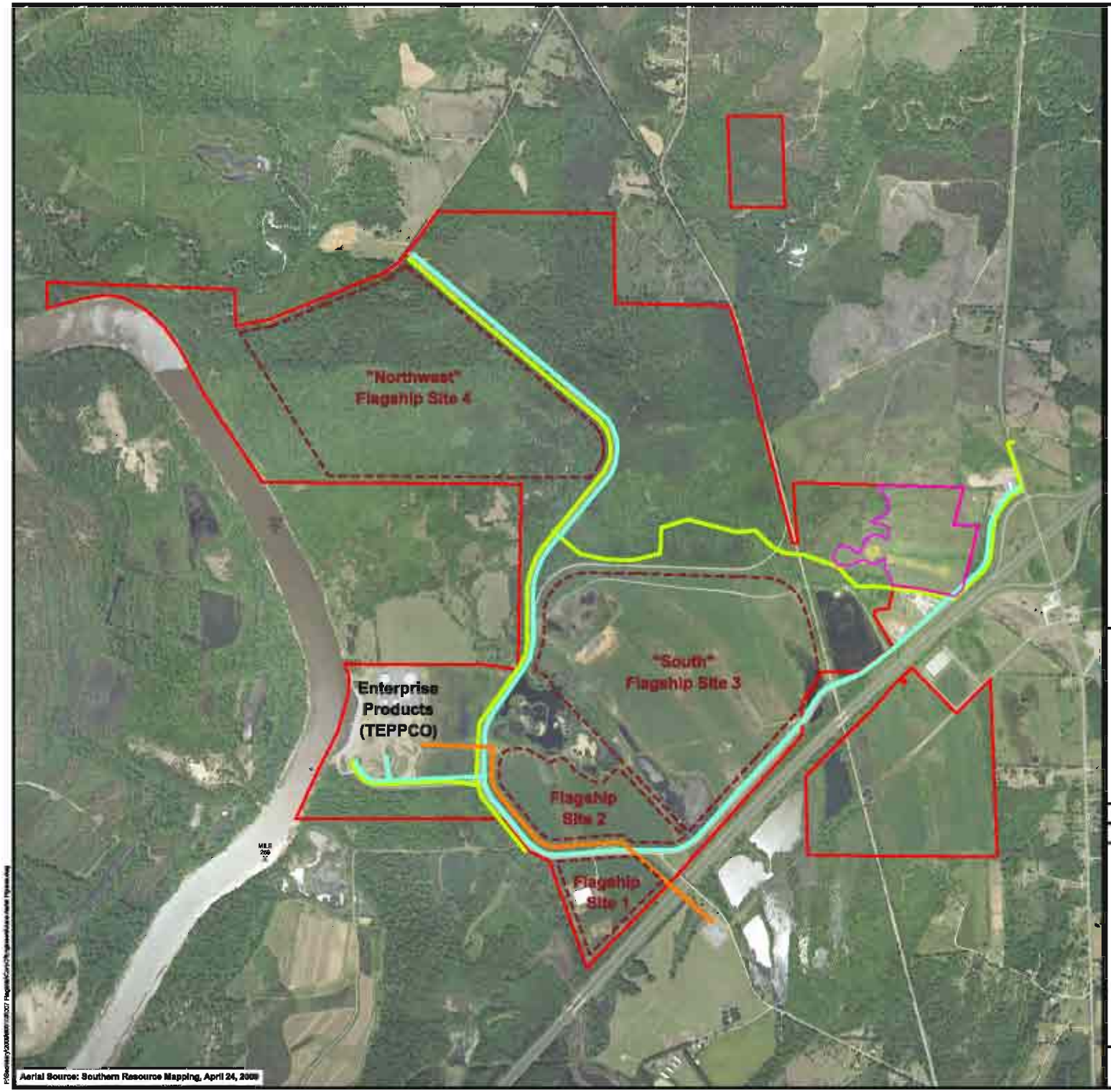
PROJECT DATE: July 1, 2010

Figure 2

Draft Flagship Site and Industrial Park Property Boundaries with Existing Utilities

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale: 1" = 2000'



LEGEND

- Draft Park Boundary
- Approximate Sewer Line Locations
- Approximate Water Line Locations
- Approximate Colonial Pipeline Location
- Draft Flagship Site Boundary
- Proposed Wetland Mitigation Tract

Note: Utility scale and locations are shown exaggerated for clarity

0' 2000' 4000'

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

TTL PROJECT NO: 600109007

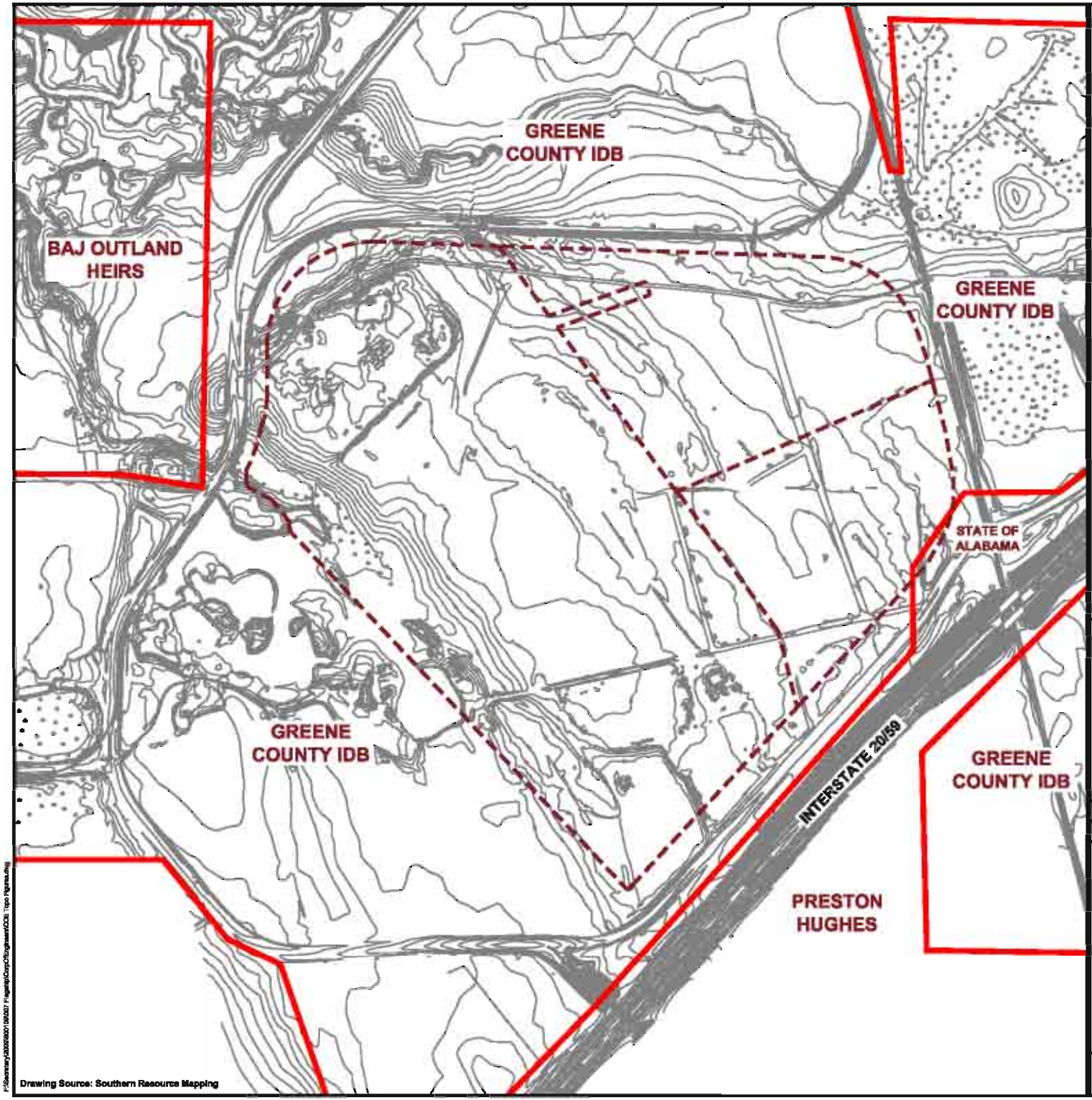
PROJECT DATE: July 1, 2010

Figure 3

Draft Flagship Sites and Industrial Park Property Boundary with Existing Utilities

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale: 1" = 2000'



LEGEND

N

Draft Park Boundary

Draft Flagship Site Boundary

0' 800' 1600'

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0992

TTL PROJECT NO: 600109007

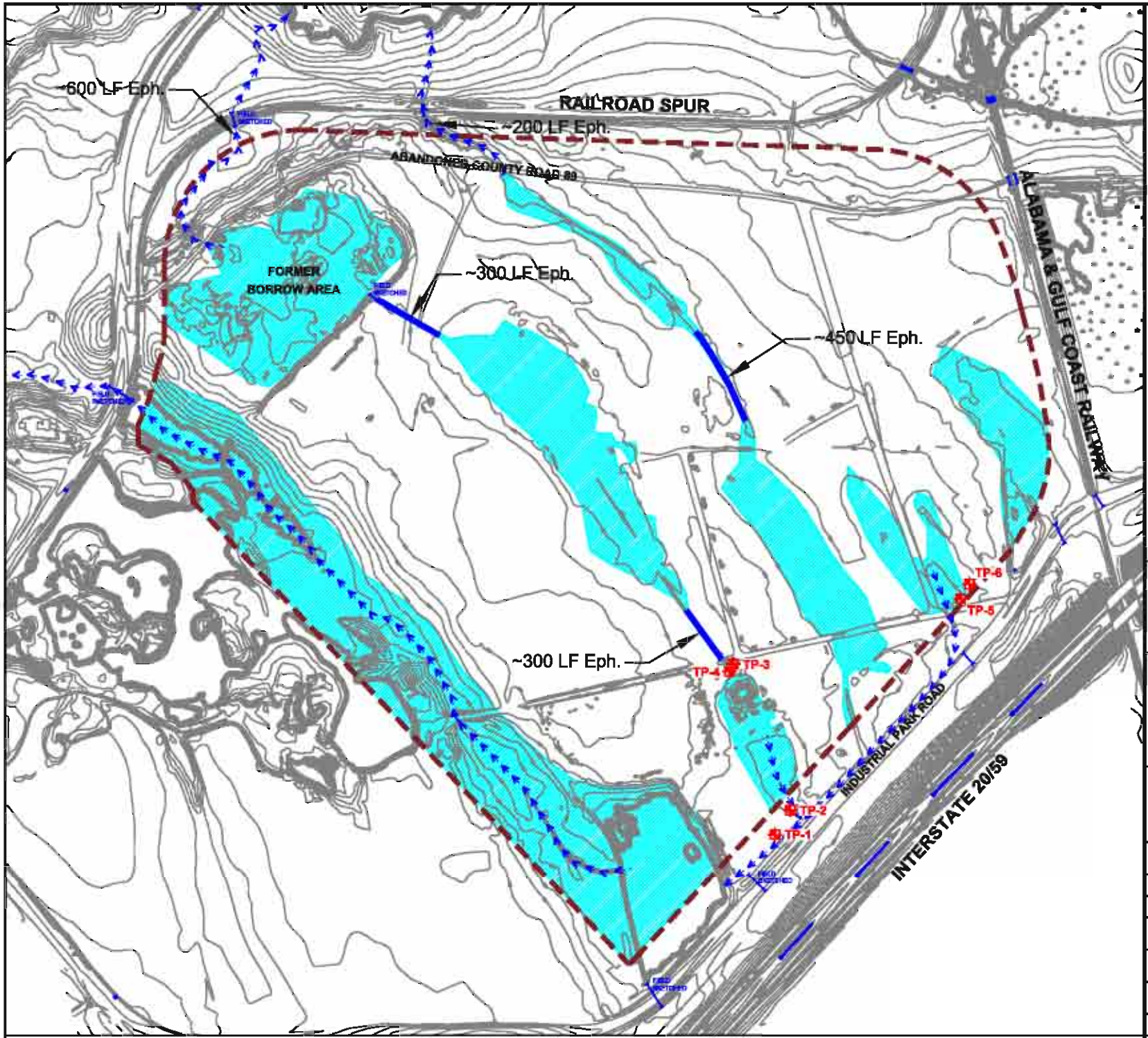
PROJECT DATE: July 1, 2010

Figure 4
Flagship Site

Surrounding Property Ownership

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale:
1" = 800'



Modified from original drawing by: Southern Resource Mapping, April 24, 2008

Feet
0 200 400 800

N
W E
S

LEGEND

- Other Waters of the U.S.
- Approximate Property Boundary
- Wetland and Open Water Boundaries
- TP-5 Approximate Test Pit Location and Identifier
- Surface Water Conveyances
- Culverts

Site Description:
Approximately 235 Total Site Acres
Approximately 73 Acres of Wetlands and Open Water Delineated
Approximately 1,850 Linear Feet of Other Waters of the U.S. Delineated

Figure 5

Wetland and Other Waters of the U.S. Location Map

Greene County Industrial Development Board
Proposed Flagship Site
Waters of the U.S. Determination and Delineation
Boligee, Greene County, Alabama

TTL

Section, Township and Range:
S. 13 and 24, T. 21 N, R. 1 W and S. 18 and 19, T. 21 N, R. 1 E

Latitude: 32° 47' 30" N	**Longitude:** 88° 02' 49" W

TTL Project Number: 600109007

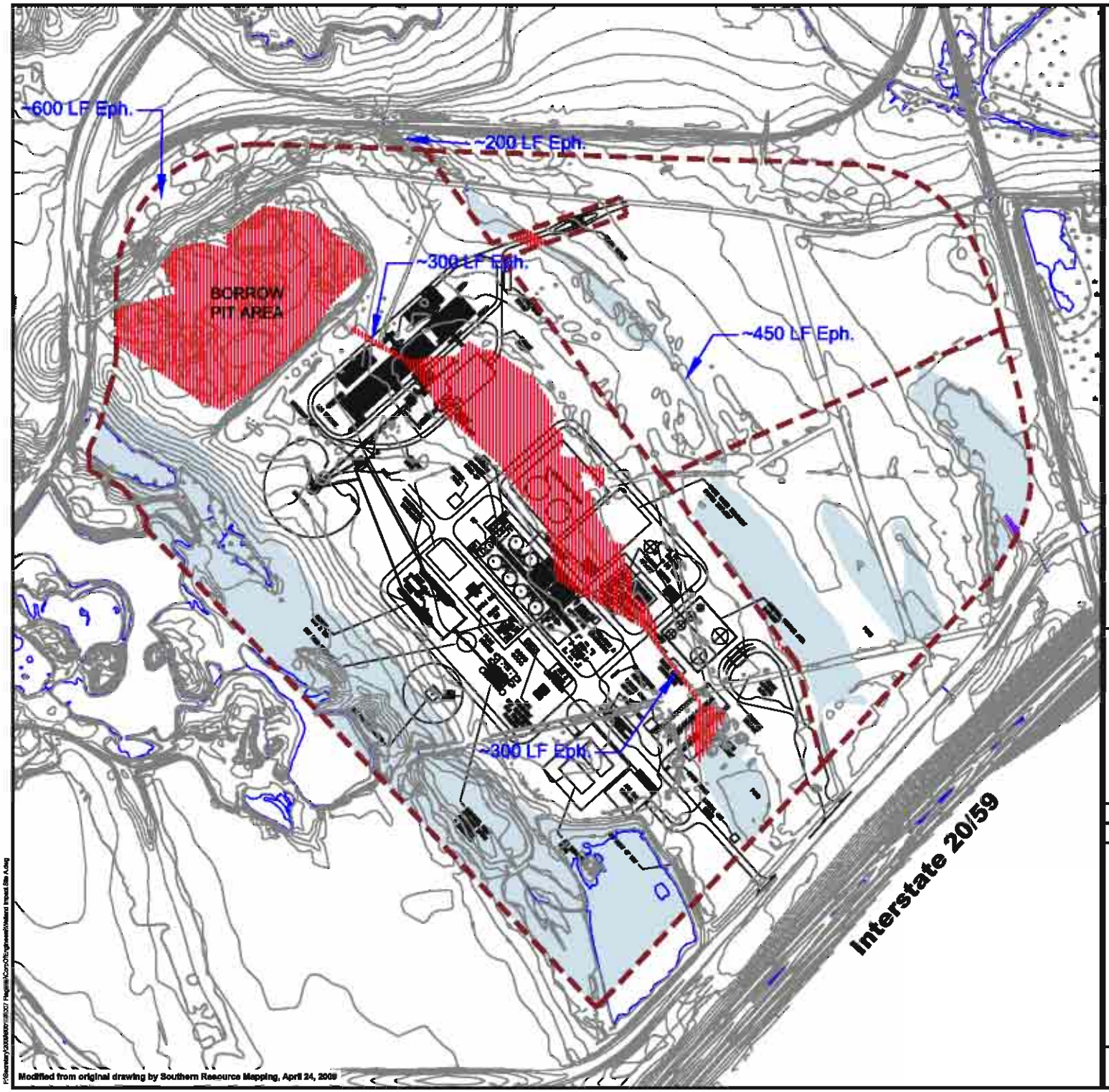
File Path:
F:\Secretary\2009\600109007 Flagship\CorpOfEngineers\COE Topo Figures.dwg

Date Created: 05/11/2010	**Revision No.:** 1	**Date Revised:** 06/15/2010

Drawn By: mjc	**Reviewed By:** Bob White

Project Manager: James C. Bamberger, P.E.

Sheet 1 of 1



Modified from original drawing by Southern Resource Mapping, April 24, 2009

LEGEND

Draft Flagship Site Boundary

Delineated Wetland Areas (on 04/12/2010)

Total Area = 72.71 Acres

Wetland Areas Impacted by Design

Total Impact = 22.6 Acres

0' 600' 1200'

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0862

TTL PROJECT NO: 600109007

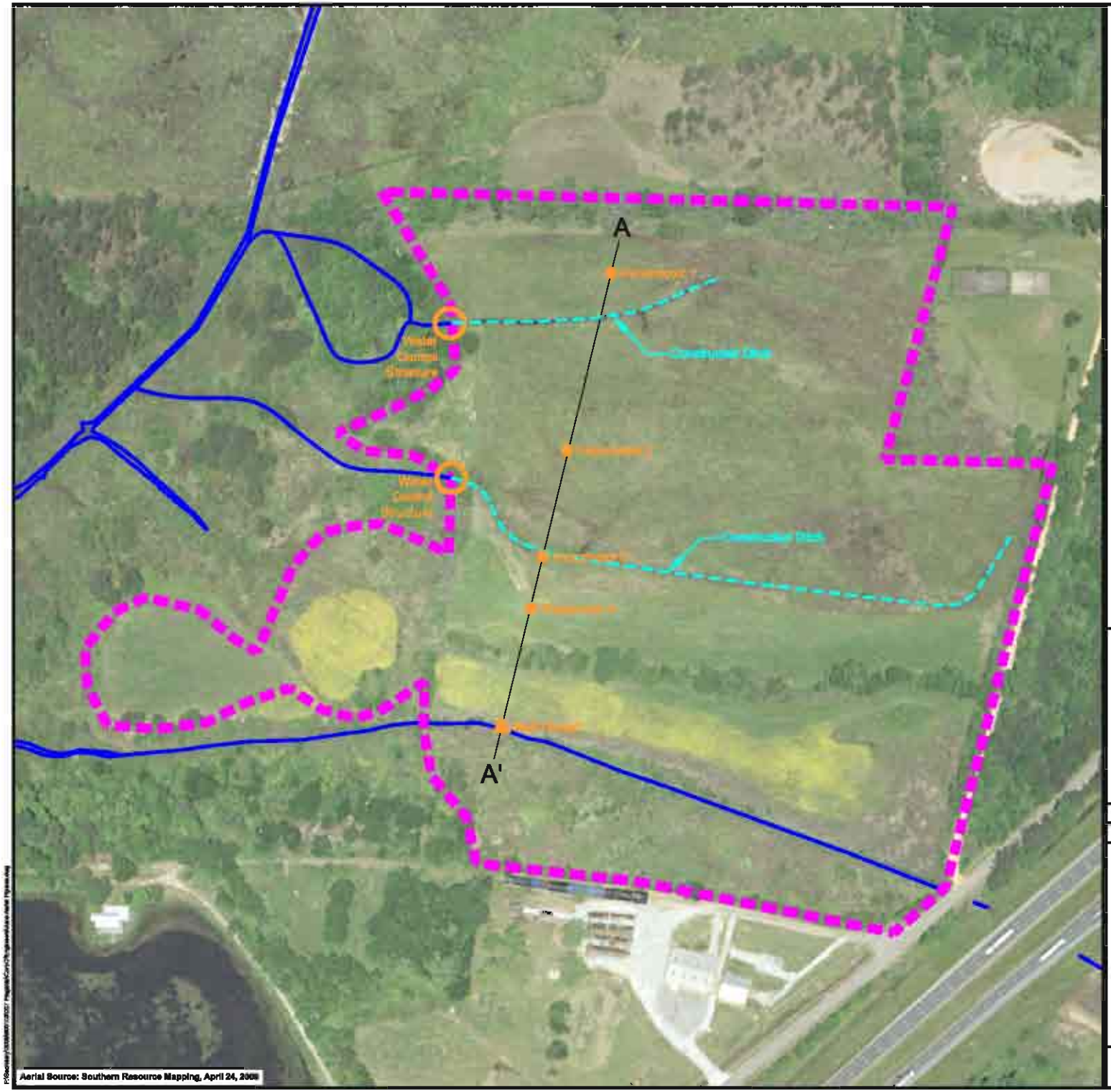
PROJECT DATE: July 1, 2010

Figure 6

Flagship Wetlands Impact

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale: **1" = 600'**



LEGEND

Proposed Wetland Tract

A — A' Cross Section Transect

0' 300' 600'

TTL
3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0862

TTL PROJECT NO: 600109007

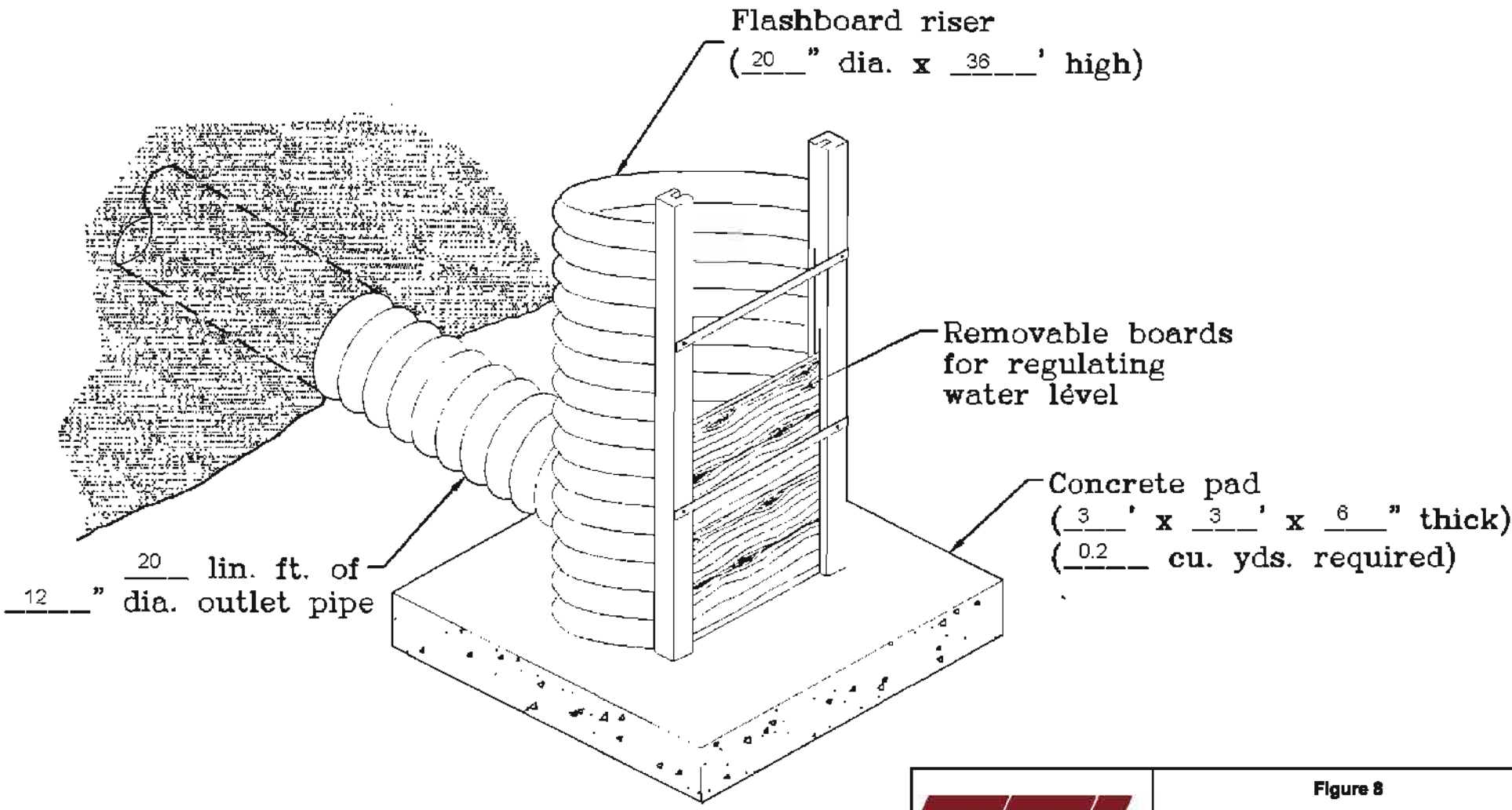
PROJECT DATE: July 1, 2010

Figure 7

Hydrologic Detail

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale: **1" = 300'**



FLASHBOARD RISER

(Not to scale)

TTL

3016 Greensboro Avenue • Tuscaloosa, Alabama 35401
205.345.0816 • Fax 205.345.0892

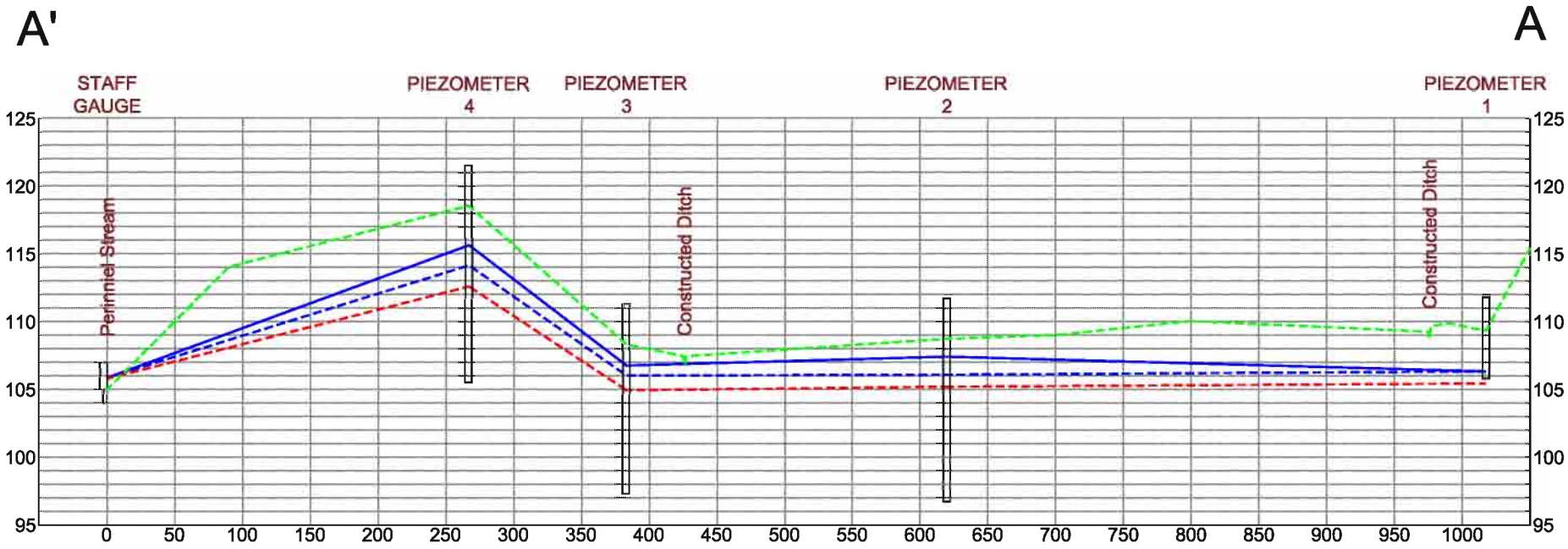
Figure 8

Flashboard Riser Detail

Greene County Industrial Development Board
Crossroads of America Industrial Park
Bolgee, Greene County, Alabama

Project Date:	Approximate Scale:	TTL Project No.:
June 28, 2010	Not to Scale	600109007

F:\Secretary\2009\600109007 Flagship\Corp Of Engineers\June Flashboard.dwg



Relative Ground Elevation

Water Level at Piezometer Installation (March 9, 2010)

Water Level on April 12, 2010

Water Level on May 21, 2010

0′ 12′

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0892

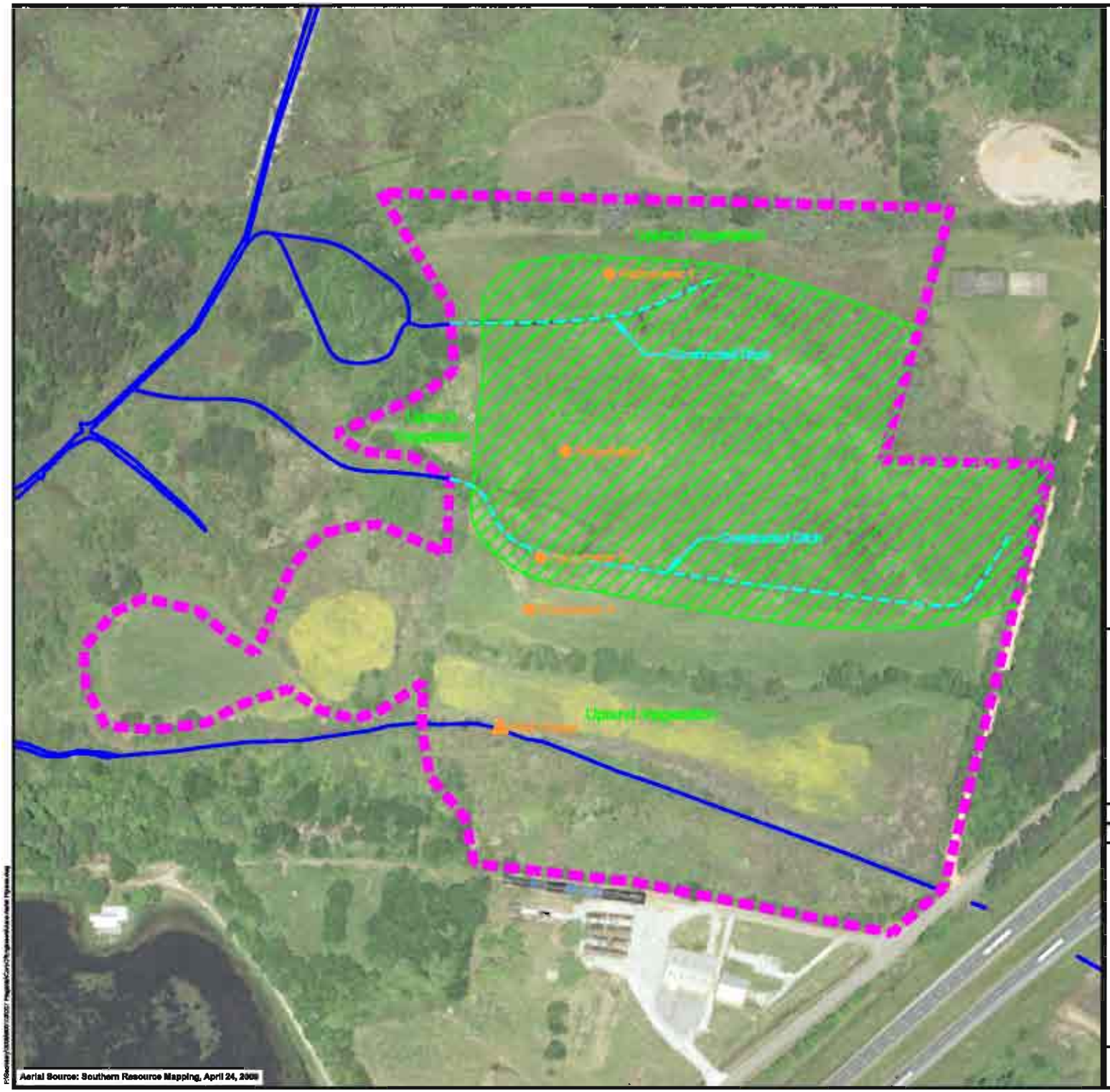
Figure 9

Transect Cross Section

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Project Date:	Approximate Scale:	TTL Project No.:
July 1, 2010	1" = 12'	600109007

F:\Secretary\2009\600109\007 Flagship\Hydro Data\Transect XSN.dwg



LEGEND

Proposed Wetland Tract

Approximate Total Area = 45 Acres

Restored Wetland Vegetation Area

Approximate Total Area = 17 Acres

0' 300' 600'

TTL

3516 Greensboro Avenue ■ Tuscaloosa, Alabama 35401
205.345.0816 ■ Fax 205.345.0862

TTL PROJECT NO: 600109007

PROJECT DATE: July 1, 2010

Figure 10

Vegetation Prescription

Greene County Industrial Development Board
Crossroads of America Industrial Park
Boligee, Greene County, Alabama

Scale: **1" = 300'**