JOINT
PUBLIC NOTICE

CHARLESTON DISTRICT, CORPS OF ENGINEERS
1949 Industrial Park Road, Room 140
Conway, South Carolina 29526
and
THE S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
Office of Environmental Quality Control
Water Quality Certification and Wetlands Programs Section
2600 Bull Street
Columbia, South Carolina 29201

REGULATORY DIVISION
Refer to: P/N # SAC 1992-24122-4IA

28 January 2011

Pursuant to Sections 401 and 404 of the Clean Water Act (33 U.S.C. 1341), an application has been submitted to the Department of the Army and the South Carolina Department of Health and Environmental Control by

HAILE GOLD MINE, INC.
ATTN: DAVID THOMAS
7283 HAILE GOLD MINE ROAD
KERSHAW, SC 29067

for a permit to construct and operate a gold mine in order to extract and process gold from the Haile ore body in

HAILE GOLD MINE CREEK

at a location approximately 3 miles north of the City of Kershaw near the intersection of US Highway 601 and Haile Gold Mine Road, Lancaster County, South Carolina (Latitude: 38.5802°N; Longitude -80.5401°W).

In order to give all interested parties an opportunity to express their views

NOTICE

is hereby given that written statements regarding the proposed work will be received by both of the above mentioned offices until

30 Days from the Date of this Notice,

from those interested in the activity and whose interests may be affected by the proposed work.

The proposed work consists of the excavation and fill of 161.81 acres of wetlands and 38,775 linear feet of streams. In detail the work consists of the mechanized land clearing, grubbing, temporary stockpiling, filling, and excavation of 161.81 acres of jurisdictional, freshwater wetlands and 38,775 linear feet of streams. Phased mining will take place involving eight open pits over a twelve year period ranging in depth from 110 to 840 feet. In each pit the surface layer, consisting of the existing seed bank and growth media, will be removed and stockpiled for use during reclamation activities. Next, several tons of overburden (waste rock) will be excavated and stockpiled for future backfilling of the pit. Once the overburden is removed, ore will be mined using 6 inch diameter bore holes, explosives and wheeled loading equipment to load 100-ton capacity off-road mining trucks. Following ore removal, the pit will be backfilled with overburden. Ore will be processed in onsite milling facilities. Once the gold has been extracted, the remaining material or tailings will be treated to maintain a pH between 8.0 and 8.5 and concentration of less than 50 ppm of cyanide and pumped to an approximately 600 acre Tailings Storage Facility (TSF). Once mining ceases, the TSF will be encapsulated with geosynthetic material and a minimum of 2' of growth media. Any water leaching from the TSF will be monitored and treated prior to discharge into the Little Lynches River. Mining activities will take place seven days a week, 365 days a year. See attached plans and detailed project description, sheets 1 through 58 of 58 dated January 21, 2011.

The project purpose is to construct a viable mine and mill to recover precious metals from the Haile gold deposit.

According to the applicant, extensive geological investigations, sampling and drilling have confirmed that the Haile Gold Mine has economic mineral resources located on its site. From these investigations, the owner has determined that the proposed facilities and operations cannot be moved to another site due to resource location, project economics and land ownership/availability. Four onsite alternative situations have been investigated in development of the Least Environmentally Damaging Practicable Alternative including: 1) No-action alternative, 2) Twenty-one alternative site plans, 3) the preferred alternative, and 4) No-pit backfill alternative plan.

Mitigation is being proposed in the form of a permittee responsible mitigation plan that includes restoration and enhancement of 64,486 linear feet of streams, preservation of 32,585 linear feet of streams, restoration and enhancement of 190.11 acres of wetlands and preservation of 17.6 acres of wetlands. Additionally, out-of-kind mitigation is being proposed in the form of preservation by transferring fee simple ownership of 642 acres (Parcel A - 590 acres and Parcel B – 52 acres) of conservation land adjacent to the Forty Acre Rock Heritage Preserve and Wildlife Management Area, designated as a National Natural Landmark. All proposed mitigation will take place in four areas within the same watershed as the impact site. The four subject areas are identified as Flat Creek Headwaters Mitigation Area, Little Lynches River Mitigation Area, Lynches River Headwaters Mitigation Area and Flat Creek Heritage Preserve Expansion Area. A location map of the mitigation sites is attached.

NOTE: Plans depicting the work described in this notice are available and will be provided, upon receipt of a written request, to anyone that is interested in obtaining a copy of the plans for the specific project. The request must identify the project of interest by public notice number and a self-addressed stamped envelope must also be provided for mailing the drawings to you. Your request for drawings should be addressed to the

U.S. Army Corps of Engineers
ATTN: REGULATORY DIVISION
1949 Industrial Park Road, Room 140
Conway, South Carolina 29526

The District Engineer has concluded that the discharges associated with this project, both direct and indirect, should be reviewed by the South Carolina Department of Health and Environmental Control in accordance with provisions of Section 401 of the Clean Water Act. As such, this notice constitutes a request, on behalf of the applicant, for certification that this project will comply with applicable effluent limitations and water quality standards. The District Engineer will not process this application to a conclusion until such certification is received. The applicant is hereby advised that supplemental information may be required by the State to facilitate the review. Persons wishing to comment or object to Water Quality Certification must submit all comments in writing to the S.C. Department of Health and Environmental Control at the above address within thirty (30) days of the date of this notice.

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Implementation of the proposed project would impact approximately (165) acres of estuarine substrates and emergent wetlands utilized by various life stages of species comprising the red drum, shrimp, and snapper-grouper management complexes. Our initial determination is that the proposed action would not have a substantial individual or cumulative adverse impact on EFH or fisheries managed by the South Atlantic Fishery Management Council and the National Marine

Fisheries Service (NMFS). Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the NMFS.

Pursuant to Section 7(c) of the Endangered Species Act of 1973 (as amended), the applicant has provided a protected species survey for the property associated with the activity described above. Based upon this report, the District Engineer has determined that the project is not likely to adversely affect any federally endangered, threatened, or proposed species or result in the destruction or adverse modification of designated or proposed critical habitat. This public notice serves as a request for written concurrence from the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service on this determination.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), this public notice also constitutes a request to Indian Tribes to notify the District Engineer of any historic properties of religious and cultural significance to them that may be affected by the proposed undertaking.

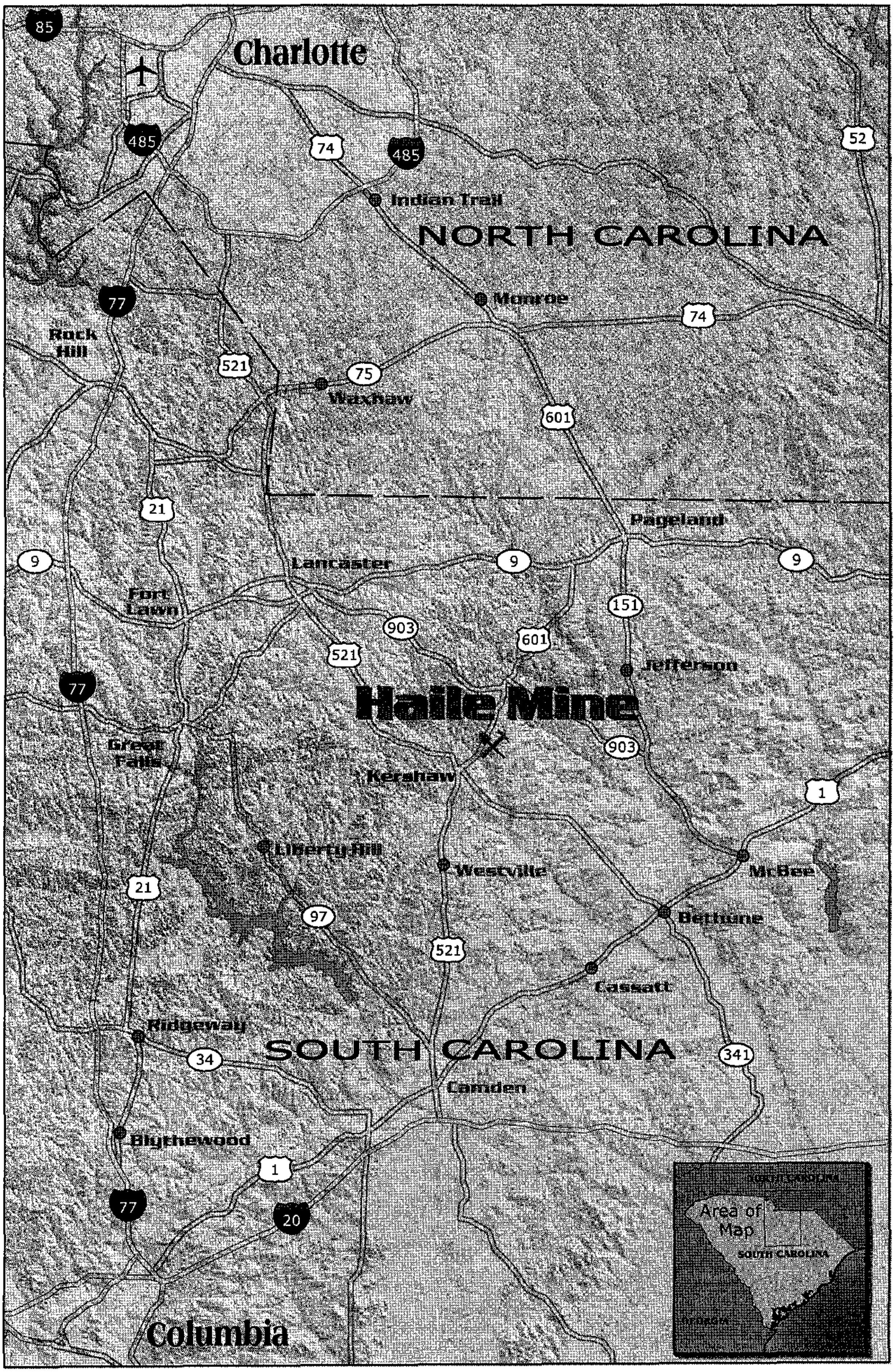
In accordance with the NHPA, the District Engineer has also consulted the latest published version of the National Register of Historic Places for the presence or absence of registered properties, or properties listed as being eligible for inclusion therein, and this worksite includes one historic structure, Site 0946, which is eligible for listing as well as several others that are either not eligible or require evaluation. Additionally, several sites labeled as Historic Areas are scattered throughout the site. The applicant has coordinated closely with the State Historic Preservation Office throughout site preparation work. To insure that other cultural resources that the District Engineer is not aware of are not overlooked, this public notice also serves as a request to the State Historic Preservation Office to provide any information it may have with regard to historic and cultural resources.

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 a public hearing shall state, with particularity, the reasons for holding a public hearing.

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the activity on the public interest and will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency (EPA), under authority of Section 404(b) of the Clean Water Act and, as appropriate, the criteria established under authority of Section 102 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the project must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the project will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, 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 and fiber production and, in general, the needs and welfare of the people. A permit will be granted unless the District Engineer determines that it would be contrary to the public interest. In cases of conflicting property rights, the Corps of Engineers cannot undertake to adjudicate rival claims.

The Corps of Engineers 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 activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this project. 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 activity.

If there are any questions concerning this public notice, please contact Sharon Abbott at 843-365-4239.



SAC #1992-24122-4
Haile Gold Mine
Sheet 1 of 58
Dated 21 Jan 2011

OVERALL SITE LAYOUT

HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Date: 12/03/10

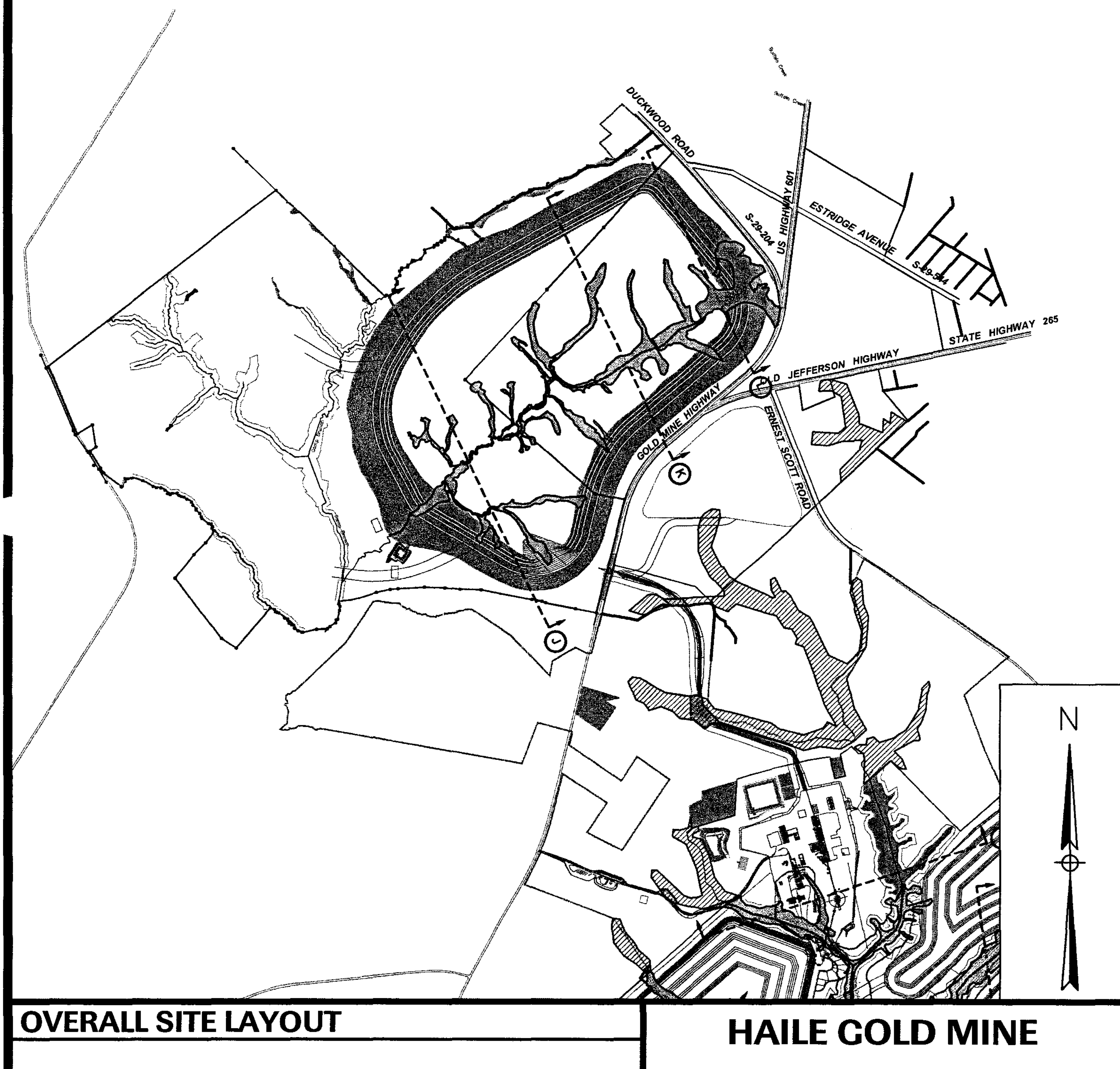
2000 0 2000 4000 6000

scale in feet
1" = 2000'

Drawing Title
OVERALL SITE LAYOUT- LOWER PORTION

Drawing No. **1 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 2 of 58
Dated 21 Jan 2011



OVERALL SITE LAYOUT

HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Date: 12/03/10

2000 0 2000 4000 6000

scale in feet
1" = 2000'

Drawing Title
OVERALL SITE LAYOUT-UPPER PORTION

Drawing No. **2 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 3 of 58
Dated 21 Jan 2011

Area	Acres Wetland Impacts						
Upper Section		**Lower Section**		**Duckwood**		**Determined Area**	
Area L1	14.52	Area 1	0.51	Area D1	49.93	Area DT1	0.89
Area L2	15.48	Area 2	0.40	Area D2	1.92	Area DT3	3.27
Area L4	19.83	Area 9	0.07	Area D6	0.20		
Area L4 -1	0.08	**Area X1**	**0.21**	**Area D8a**	**0.11**		
Area L4 -2	0.67						
Area L5	6.25						
Area L6	9.46						
Area U1	0.07						
Area U2	1.14						
Area U3	11.56						
Area U4	9.07						
Area U5	1.66						
Area U5a	0.19						
Area U6	3.18						
Area U7	1.49						
Area U8	0.63						
Area U9	1.34						
Area U10	2.86						
Area U10a	0.60						
Area U11a	2.77						
Area U12	0.83						
Area U13	0.95						
Area U16	0.74						
Sum	105.39	Sum	1.19	Sum	51.05	Sum	4.16
Total Impacted		161.79	ac				
Total Wetlands		300.51	ac				

Area	LF Stream Impacts				
Upper Section		**Upper Ledbetter**		**Duckwood**	
HCM Creek - Reach 4	2,095	HCM - Tributary 3-1 R1	1,028	CBT-1-R1	802
HCM Creek - Reach 5	1,090	HCM - Tributary 3-1 R2	1,012	CBT-1-R2	1,617
HCM Creek - Reach 6	51	HCM - Tributary 3 - R1	3,738	CBT-1-R3	1,198
HCM Creek - Reach 7	923	HCM - Tributary 3 - R2	246	CBT-1-R4	1,017
HCM - Tributary 2 - Reach 1	1,073	HCM - Tributary 3 - R3	1,314	CBT-1-R8	470
HCM - Tributary 2 - Reach 3	341	HCM - R1	1,462	CBT-1-1-R1	916
HCM - Tributary 2 - Reach 4	1,172	HCM - R2	672	CBT-3-R4	209
HCM - Tributary 2 - Reach 5	197	HCM - R3	565	CB-R8	210
HCM - Tributary 2-1 Reach 1	933	HCM - Tributary 4 - R1	1,427	**CB-T4**	**100**
HCM - Tributary 2-2 Reach 1	1,425	**HCM - Tributary 4 - R2**	**602**		
HCM - Tributary 1a	810				
LL - T1 Reach 1	1,762				
LL - T2 Reach 2	1,887				
LL - T2 Reach 3	1,163				
LL - T2-1 Reach1	361				
LL - T3 Reach 2	1,149				
LL - T3 Reach 3	1,329				
HCM - Tributary 2-3 Reach 1	**1,944**				
Total	19,705		12,066		6,539
Total Impacted	36,624	LF			
Total Streams	71,727	LF			

Date: 12/03/10

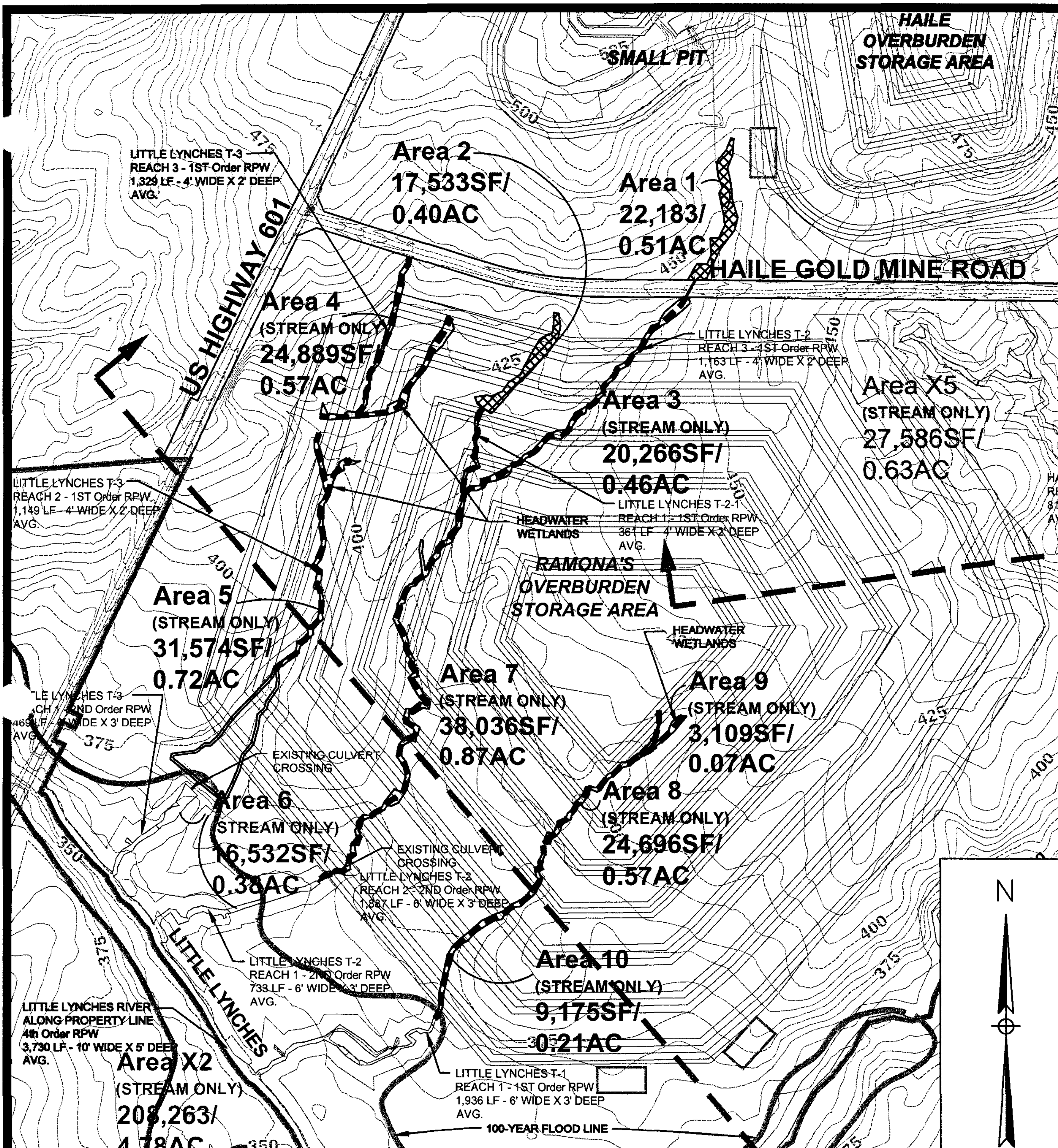
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT AREAS

Drawing No. **3 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 4 of 58
Dated 21 Jan 2011



Areas Impacted See sheet 3 for quantities of impacts

1,2,3,4,5,7,8,9,10

Streams Impacted

LLT1, LLT2, LLT3

Date: 12/03/10

500 0 500

scale in feet
1" = 500'

LEGEND

- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

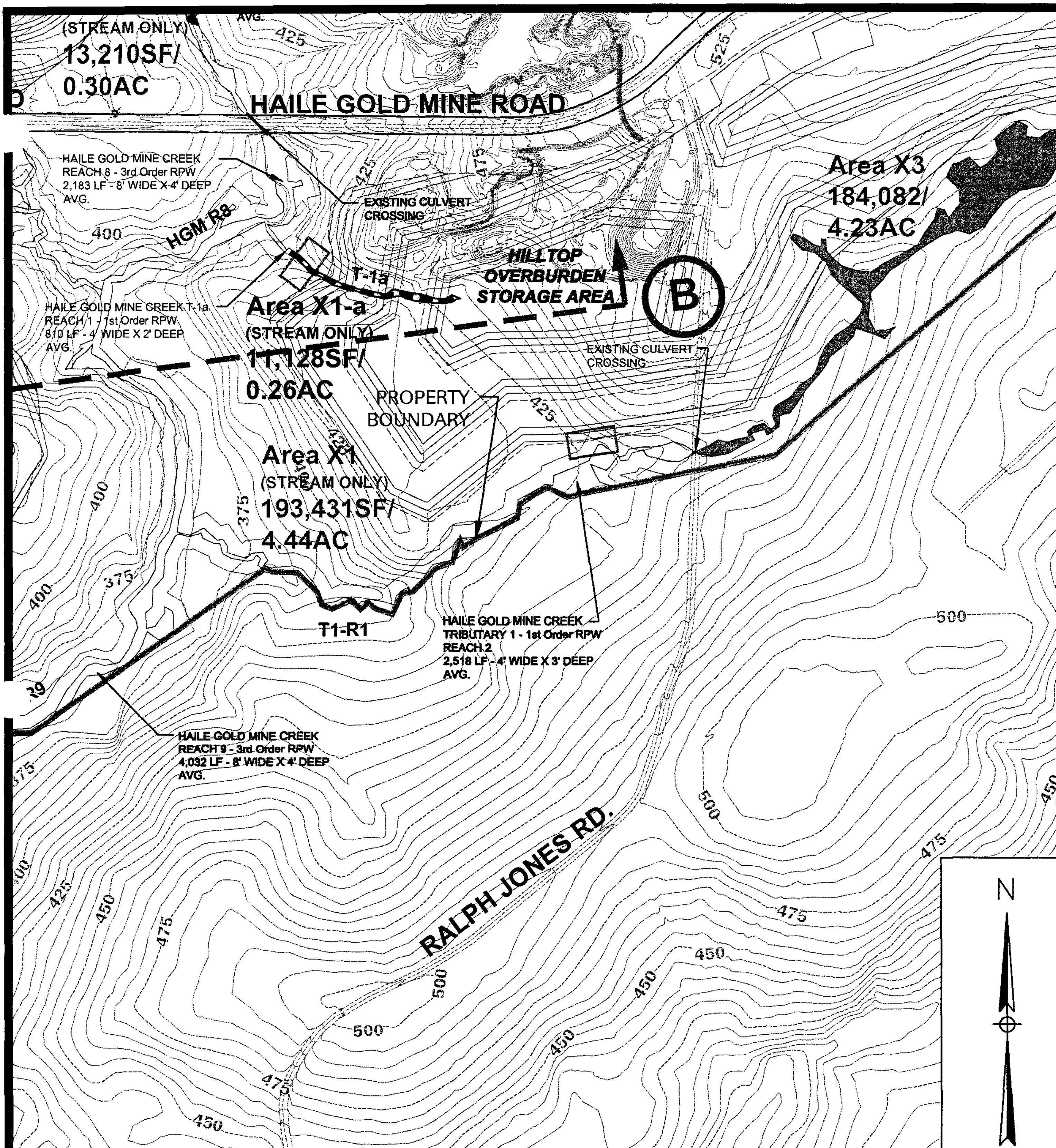
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **4 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 5 of 58
Dated 21 Jan 2011



Areas Impacted	See sheet 3 for quantities of impacts
X1a	

Streams Impacted

T-1a

Date: 12/03/10

500 0 500
scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

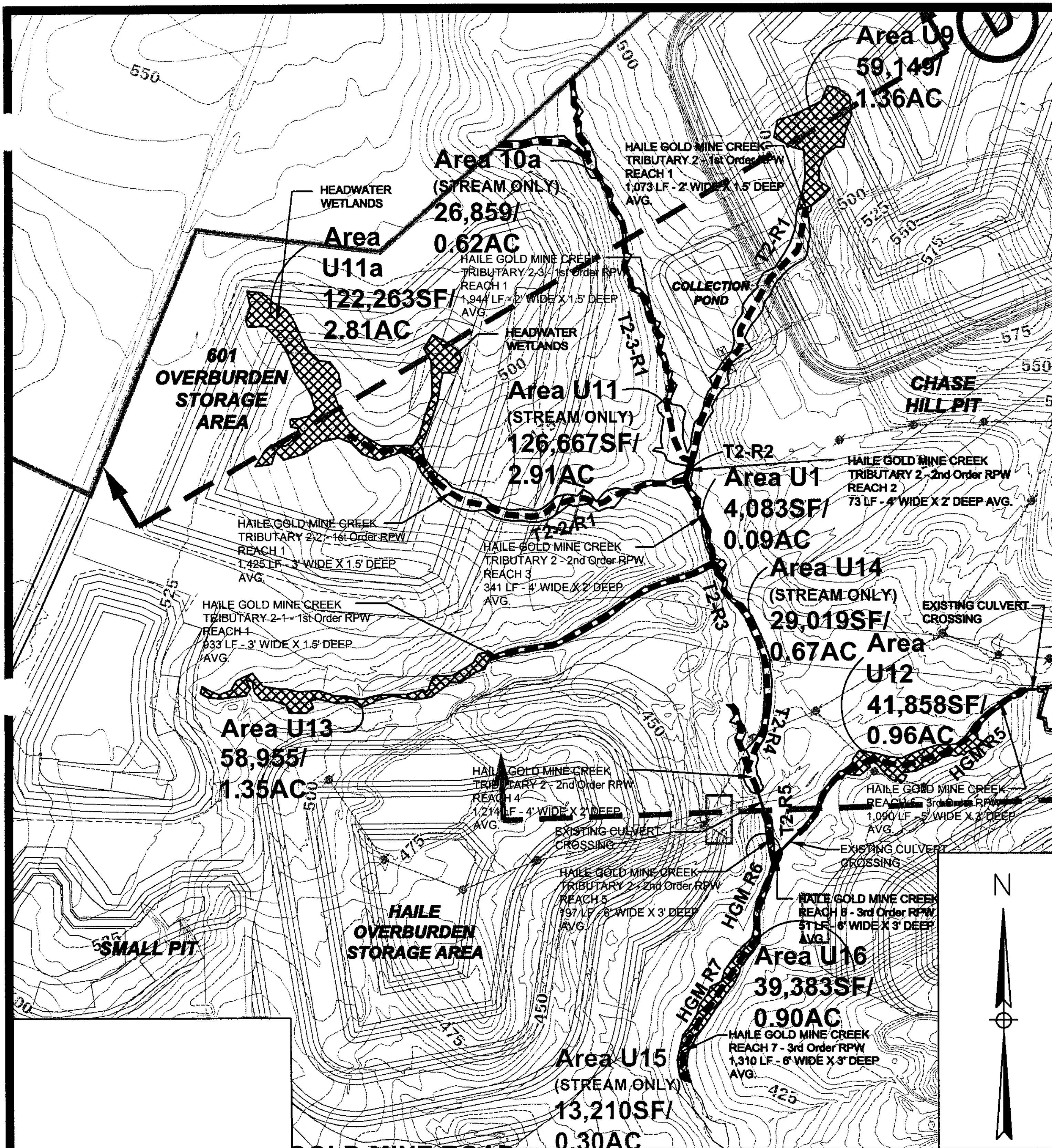
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No.
5 of 27

SAC #1992-24122-4
Haile Gold Mine
Sheet 6 of 58
Dated 21 Jan 2011



Areas Impacted — See sheet 3 for quantities of impacts

U1, U9, 10a, U11, U11a, U12, U13, U14, U16

Date: 12/03/10

Streams Impacted HGM R5, HGM R6, HGM R7, T2-R1, T2-R2, T2-R3, T2-R4, T2-R5, T2-2-R1, T2-3-R1

500 0 500

scale in feet
1" = 500'

LEGEND

- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

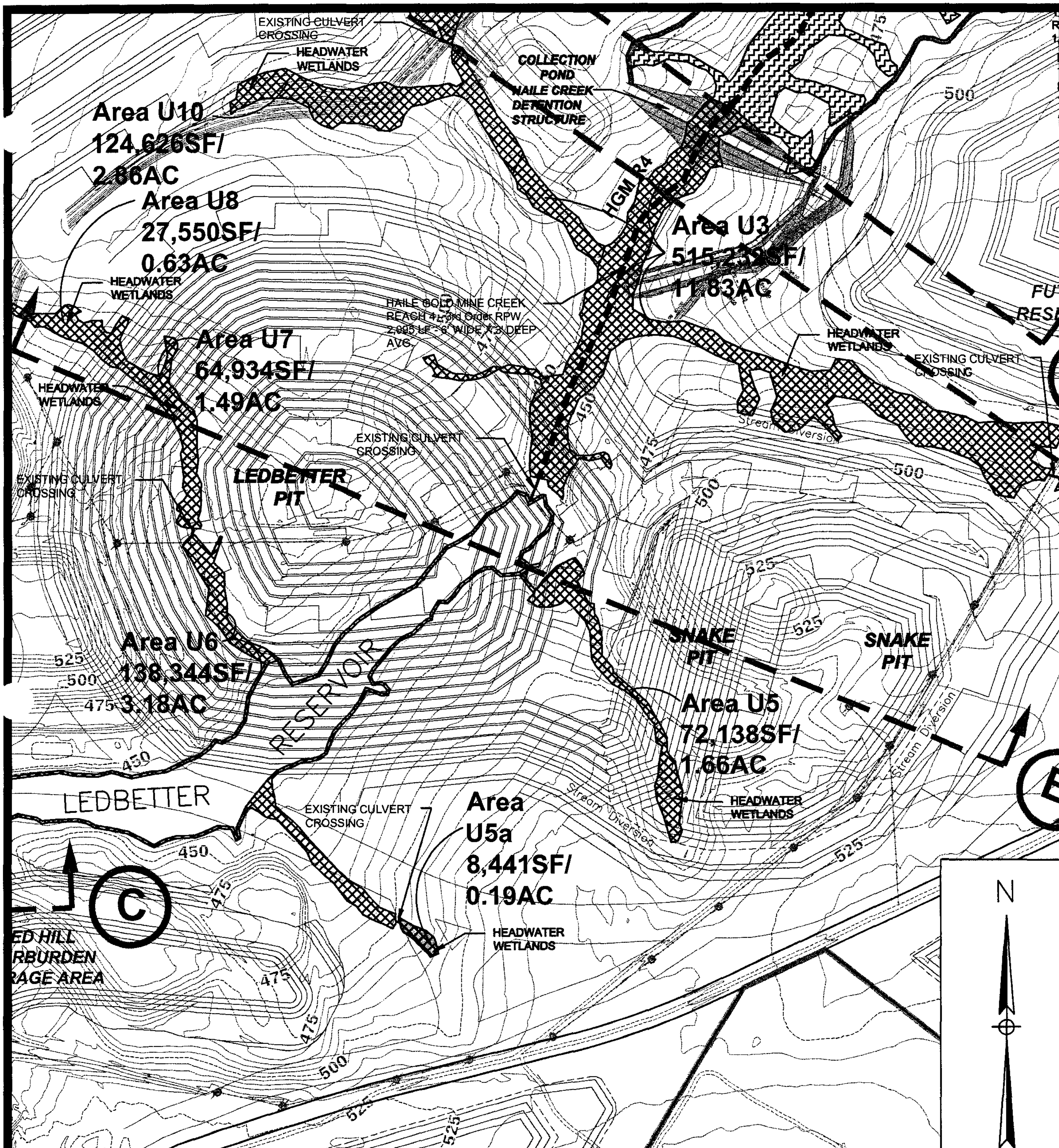
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **6 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 7 of 58
Dated 21 Jan 2011



Areas Impacted	See sheet 3 for quantities of impacts
U3, U5, U5a, U6, U7, U8, U10	
Streams Impacted	HGM R4

Date: **12/03/10**

500 0 500
scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

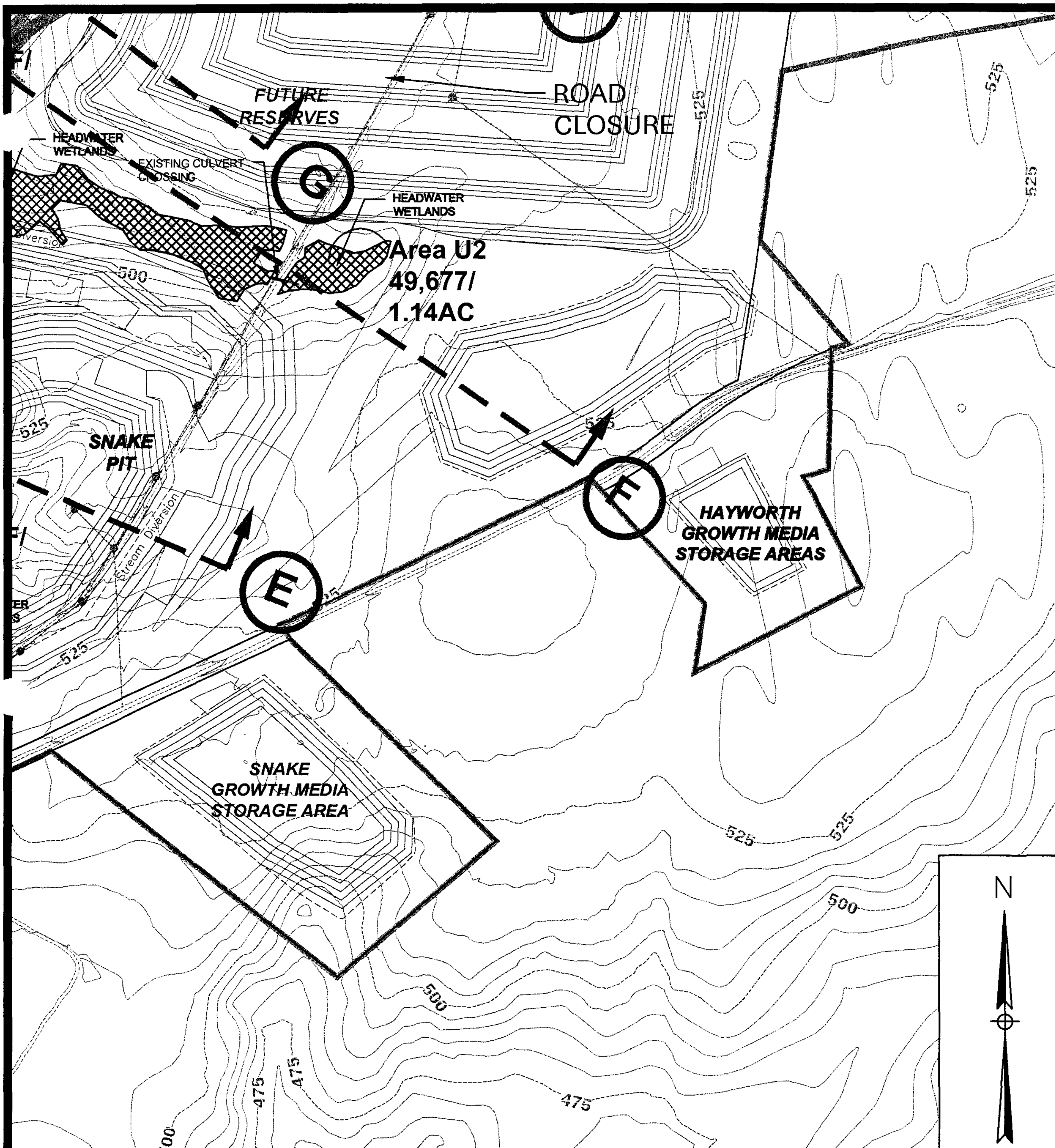
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **7 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 8 of 58
Dated 21 Jan 2011



Areas Impacted | See sheet 3 for quantities of impacts

U2

Streams Impacted

NONE

Date: **12/03/10**

500 0 500

scale in feet
1" = 500'

LEGEND
IMPACTED WETLAND
IMPACTED STREAM
UNIMPACTED WETLAND
FLOODED WETLAND
DETERMINED AREA

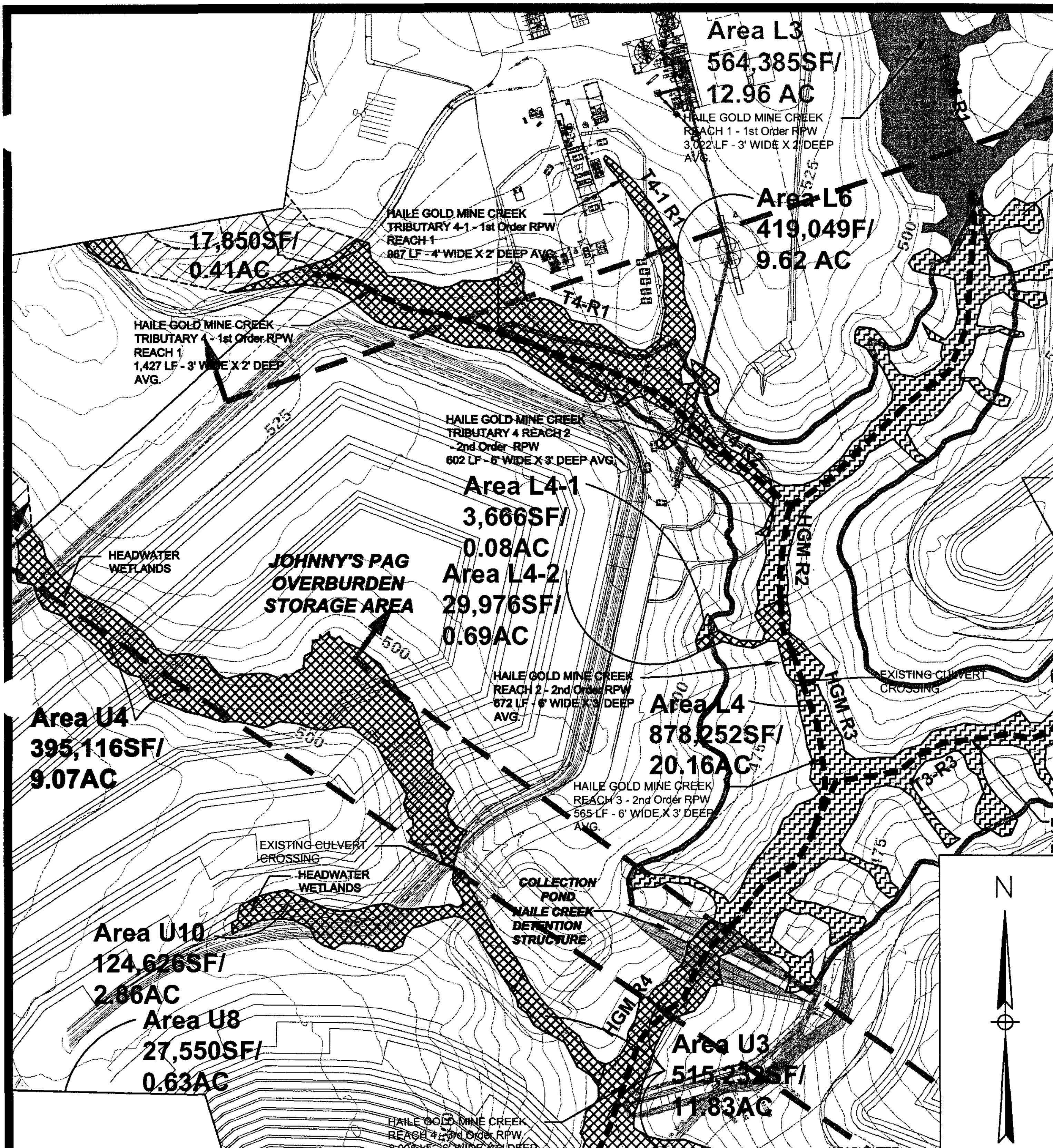
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **8 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 9 of 58
Dated 21 Jan 2011



Areas Impacted	See sheet 3 for quantities of impacts
L4, L4-1, L4-2, L6, U4, U10	Date: **12/03/10**
Streams Impacted	HGM R1, HGM R2, HGM R3, HGM R4
T4-R1, T4-1-R1, T4-R2, T2-R4, T2-R5, T2-2-R1, T2-3-R1	

500 0 500
scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

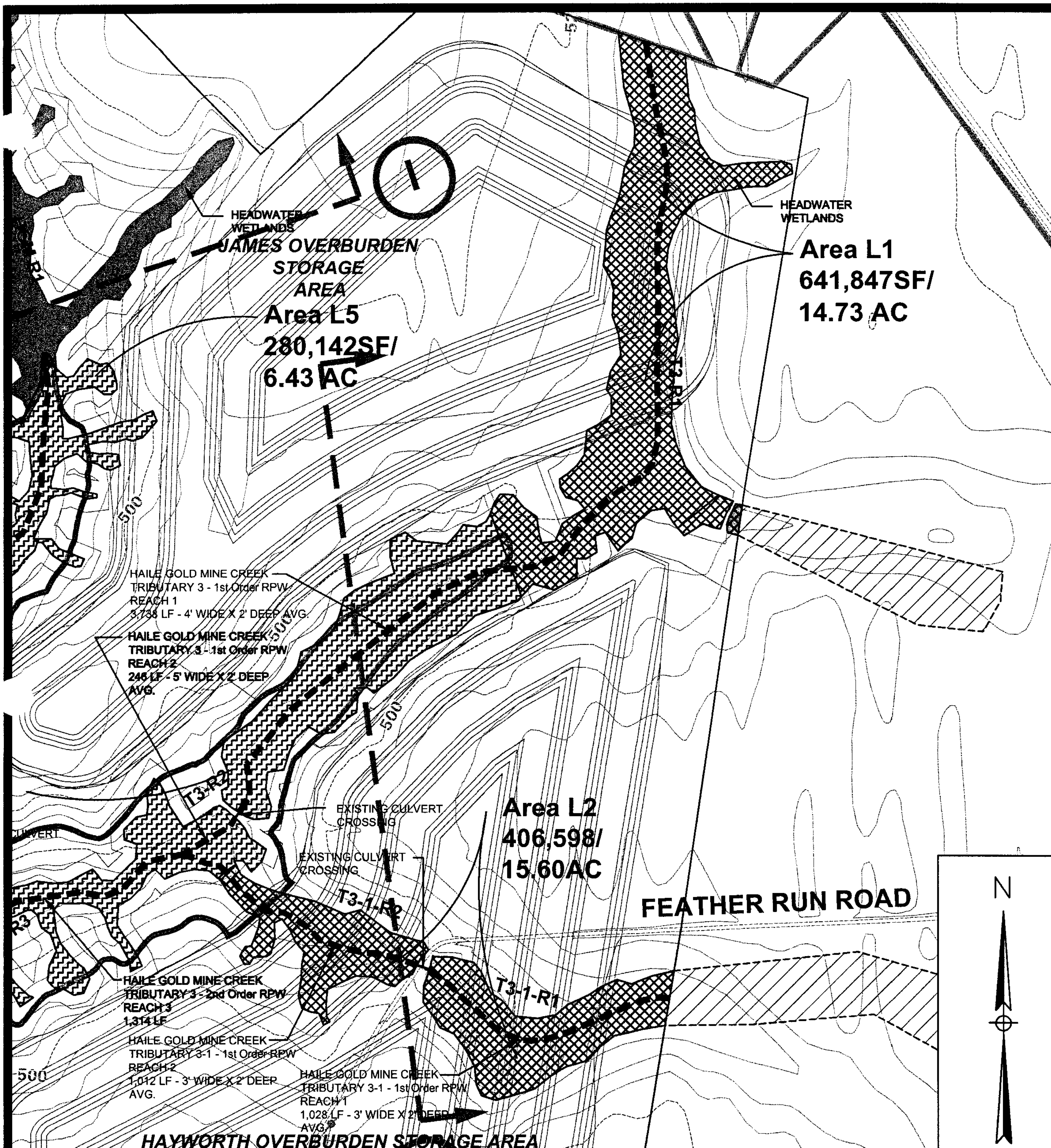
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **9 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 10 of 58
Dated 21 Jan 2011



Areas Impacted See sheet 3 for quantities of impacts

L1, L2, L5

Streams Impacted

T3-R1, T3-R2, T3-1-R1, T3-1-R2

Date: 12/03/10

500 0 500
scale in feet
1" = 500'

LEGEND
IMPACTED WETLAND — IMPACTED STREAM
UNIMPACTED WETLAND — FLOODED WETLAND
DETERMINED AREA

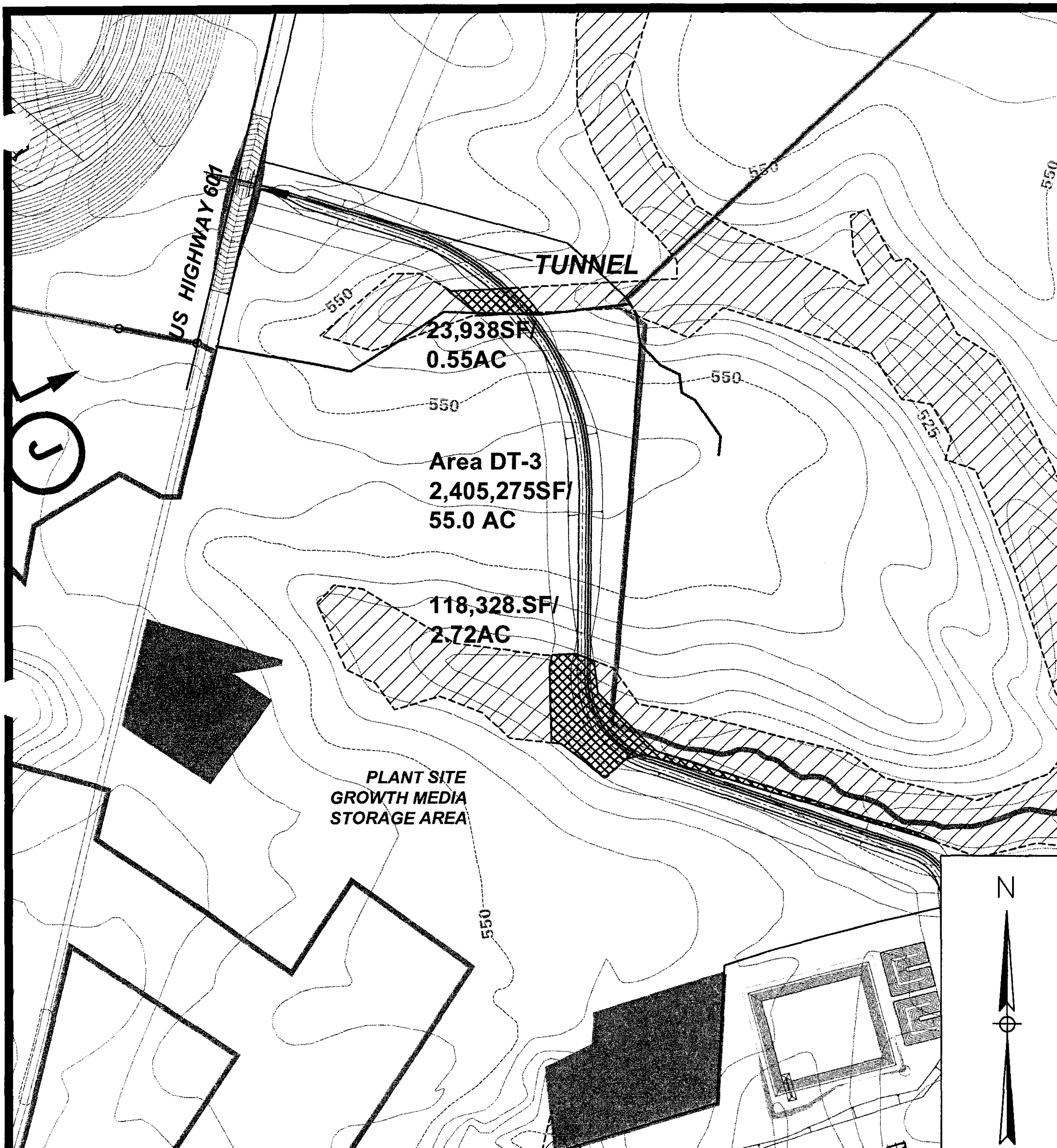
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **10 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 11 of 58
Dated 21 Jan 2011



Areas Impacted | See sheet 3 for quantities of impacts

Streams Impacted

Date: 12/03/10

500 0 500

scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

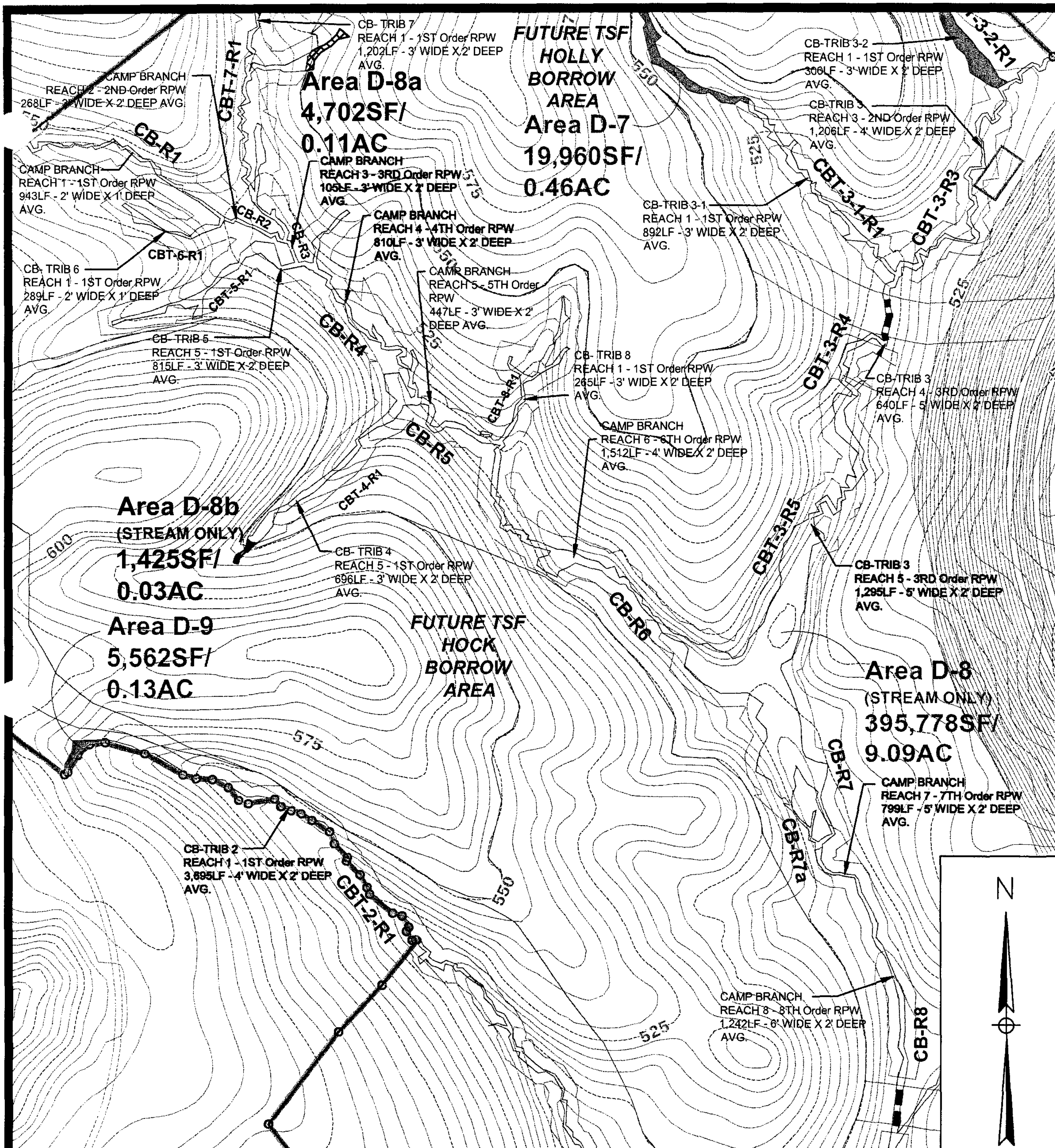
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **11 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 12 of 58
Dated 21 Jan 2011



Areas Impacted	See sheet 3 for quantities of impacts
D-8a, D-8b	

Streams Impacted

CB-R8, CBT-3-R4, CBT-4-R5

Date: 12/03/10

500 0 500

scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

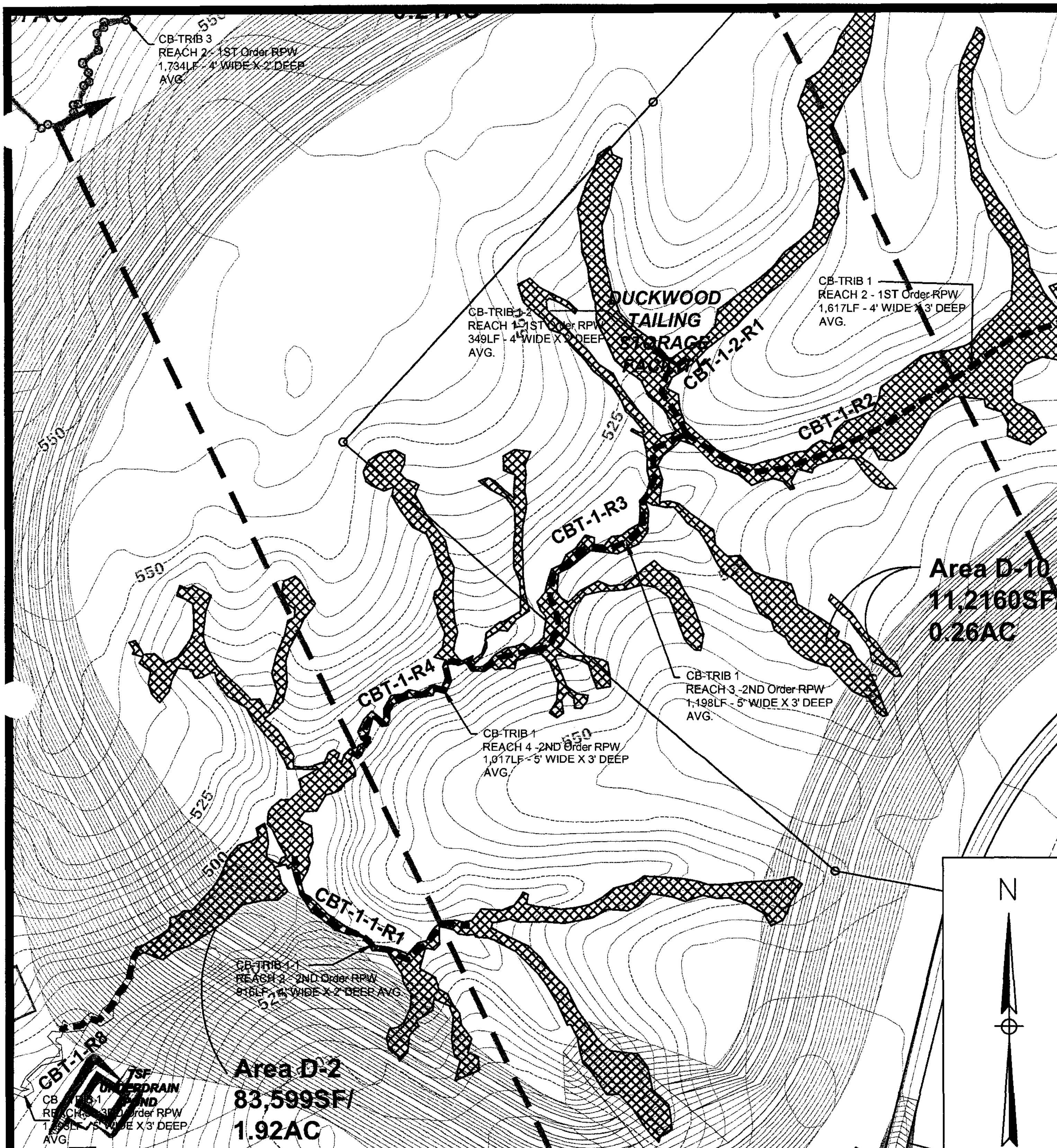
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **12 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 13 of 58
Dated 21 Jan 2011



Areas Impacted	See sheet 3 for quantities of impacts
D2, D10	Date: **12/03/10**

Streams Impacted CBT-1-R2, CBT-1-R3, CBT-1-R4, CBT-1-R5, CBT-1-R6, CBT-1-1-R1, CBT-1-1-R2, CBT-1-1-1-R1, CBT-1-2-R1

500 0 500
scale in feet
1" = 500'

LEGEND
- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

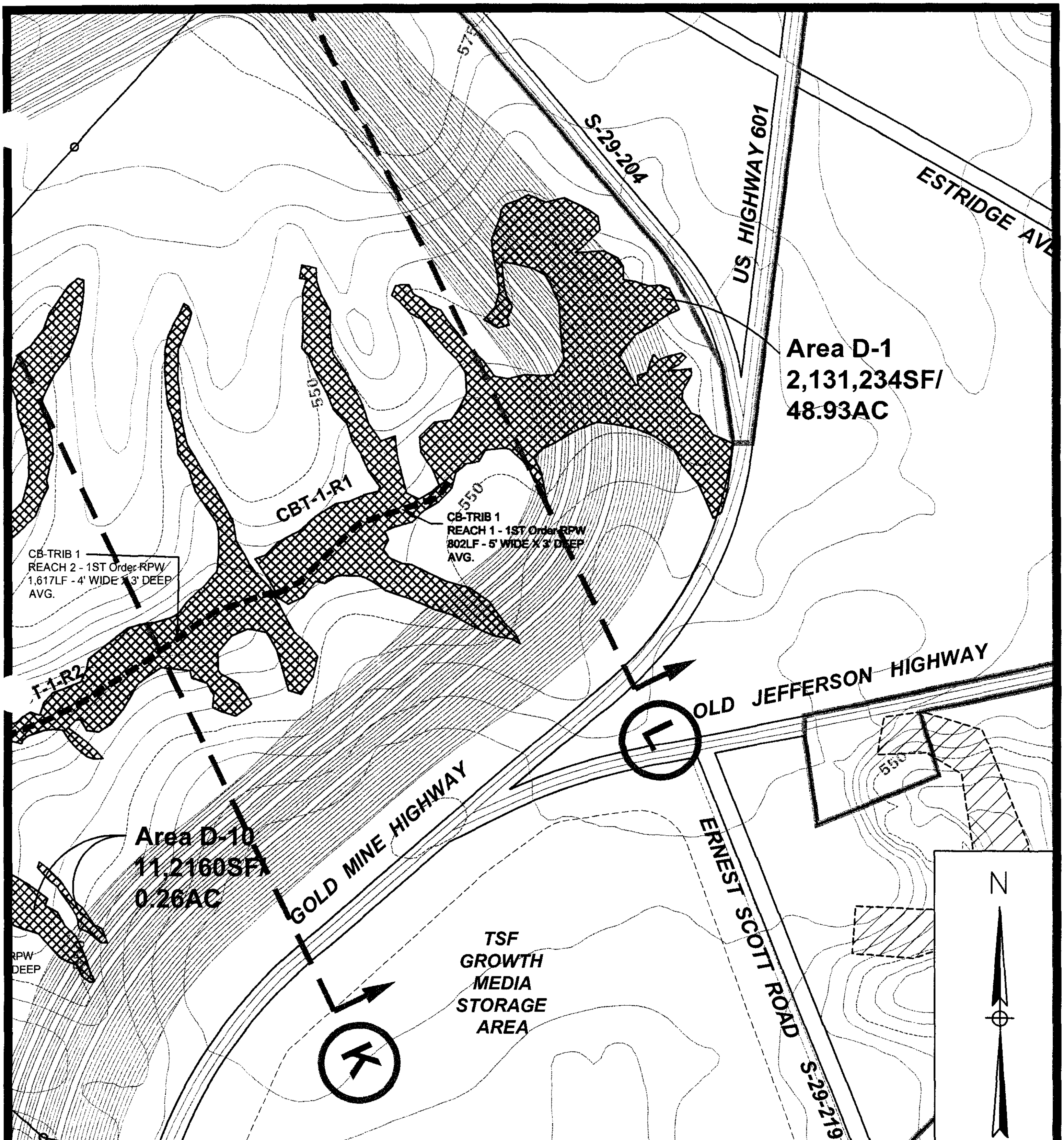
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **13 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 14 of 58
Dated 21 Jan 2011



Areas Impacted | See sheet 3 for quantities of impacts

D1

Streams Impacted

CBT-1-R1

Date: **12/03/10**

500 0 500

scale in feet
1" = 500'

LEGEND

- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

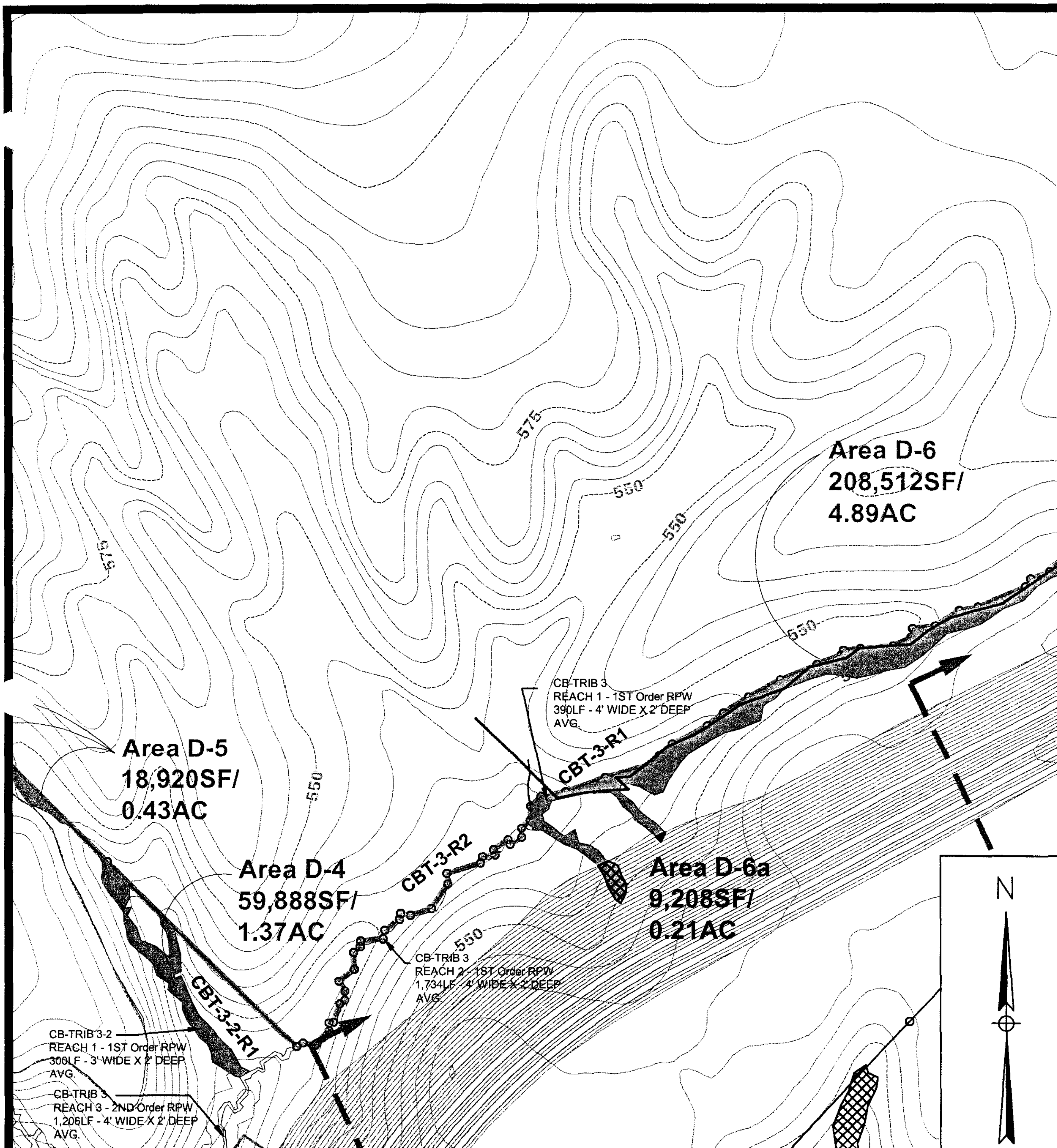
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. **14 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 15 of 58
Dated 21 Jan 2011



Areas Impacted See sheet 3 for quantities of impacts

D-6a

Streams Impacted

NONE

Date: 12/03/10

500 0 500

scale in feet
1" = 500'

LEGEND

- IMPACTED WETLAND
- IMPACTED STREAM
- UNIMPACTED WETLAND
- FLOODED WETLAND
- DETERMINED AREA

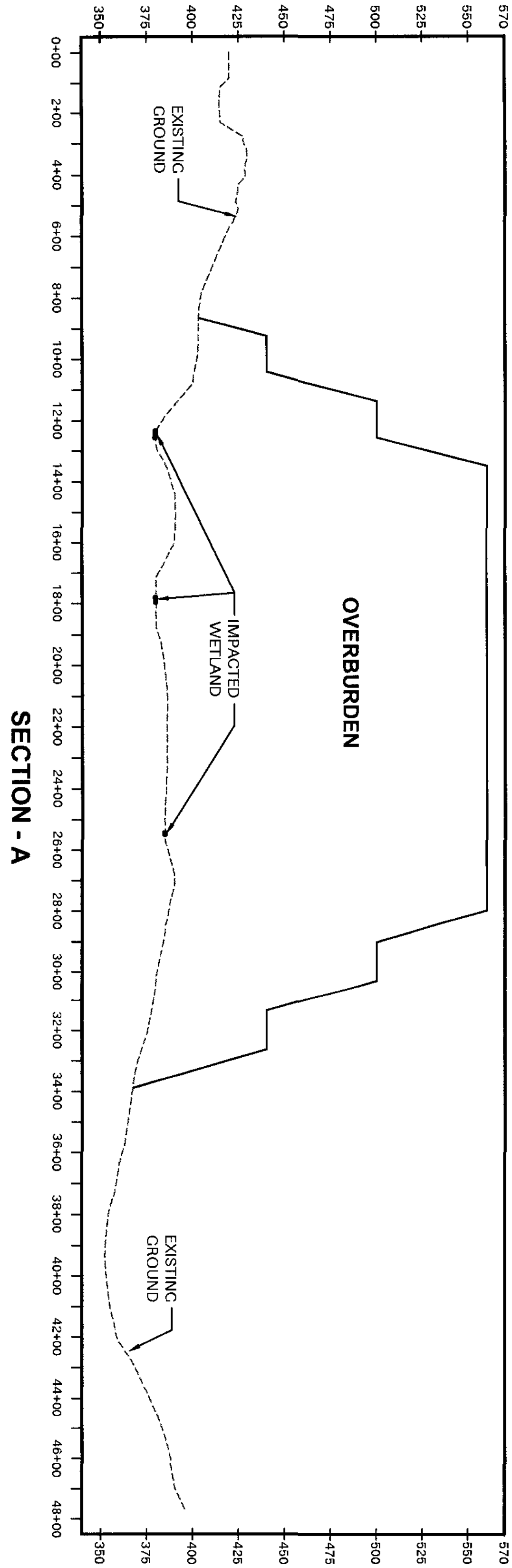
HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND & STREAM IMPACT PLAN

Drawing No. 15 of 27

SAC #1992-24122-4
Haile Gold Mine
Sheet 16 of 58
Dated 21 Jan 2011



0 600 1200
scale in feet
1" = 600'

0 100 200
scale in feet
1" = 100'

HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - A

SAC #1992-24122-4
Haile Gold Mine
Sheet 17 of 58
Dated 21 Jan 2011

Date: 12 /03/10

Drawing No. 16 of 27

HAILE GOLD MINE

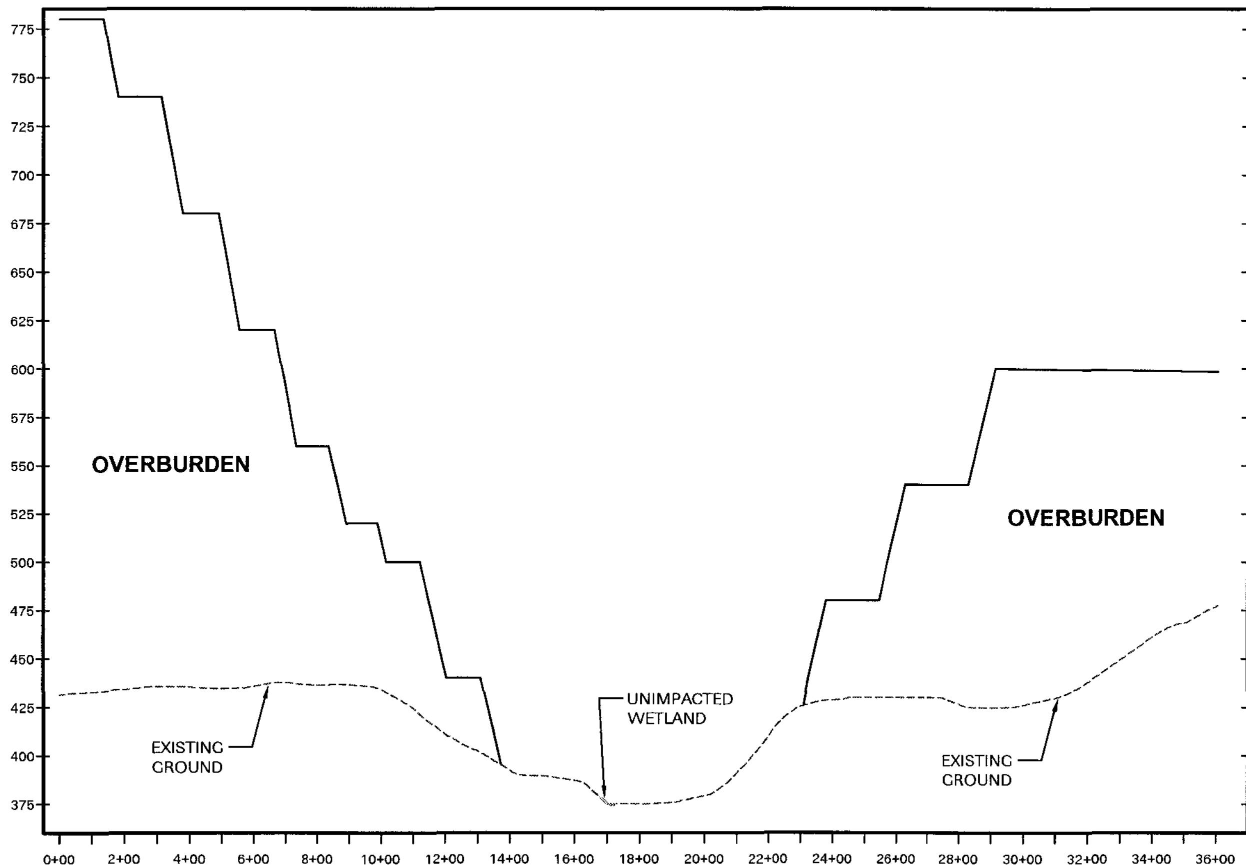
KERSHAW, SOUTH CAROLINA

SAC #1992-24122-4
Haile Gold Mine
Sheet 18 of 58
Dated 21 Jan 2011

Drawing Title: **WETLAND IMPACT SECTION - B**

Drawing No. **17 of 27**

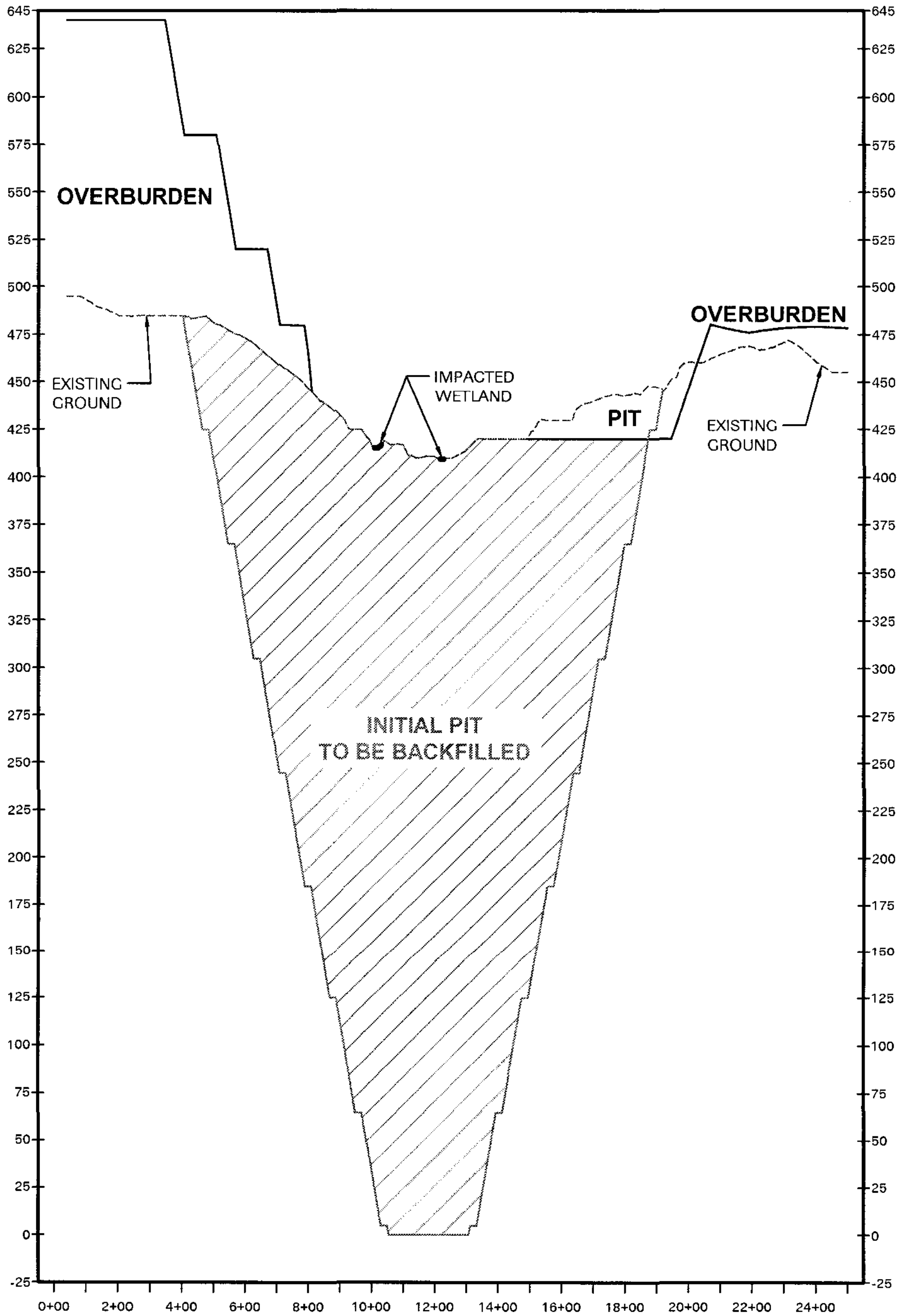
Date: **12/03/10**



SECTION - B

0 600 1200
scale in feet
1" = 600'

0 100 200
scale in feet
1" = 100'



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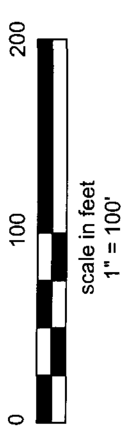
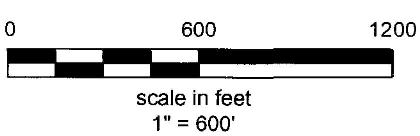




HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

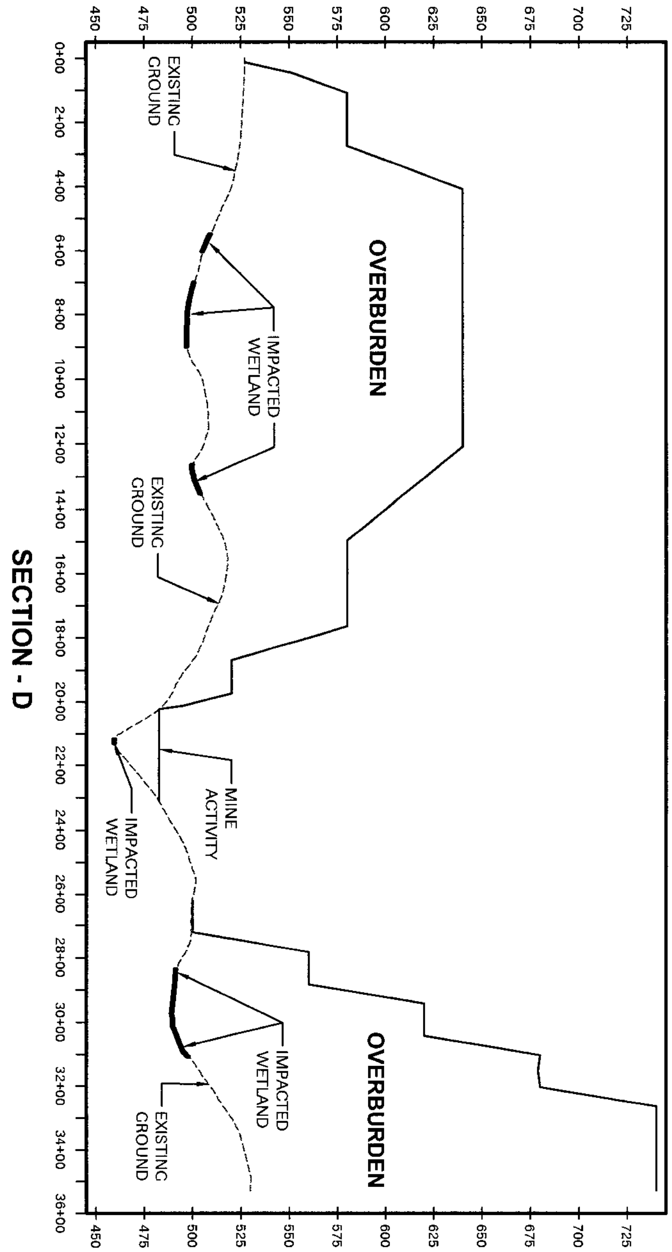
Drawing Title

WETLAND IMPACT SECTION - C

Date: **12 /03/10**

Drawing No. **18 of 27**

SAC #1992-24122-4
Haile Gold Mine
Sheet 19 of 58
Dated 21 Jan 2011



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HAILE GOLD MINE

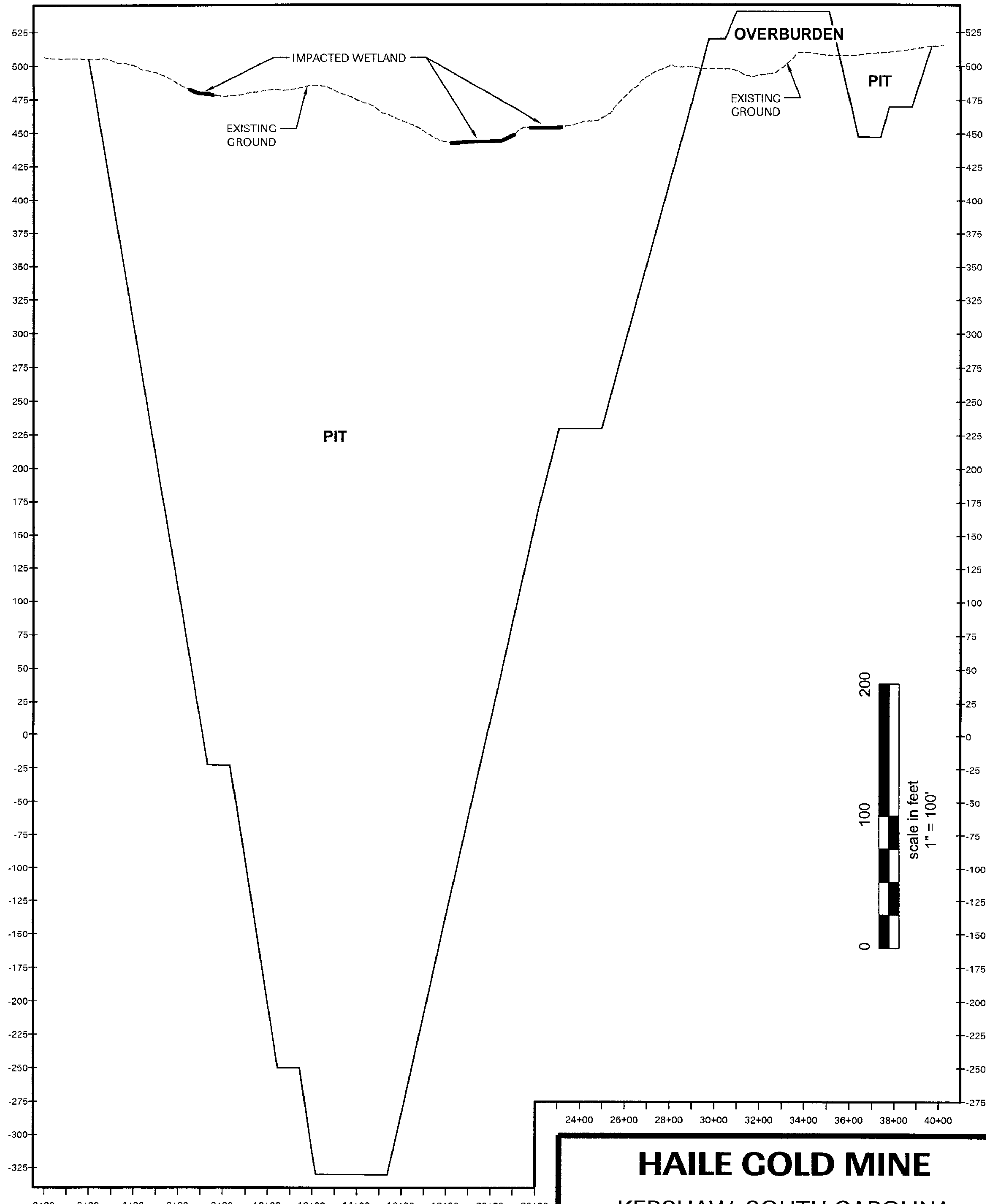
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - D

SAC #1992-24122-4
Haile Gold Mine
Sheet 20 of 58
Dated 21 Jan 2011

Date: 12 /03/10

Drawing No. 19 of 27



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HAILE GOLD MINE

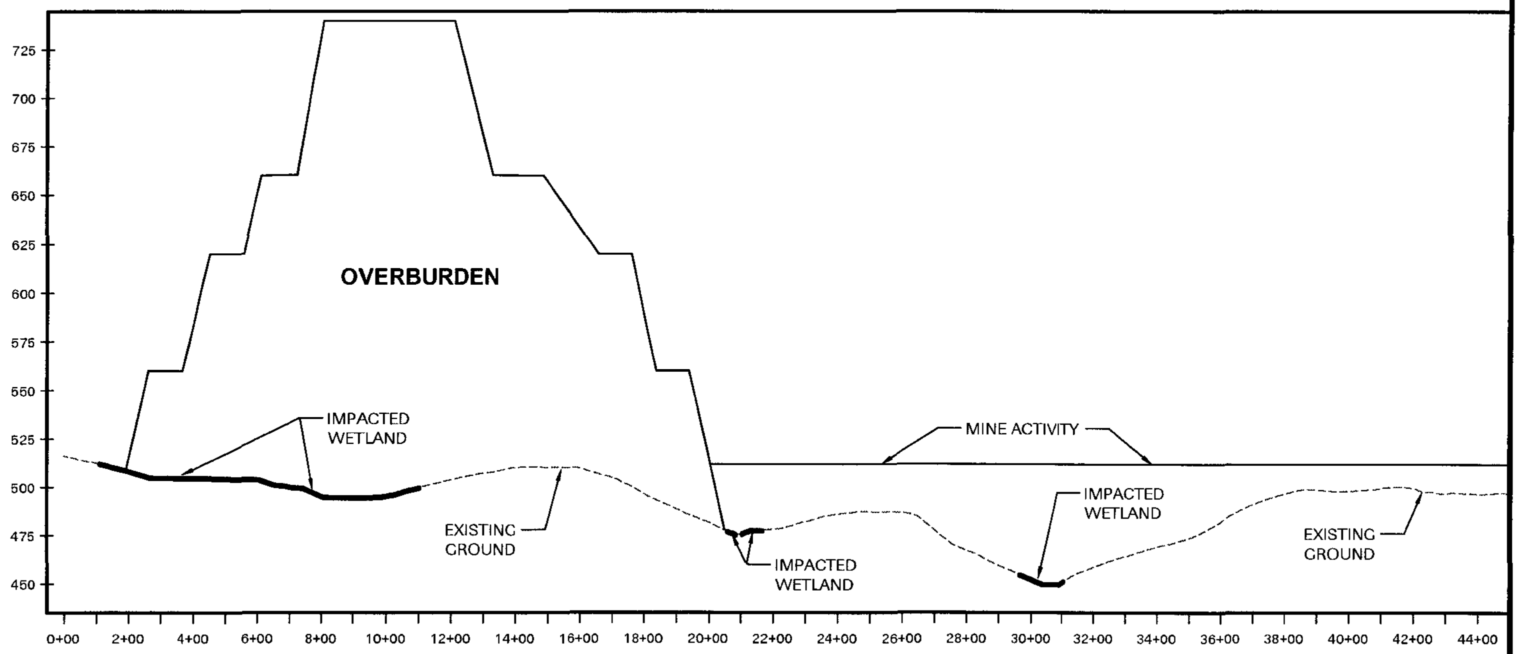
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - E

Date: 12 /03/10

Drawing No. 20 of 27

SAC #1992-24122-4
Haile Gold Mine
Sheet 21 of 58
Dated 21 Jan 2011



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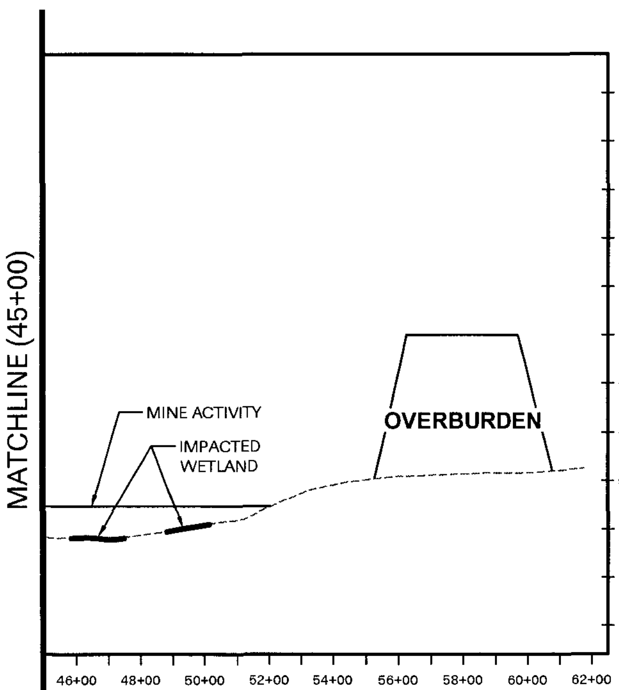

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HAILE GOLD MINE

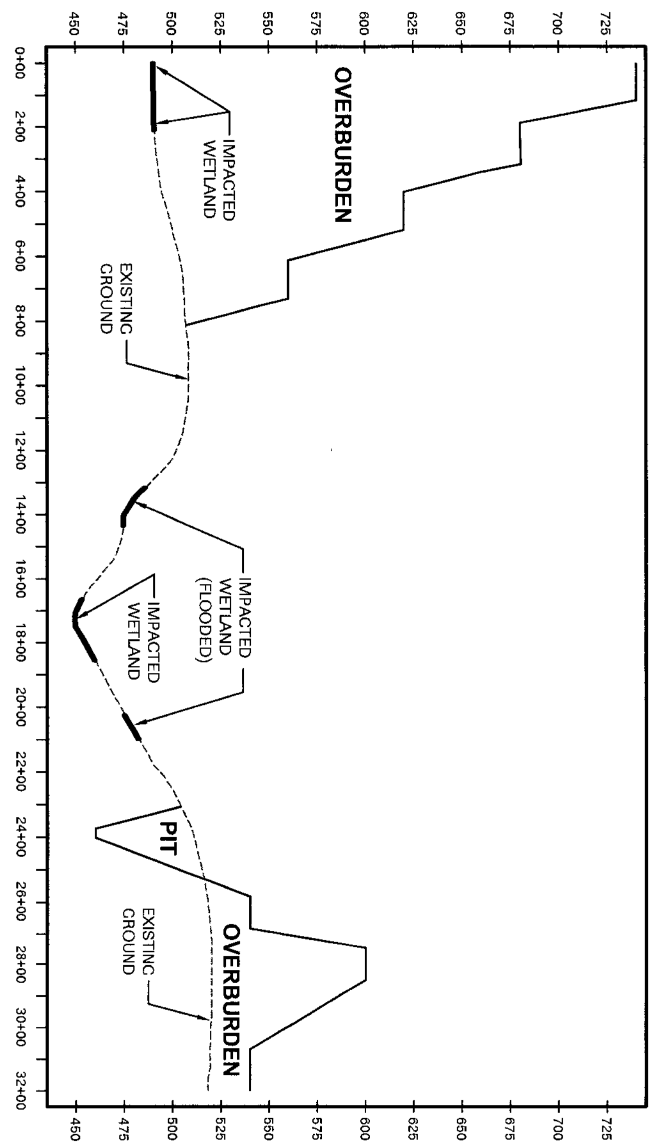
KERSHAW, SOUTH CAROLINA

SAC #1992-24122-4
Haile Gold Mine
Sheet 22 of 58
Dated 21 Jan 2011

Drawing Title: **WETLAND IMPACT SECTION - F**

Drawing No.: **21 of 27**

Date: **12 /03/10**



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HAILE GOLD MINE

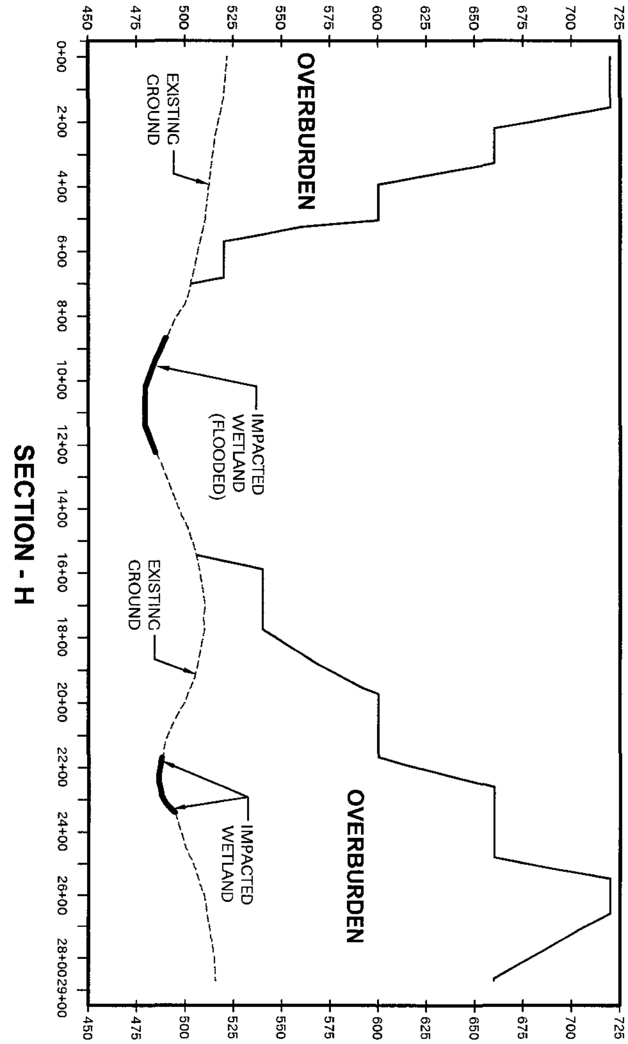
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - G

Date: 12 /03/10

Drawing No. 22 of 27

SAC #1992-24122-4
Haile Gold Mine
Sheet 23 of 58
Dated 21 Jan 2011



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HAILE GOLD MINE

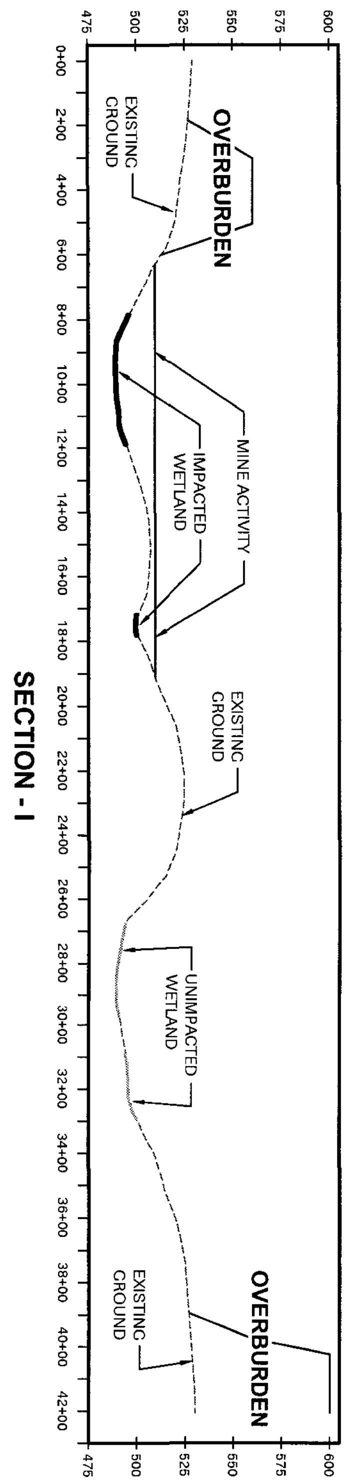
KERSHAW, SOUTH CAROLINA

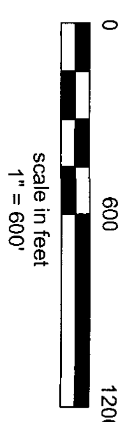
Drawing Title
WETLAND IMPACT SECTION - H

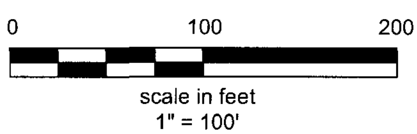
Date: 12 /03/10

Drawing No. 23 of 27

SAC #1992-24122-4
Haile Gold Mine
Sheet 24 of 58
Dated 21 Jan 2011







HAILE GOLD MINE

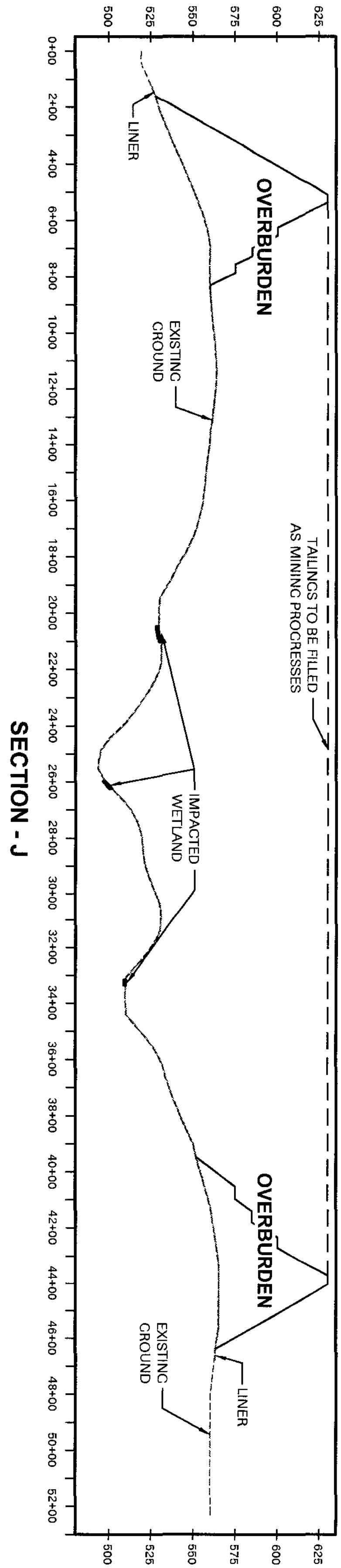
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - I

SAC #1992-24122-4
Haile Gold Mine
Sheet 25 of 58
Dated 21 Jan 2011

Date: 12 /03/10

Drawing No. 24 of 27



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HAILE GOLD MINE

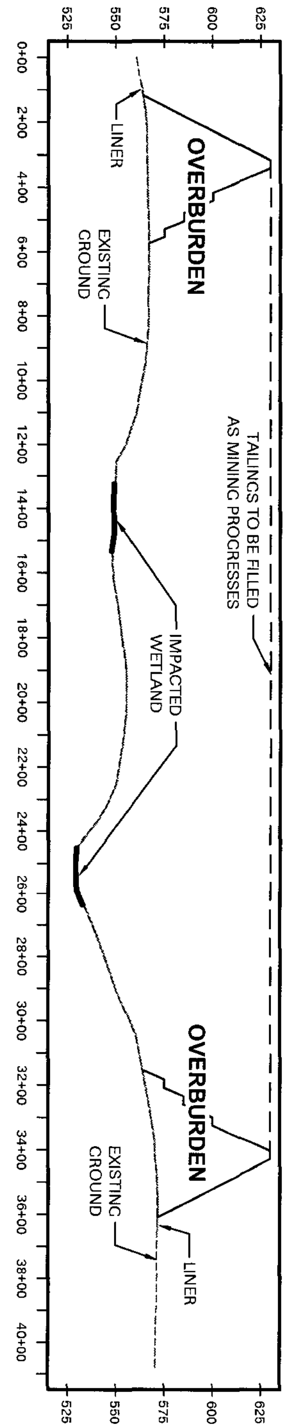
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - J

SAC #1992-24122-4
Haile Gold Mine
Sheet 26 of 58
Dated 21 Jan 2011

Date: 12 /03/10

Drawing No. 25 of 27



SECTION - K

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HAILE GOLD MINE

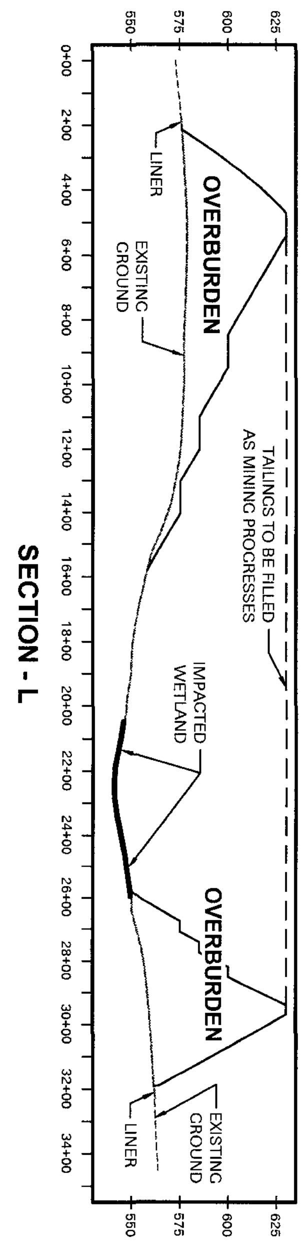
KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - K

SAC #1992-24122-4
Haile Gold Mine
Sheet 27 of 58
Dated 21 Jan 2011

Date: 12 /03/10

Drawing No. 26 of 27



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scale in feet
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HAILE GOLD MINE

KERSHAW, SOUTH CAROLINA

Drawing Title
WETLAND IMPACT SECTION - L

Date: 12 /03/10

Drawing No. 27 of 27

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Haile Gold Mine
Sheet 28 of 58
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IV. Project Description

A. Mining Method Description

Production at the Haile Gold Mine will consist of the phased mining of multiple open pits at a nominal mill rate of 7,000 tons of ore per day, 365 days per year. The current mine plan comprises eight pits; these are Ledbetter, Snake, Haile, Mill, Red Hill, Chase Hill, Small, and Champion. As exploration continues, it is expected that additional pits will be brought in to the mine plan. Mining will be on a 7 day per week schedule. The average life of mine strip ratio is approximately 6:1, overburden to ore. Mining rates vary by year with initial production being 40,000 tons per day ore plus overburden, and increasing to 79,000 tons per day within a few years. Mining equipment has been selected to provide flexible, efficient operation within the selected pit design parameters. Haul roads are constructed to connect the pit areas, the stockpile areas, and the primary crusher area. Haul roads are designed at minimum 100 foot operating width including safety berms and drainage. The maximum design gradient is 10%.

The mining cycle is divided into specific functions. Each function consists of unique operations and the operators require specific skill sets to complete them. The basic mining functions are drilling, blasting, loading, hauling, and support.

Concurrent reclamation will be performed during the mine life.

<u>Pre-Production</u>

A 12-year mine production plan has been created that will pre-strip approximately 11.7 million tons of overburden prior to production.

Following the initial clearing and grubbing, growth media will be removed from the affected areas and stockpiled until it can be redistributed for concurrent and/or final reclamation of facilities.

Approximately 182,000 tons of ore are mined during pre-production. This material will be placed on a lined facility near the plant site to be fed to the mill as scheduled.

<u>Overburden Production</u>

Approximately 240 million tons of overburden material will be generated and selectively placed based on geochemical characteristics. An overburden management plan has been developed to sample, analyze, characterize, and selectively handle and place non-ore material. Placement of the material will either be on a lined or unlined overburden facility, for use in the construction of the tailing storage facility embankment, concurrent reclamation of facilities, or returned to one of the mined pits for backfill.

Ore Production

Mining generally occurs from two pits, one in pre-stripping, and one in production. Since the mine area is overlain by coastal plain sand and saprolite, this material can be excavated without drilling and blasting. It will be loaded directly into haul trucks and transported to growth media stockpiles, overburden stockpile facilities, or used in construction of the tailings storage facility embankment.

Drilling in rock zones will be conducted using rotary blasthole drills capable of drilling 6 inch diameter holes to a depth of 23 feet. The mining bench height is 20 feet and an additional 3 feet of subdrill is required to ensure a smooth pit floor is achieved. Drill holes will be completed on a blast pattern of approximately 14 feet by 14 feet. A sample of the detritus, or cuttings, will be taken for each blasthole drilled. The samples will be delivered to an on-site laboratory for analysis. Individual blasts will consist of between 50 holes and 200 holes. Once an individual blast pattern has been completed, the pattern will be blasted to loosen the rock for subsequent excavation. The blastholes will be loaded with blasting agents, primed with cast boosters for initiation, and tied in with electronic programmable delays (EDETs). The delays are used in order to time the blast propagation for optimizing rock fragmentation and minimize low-frequency vibrations to protect the pit slopes from damage. The EDETs provide an added measure of safety in that each detonator is checked for continuity and proper operation prior to initiating the blast. In all blasting operations the maximum peak particle velocity will not exceed regulatory limits at the immediate location of any dwelling, public building, school, church, or commercial or institutional building.

Loading equipment will consist of hydraulic front shovels and wheel loaders. The loading equipment will have bucket capacities of about 15 cubic yards. The loading equipment will excavate material from the pits and load it into mining trucks for transport to various destinations. The front shovel is selected for working in poor underfoot conditions that may impede the ability of a wheel loader to work efficiently. Wheel loaders are selected as they are highly mobile and can quickly tram from one working area to another. Wheel loaders will work in the pit excavating material and in stockpiles for rehandling.

Haulage equipment will be comprised of 100-ton capacity off road mining trucks. Material loaded from the pits will be transported to the mill, to overburden facilities, or to growth media stockpiles in mining trucks. Articulated mining trucks may be used from time to time where conditions warrant, such as in poor underfoot conditions. These trucks are smaller having a capacity of 40 tons.

Support operations are required to maintain pits, overburden facilities, haulroads, stockpiles, and to perform construction as well as concurrent reclamation. The equipment used for support operations consists of a secondary rock drill, small loaders, small mining trucks, track-type tractors equipped with bulldozer and ripper, wheel dozers, motor graders, water trucks, and hydraulic backhoe excavators.

The initial mine mobile equipment list appears below. Additions and replacements to this list over the life of the mine include an additional blasthole drill, wheel loader, haul trucks as haul distances increase, motor grader, and water truck.

Mine Major Equipment	
Type	No.
Blasthole drill 6 1/2"	3
Front shovel 14.4 cu yd	1
Wheel loader 15 cu yd	1
Haultruck 100 ton	11
Trackhoe 2 cu yd	1
Motor grader 14' moldboard	2
Crawler dozer 410hp	2
Crawler dozer 580hp	1
Rubber tire dozer	1
Water truck 13,000 gal	1

Figure IV-1. Major Mine Equipment

Other mobile equipment will be necessary for maintenance operations and other functions. There will be a need for service trucks, mechanics trucks, forklifts, fuel trucks, lowboy truck, tire manipulator, and blasting agent transport/mix trucks.

Mining Sequence and Pit Schedule

Each pit area will be cleared, grubbed, and the soil removed and stored in growth media stockpiles prior to mining activity.

Mining commences during pre-production in the Mill Pit. The pre-production period is about one year and overburden material is removed from Mill Pit to expose ore.

Once the mill facility is operational in year 1, ore is supplied from the Mill Pit. The Snake Pit is comprised of two phases. Overburden stripping starts in Phase 1 of the Snake Pit. Phase 1 is smaller and reaches ore sooner, while deferring overburden for the second phase. Phase 2 mines the pit back to final limits.

Year 2 sees ore supplied by Mill Pit and Snake Phase 1. Snake Phase 2 Pit stripping commences.

Year 3 sees Mill Pit completed (approximately 400 feet deep) and backfilling starts. Haile Pit starts. Snake Phase 1 is completed and Phase 2 continues. Ore is supplied from the Snake Pit.

Year 4 Snake Pit provides ore. Haile Pit continues. Red Hill Pit is started as is Ledbetter Phase 1 Pit.

Year 5 Snake Pit completed (approximately 600 feet deep) and backfilling starts. Haile Pit continues. Red Hill Pit continues. Ledbetter Phase 1 continues.

The remaining years, through the end of the mine life, see the Haile and Red Hill Pits completed (approximately 380 feet deep and 240 feet deep, respectively) and backfilled. Mining continues in Ledbetter Phase 2 and this pit is completed in year 10 (approximately 840 feet deep).

Year 7 sees ore supplied from the Chase Hill Pit (approximately 240 feet deep) and in Year 10 ore is from the Small (approximately 110 feet deep) and Champion (approximately 240 feet deep) Pits.

The final year of operation sees the ore stockpile reclaimed and fed to the mill.

B. Mill Process Description

The Haile Gold Mine process facility incorporates both physical and chemical separation process techniques to liberate and concentrate the gold from the ore. The primary unit operations include:

- Crushing and Coarse Ore Storage
- Crushed Ore Reclaim
- Grinding
- Flotation
- Concentrate Treatment
- Flotation Tailing Treatment
- Tailing Systems
- Carbon Handling and Refinery

In addition, ancillary operations include:

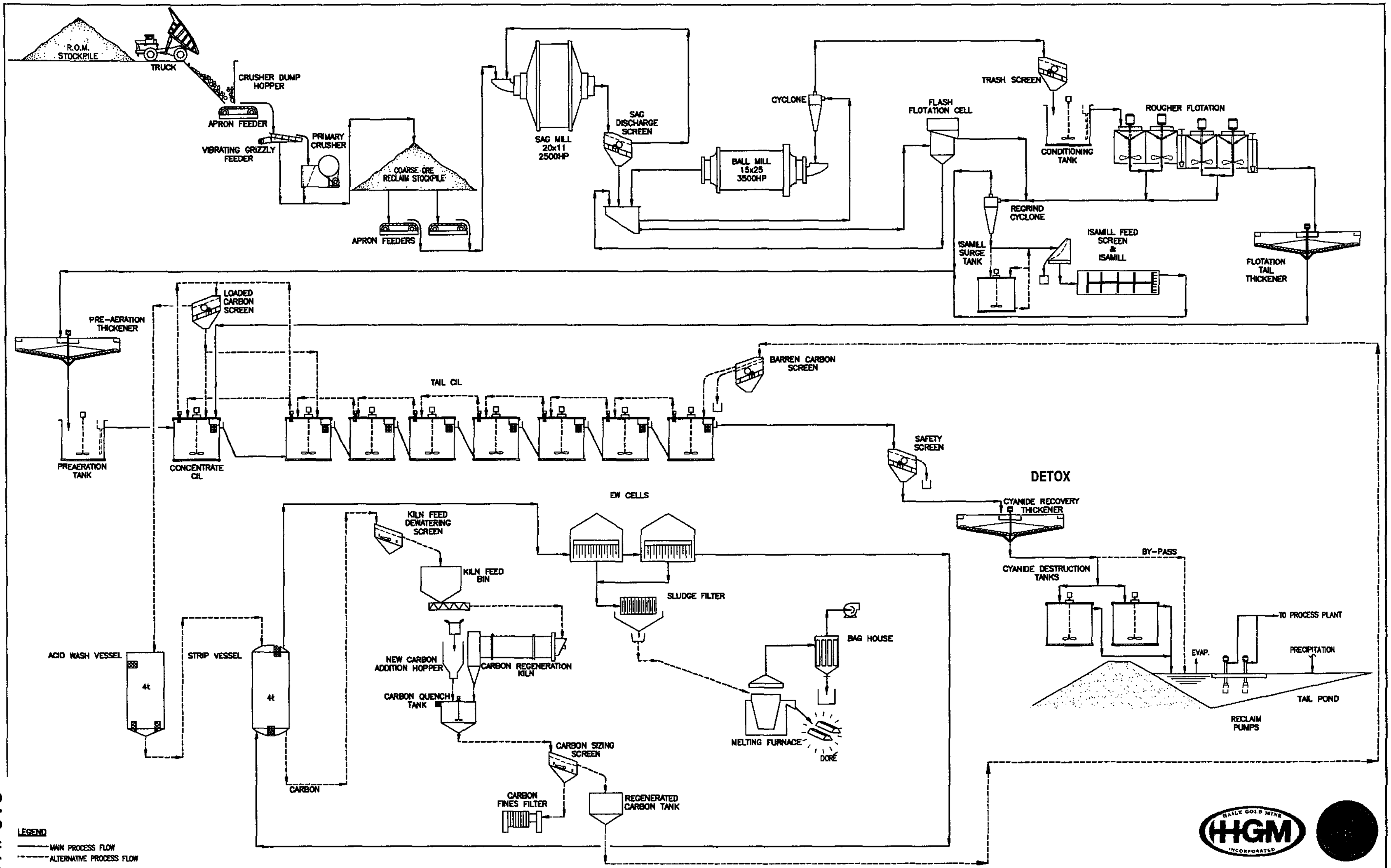
- Reagent Storage and Mixing
- Water Systems
- Compressed Air Systems
- Process Containment and Events Pond

The following sections describe the processes and circuits involved. They are schematically shown on the process flow sheet 000-EN-001 (Figure IV-2) and the process site plan 000-EN-002 (Figure IV-3).

Crushing and Coarse Ore Storage

Ore from the mine will be transported to the primary crusher in haul trucks. The ore is crushed to less than six (6) inches in the primary crusher. The trucks dump ore into a feed hopper or to a stockpile ahead of the primary crusher. A front end loader will be used to feed the crusher feed hopper if needed.

The ore will discharge from the crusher feed hopper using an apron feeder, The feeder delivers the run of mine ore to a vibrating grizzly, which is slotted to separate large ore particles from small ore particles. Ore particles smaller than six inches will pass through the slots and bypass the jaw crusher. Ore that is larger than the 6" slot openings will be fed to the jaw crusher. The fine ore that passed through the vibrating grizzly feeder will discharge onto a conveyor that collects ore from the discharge of the crusher. The ore passing through the primary crusher is reduced in size to less than six inches and falls onto the crusher discharge conveyor and combines with the ore that passed through the grizzly.



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DRAWN BY	JWB	NOV 10
CHECKED BY	JS	
PROJECT MGR		
CLIENT APPR.		

M3 — ARCHITECTURE, ENGINEERING, CONSTRUCTION MANAGEMENT
Tucson, Arizona; Chandler, Arizona; Hermosillo, Sonora Mexico
www.m3eng.com

Romarco Minerals, Inc.

HAILE GOLD PROJECT
OVERALL PROCESS
FLOW SHEET

JOB NO. M3-PN09069
DWG NO. 000-EN-001
REV NO. 0 DATE 08-NOV-10

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Sheet 33 of 58
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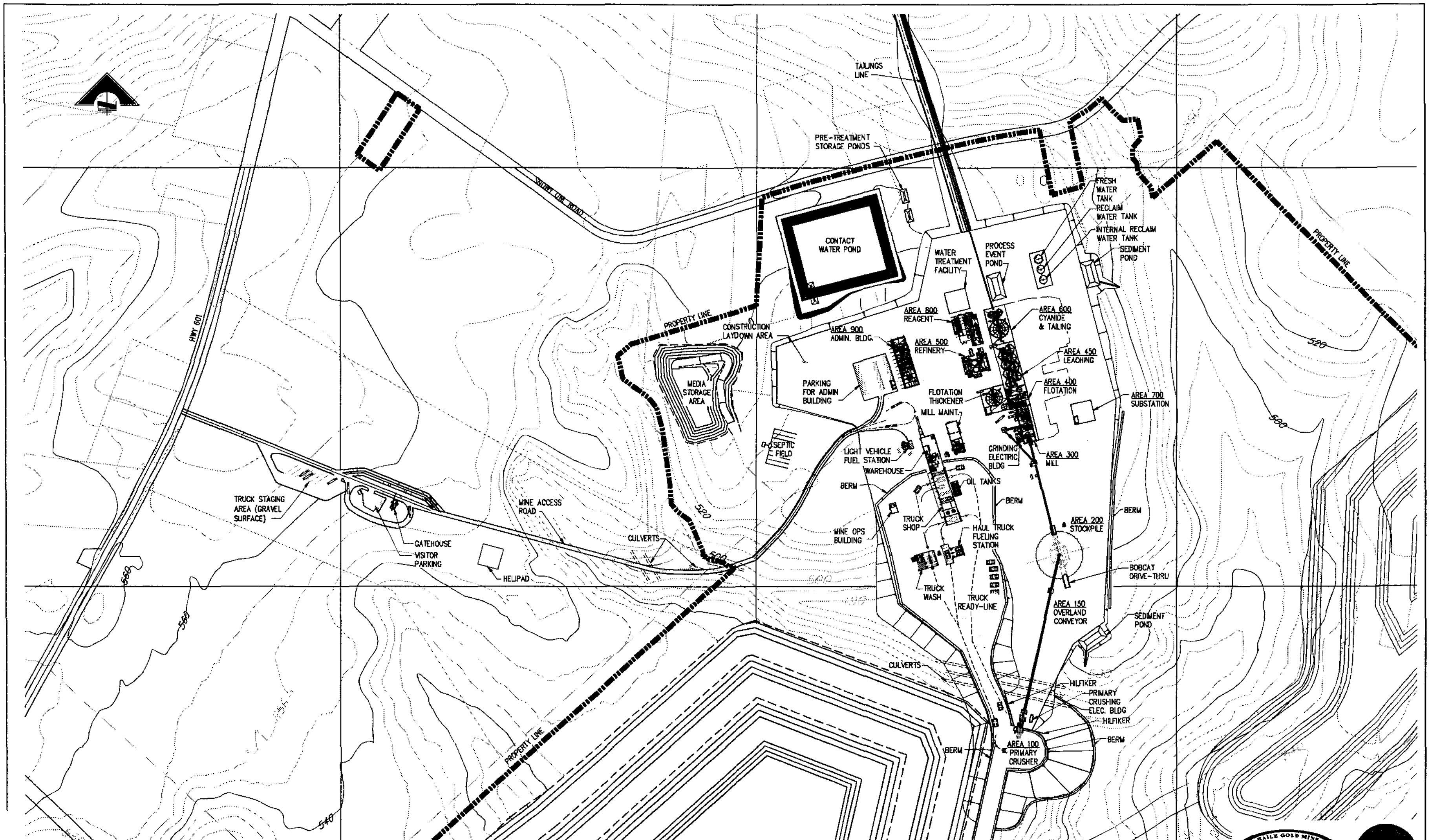

PLAN

SCALE: 1"=200'-0"

200' 100' 0' 200' 300'

1" = 200'

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CHECKED BY		
PROJECT MGR		
CLIENT APPR.		

m3 ARCHITECTURE ENGINEERING CONSTRUCTION MANAGEMENT
Tucson, Arizona Chandler, Arizona Hermosillo, Sonora Mexico www.m3eng.com

Romarco Minerals, Inc.

HAILE GOLD PROJECT
GENERAL
ENVIRONMENTAL
PARTIAL SITE PLAN

JOB NO. M3-PN09089
DWG NO. 000-EN-002
REV NO. 1
DATE 10 NOV 10

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Haile Gold Mine
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A hydraulically operated rock breaker will be provided for breaking oversize rock delivered to the jaw crusher. The primary crushing facility will be equipped with an air compressor to provide high pressure air requirements for maintenance equipment such as air tools and air lances.

The primary crusher discharge conveyor will feed crushed ore to the coarse ore stockpile feed conveyor. The coarse ore stockpile feed conveyor will transport the ore to a conical coarse ore stockpile. The crushing production rate will be monitored by a belt scale mounted on the coarse ore stockpile feed conveyor. A tramp iron magnet will be installed at the discharge of the primary crusher discharge conveyor to remove any unwanted metal from the crusher discharge stream. A metal detector will be installed over the coarse ore stockpile feed conveyor to insure that any tramp metal has been removed.

A water spray system will be installed to suppress dust in ore feed streams, transfer points between conveyors and chutes, and the crusher dump pocket.

The coarse ore stockpile will have approximately one day of full throughput live storage capacity. Dead storage may be recovered by bulldozer and/or a frond end loader when needed.

Any ore spillage will be returned to the nearest belt conveyor for processing. Precipitation falling on the crusher will be collected in a sump in the lowest level of the crusher structure and will be pumped to the process plant for use in the process.

<u>Crushed Ore Reclaim</u>

Two draw points under the crushed ore stockpile will provide ore to two reclaim apron feeders located in a tunnel under the stockpile. The reclaim feeders will discharge onto the SAG mill feed conveyor. Each feeder will be capable of feeding up to 400 tons per hour of ore to the SAG mill feed conveyor. The feeders will be variable speed and controlled to maintain the ore feed rate to the grinding circuit. Either or both feeders may be operated at any time. The speed of the feeders will be controlled by a control signal that will be provided by a belt scale mounted on the conveyor down stream of the feeders. A magnet will be installed over the SAG mill feed conveyor to make sure any tramp metal is removed.

In addition to water sprays at ore transfer points, cartridge type dust collectors will be installed to capture and control dust from the reclaim feeders within the reclaim tunnel.

Precipitation that lands on the ore stockpile or that is collected in the reclaim tunnel area will be collected in a sump in the lowest corner of the tunnel and will be pumped to the process plant for use in the process.

<u>Grinding</u>

The crushed ore from the reclaim tunnel is conveyed to the grinding circuit. The grinding circuit will process an average of 7,000 tons of ore per day on a 365 days per year basis. At 92% plant availability, this equates to a design throughput of 7,609 ton per day. Ore will be ground to a final product size of 80% passing 200 mesh (74 microns) in a semi-autogenous (SAG) primary mill and secondary ball mill grinding circuit.

Primary grinding will be performed in a SAG mill. The ore from the SAG mill feed conveyor is deposited into the SAG mill and is mixed with water to make a solid and liquid mixture referred to as slurry. The SAG mill will operate in closed circuit with a SAG mill discharge screen. Closed circuit implies that the slurry discharge from the mill is screened with the coarse material that does not pass the screen openings returning to the feed of the SAG mill and the finer material progressing to the second stage of grinding in the ball mill circuit.

SAG mill discharge screen oversize material will report to a series of two belt conveyors that will transport the oversize back to the SAG mill feed conveyor.

Secondary grinding will be performed in a ball mill operated in closed circuit with hydrocyclones. The hydrocyclones segregate the ore particles by size with the fine material reporting to the hydrocyclone overflow and the coarse product reporting to the cyclone underflow. The underflow returns to the ball mill for additional grinding. The ball mill product will discharge over a trommel screen prior to being pumped to the hydrocyclones. The trommel screen will separate ball chips and tramp material from the process stream and deliver that material to tote bin for removal.

The ball mill discharge slurry will fall through the trommel where it will be combined with SAG mill discharge screen undersize slurry in the hydrocyclone feed pump box. This combined slurry will be pumped, using variable speed slurry pumps, to the hydrocyclones for sizing. Hydrocyclone underflow will flow by gravity back to the ball mill for additional grinding.

A portion of the combined SAG mill and ball mill slurry will be pumped to a flash flotation cell. The flash flotation cell separates the gold bearing sulfide minerals from the gangue material into a concentrate stream containing the gold containing sulfides and a tail stream containing the gangue. The flash flotation concentrate will flow by gravity to the regrind circuit while the tail is returned to the hydrocyclone feed sump.

Hydrocyclone overflow (final grinding circuit product) will flow by gravity to a vibrating trash screen for removal of tramp material. Trash screen oversize will discharge into a tote bin for removal. Trash screen undersize will flow by gravity to the rougher flotation conditioning tank.

An overhead crane will be provided for maintenance purposes. The area will be equipped with a sump and pump for clean-up purposes.

The grinding and flotation circuit is an open air plant covered with a roof only. The floor will be concrete with containment walls to contain process upsets within the grinding and flotation area. The floor will be sloped to floor sumps that collect the contained solution and solids, which are then pumped back to the hydrocyclone feed pump box. The "Process Containment and Events Pond" section discusses containment sizing.

<u>Flotation</u>

As discussed previously, a portion of the combined SAG mill and ball mill discharge will be pumped to a flash flotation cell. Tail from the flash flotation cell will flow by gravity back to the hydrocyclone feed sump. Concentrate from the flash flotation cell will flow by gravity to the regrind hydrocyclone feed pump box.

Hydrocyclone overflow will flow by gravity to a flotation feed trash screen for removal of tramp material ahead of the rougher flotation conditioning tank. Trash screen undersize will flow by gravity to the rougher flotation conditioning tank.

Flotation concentrate from both the flash flotation cell and the rougher flotation cells will be pumped to a regrind circuit. The concentrate regrind circuit grinds the material to approximately 15 microns. . Various flotation reagents will be added to the SAG mill feed, to the cyclone feed sump, to the rougher flotation conditioning tank and stage added to the rougher flotation cells as needed to achieve efficient flotation recovery. The "Reagent Storage and Mixing" section discusses these reagents in more detail along with associated addition points.

<u>Concentrate Treatment</u>

<u>Regrind</u>
Combined flotation concentrate from the flash flotation cell and the rougher flotation cells will be pumped using a variable speed pump to the regrind hydrocyclone cluster. The underflow stream from the regrind hydrocyclone cluster will flow by gravity to the regrind mill for additional grinding. Overflow from the regrind hydrocyclone cluster will flow by gravity to the regrind mill discharge pump box. Product from the regrind mill will be combined with the regrind cyclone overflow in the regrind mill discharge pump box, where it will be pumped using a variable speed pump to the pre-aeration thickener feed box. Regrind hydrocyclone underflow may be bypassed to an agitated surge tank ahead of the regrind mill for storage when the regrind mill is down for maintenance.

<u>Pre-aeration</u>
Reground concentrate will be pumped to a thickener. Flocculant and dilution water will be added to the thickener feed to aid in settling. In addition, milk of lime (MOL) may be added to the thickener feed.

The withdrawal rate of thickened solids will be controlled by a variable speed thickener underflow pump to maintain the proper slurry characteristics. Underflow from the pre-aeration thickener will be pumped at approximately 60% solids to an agitated pre-aeration tank where it will be diluted to approximately 45% solids with internal reclaim water ahead of a series of eight agitated carbon-in-leach (CIL) tanks.

The thickener overflow will be pumped using a fixed speed pump to the internal reclaim water tank for reuse in the grinding and flotation process circuits.

The pre-aeration circuit will consist of one agitated tank. Process air will be piped to the tank and bubbled through the slurry to oxidize the ore. Aeration enhances gold recovery and reduces the amount of reagents required for leaching. Also, lead nitrate will be added to the pre-aeration tank to promote better gold recovery.

Slurry from the pre-aeration tank will be pumped to CIL tank #1 where it will be leached with cyanide in the presence of activated carbon.

The pre-aeration thickener will be mounted on steel legs on foundations. A concrete containment area with slab on grade and cast-in-place walls will contain precipitation and process spills within the regrind, pre-aeration and thickening areas. A sump pump will transfer the contained material back to the pre-aeration thickener for processing.

Flotation Tailing Treatment

The rougher flotation tailing will still contain enough gold to justify further processing. This section describes the process that will be used to recover the additional gold from the flotation tailing.

Flotation Tail Thickener

The rougher flotation tailings will flow by gravity to a thickener. Flocculant, milk of lime and dilution water (internal reclaim) will be added to the thickener feed to aid in settling.

The withdrawal rate of settled solids from the thickener will be controlled by a variable speed thickener underflow pump to maintain the proper slurry characteristics. Underflow from the flotation tailing thickener will be pumped using a variable speed slurry pump, at approximately 60% solids, to the CIL tank #2 feed box where it is combined with the discharge from CIL tank #1. The combined slurry will be diluted to approximately 45% solids with reclaim water ahead of the remaining seven CIL tanks where it will be leached with cyanide in the presence of activated carbon.

The thickener overflow will be pumped using a fixed speed pump to the internal reclaim water tank. The flotation tail thickener will be mounted on steel legs on foundations. A concrete containment area with slab on grade and cast-in-place walls will contain precipitation and process spills. A sump pump will transfer the contained water back to the flotation tail thickener.

Carbon-In Leach (CIL)

The CIL circuit will consist of eight agitated tanks. The gold is leached from the ore and adsorbed onto activated carbon that is mixed within the slurry. The first CIL tank will be used to leach reground flotation concentrate only and will provide approximately 20 hours of retention time. The remaining seven CIL tanks (i.e. tanks #2 through #8) will be used to leach the combined flotation tailing and discharge from tank #1. The seven tanks will provide approximately 20 hours of total retention time at 45% solids. Cyanide solution may be added to the first and second CIL tanks. Process air will be piped to all tanks. Milk of lime may be added to the CIL circuit to adjust pH if required.

Slurry will advance by gravity from tank to tank, exiting the last tank and reporting by gravity to the CIL carbon safety screen.

The CIL tanks will nominally contain 10 g/L of 6 x 12 mesh granular activated carbon to adsorb the dissolved precious metals from the slurry.

Carbon, which has a larger particle size than the ground slurry, will be retained in each CIL tank by an inter-stage screen that will allow only the ore slurry to flow from tank to tank. The carbon will be advanced to the next tank in series (counter-current to the slurry flow) on a batch basis using vertical recessed impeller pumps located in each tank. Loaded carbon (i.e. carbon with precious metals adsorbed onto it) from either the first tank, the second tank, or the third tank will be pumped to the loaded carbon screen. The carbon (screen oversize) will be water washed on the screen and then discharged by gravity into the acid wash vessel while the screen undersize will be returned to the appropriate CIL tank.

A concrete containment slab on grade and containment walls will contain precipitation and process spills in the CIL area. A sump pump will transfer the material back to the process.

CIL Carbon Safety Screen
Slurry discharging from the last CIL tank will flow by gravity to a CIL carbon safety screen fitted with 28-mesh screen panels. The purpose of this screen is to prevent accidental losses of activated carbon.

The oversize (carbon) from the safety screen will be collected and returned to the CIL circuit. Slurry that passes through the screen will be pumped using a fixed speed pump to the cyanide recovery thickener.

A concrete containment slab on grade and containment walls will contain precipitation and process spills. A sump pump will transfer this material back to the process.

Tailing Systems

Cyanide Recovery Thickener and Tailing Detoxification
The CIL carbon safety screen undersize stream will report to the cyanide recovery thickener feed box. Dilution water (reclaim water), flocculant, and milk of lime are added to the slurry which is then thickened to approximately 55% solids. Overflow solution containing cyanide from the cyanide recovery thickener is routed to the reclaim water tank for reuse in the process. Within process operating limits, a maximum amount of dilution water will be used at all times to minimize the cyanide remaining in the slurry. Under normal operating conditions, the cyanide recovery thickener underflow will be pumped to the tailing storage facility. The withdrawal rate of settled solids will be controlled by a variable speed thickener underflow pump to maintain proper slurry characteristics.

As stated above, cyanide recovery thickener underflow will be pumped to the tailing storage facility under normal conditions. If the cyanide level is high enough (i.e. greater than or equal to 50 ppm weak acid dissociable (WAD) cyanide), the flow can be directed to the cyanide destruction tanks, where cyanide is destroyed using the SO_2/Air process.

In the cyanide detoxification tanks, residual free and WAD cyanide will be oxidized to the relatively non-toxic form of cyanate by the SO_2/Air process using ammonium bisulfite and oxygen, with copper sulfate as a catalyst as needed. Milk of lime will also be added as needed to maintain a slurry pH in the range of 8.0 to 8.5. The more stable iron cyanides are removed from solution as an insoluble ferrocyanide precipitate. The cyanide levels are thereby reduced to an environmentally acceptable level.

The detoxification is accomplished in two agitated tanks operating in parallel. Each tank will provide a residence time of approximately 30 minutes.

Discharge from the cyanide detoxification tanks will be final plant tailing and will be pumped to the tailing storage facility.

A concrete containment slab on grade and containment walls will contain precipitation and process upsets in the cyanide recovery thickener and cyanide detoxification area. A sump pump will transfer the material back to the cyanide recovery thickener.

Carbon Handling and Refinery

Carbon Acid Wash

Loaded carbon from the CIL circuit will flow by gravity to a carbon acid wash vessel. The carbon will be acid washed to remove inorganic contaminants (mainly calcium carbonate) by circulating dilute hydrochloric acid from the acid wash recirculation tank upwards through the bed of carbon. Residual acid in the acid wash vessel will be neutralized with caustic before transferring the carbon to the strip vessel. The carbon is transferred with water using a horizontal recessed impeller pump. Carbon transfer water comes from the closed circuit carbon transfer water system.

A concrete containment slab independent of the carbon strip area containment slab on grade and containment walls will contain precipitation and process spills in the acid wash area. A sump pump will transfer the material back to the process.

Carbon Stripping

Gold will be removed from the carbon utilizing a pressure Zadra circuit. The pressure Zadra circuit comprises circulating a 280°F caustic cyanide solution upward through the partially fluidized bed of loaded carbon. This process is also known as carbon stripping. A more thorough description of the process is as follows:

The loaded carbon from the acid wash circuit will be pumped into the top of the strip column and the excess water will be drained to the floor sump and returned to the process using a sump pump. After the complete batch of carbon has been transferred, the strip cycle will be initiated by pumping hot caustic cyanide solution from the barren solution tank into the bottom of the strip vessel. The solution will discharge through a screened outlet at the top of the vessel before passing through the heat recovery exchanger to the pregnant (strip solution that contains the concentrated gold) solution tank. The hot side of the final heat exchanger is piped to a thermal fluid heater. Approximately 10 Bed Volumes (BV's) at a rate of 2 to 3 BV/hr will be passed through the carbon to remove all the precious metals. A Bed Volume is the volume of solution that occupies the space in the vessel that is occupied by the carbon. A final 3 BV of hot water will be used to wash the carbon at the end of the stripping cycle. After the stripping circuit has been cooled down, the carbon will be transferred with water to the reactivation circuit using a horizontal recessed impeller pump.

A concrete containment slab on grade and containment walls, independent of the acid wash area, will contain precipitation and process spills in the carbon strip area. A sump pump will transfer the water back to the process.

Refinery

The pregnant strip solution produced in the carbon strip circuit is collected in the pregnant solution tank, where it is pumped to electrowinning cells to recover the precious metals. Electrowinning is used to recover the precious metals from the pregnant solution, and it is an electrolytic process where the precious metals are recovered from the solution by passing direct electrical current between electrodes (anodes and cathodes) immersed in the solution. As the current passes from the anode to the cathode, the precious metals loosely plate onto the cathode as a sludge.

Electrowinning is accomplished in two electrowinning cells in series. Each cell contains anodes (304-stainles-stell punched plate) and cathodes (stainless steel mesh held in place by 304-steel bayonets

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and wire frames, and suspended in cross linked polyethylene baskets). Each cell has a DC rectifier capable of delivering a current of 0 to 2000 amps at a voltage of 0 to 9 volts.

The flow rate of pregnant solution through each cell is approximately 50-70 gallons per minute (gpm). During electrowinning the solution flows by gravity to the electrowinning (EW) pump box. From there, the EW barren solution pump delivers the solution to the barren strip solution tank. The sludge will be periodically washed off the cathodes and recovered as a damp cake in a plate and frame filter press. The filter cake will be dried in a drying oven prior to smelting.

The dried filter cake (gold sludge) will be processed, along with pre-mixed flux, in an electric induction melting furnace. When the sludge and flux mixture becomes fully molten, the components separate into two distinct layers: slag (on the top) and metal (on the bottom). The slag layer, containing most of the impurities, is poured off first into a conical slag pot. The remaining molten metal, containing the precious metals and minor impurities, is then poured off into bar molds.

After cooling and solidifying, the metal bar (doré) will be dumped from the mold and slag will be knocked off by hand. The resulting doré bar will be further cleaned of residual slag using a shot cleaning machine and finished as required with a needle gun. The cleaned bars are then weighed and stamped with an I.D. number and weight. Doré bars, each weighing a total of approximately 50 to 80 pounds, will be the final product of the operation and will be stored in a vault awaiting shipment.

Slag will be collected and returned to the process.

Exhaust from the barren solution tank, the pregnant solution tank, and the electrowinning cells will be collected through ductwork and passed through an exhaust control system before discharging to atmosphere. Fumes from the drying oven and the melting furnace will be collected through ductwork and cleaned in a bag house before discharging through an exhaust control system to atmosphere.

The refining building will be enclosed by concrete block walls with a steel framed roof and metal roofing. Water used for cleanup and any spills will be collected and pumped back into the process.

<u>Carbon Reactivation</u>
Following stripping, the carbon will be thermally regenerated before being returned to the CIL circuit. Carbon used in the CIL circuit can be fouled by various organic compounds such as flocculant and flotation reagents. The organics on the surface and in the pores of the carbon blind the adsorption sites available for gold/silver recovery. Thus, organics are removed from the carbon by volatilizing them at high temperatures. The process of restoring the active sites on the surface of the carbon and removing the organics is called carbon reactivation.

Stripped carbon will be pumped from the bottom of the strip vessel to a dewatering screen ahead of a rotary tube reactivation kiln. The coarse carbon particles in the screen oversize will go into the reactivation kiln feed bin. The fine carbon particles and the transfer solution will pass through the screen and flow to a carbon fines settling tank. The feed bin has two wedge wire screens sitting in discharge pipes in the bottom of the bin, and any remaining solution may be drained through these screens and pipes to the floor sump where it is returned to the process.

Well drained damp carbon will be fed from the feed bin into the feed end of the rotary tube reactivation kiln using a variable speed screw conveyor. The reactivation kiln will be heated to temperatures as high as 1400 °F. After entering the feed end of the tube, the carbon will travel down the sloping tube and discharge into a quench tank, where it is quickly cooled. As the hot carbon contacts the fresh water in the quench tank steam is generated, which will provide the desired moisture in the atmosphere above the carbon inside the kiln tube.

Exhaust gases from the reactivation kiln will pass through a wet scrubber and exhaust control system which discharges to atmosphere.

Quenched carbon will be pumped by the quench tank carbon transfer pump to a carbon sizing screen. The coarse carbon particles in the screen oversize will go into the regenerated carbon holding tank. The fine carbon particles and the bulk of the fresh water will pass through the screen and flow to the carbon fines settling tank. The feed bin will have two wedge wire screens sitting in discharge pipes in the bottom of the bin allowing excess water to be drained to the floor sump and pumped back to the process. Reactivated carbon will be pumped, using carbon transport water, from the regenerated carbon holding tank back to CIL tank #8 for reuse.

Periodically, new activated carbon must be added to the system to make up for fine carbon losses. A bulk bag containing approximately 1500 lb of carbon will be suspended above the carbon quench tank. The tank is filled with water, which will be mixed by an agitator. The bottom of the bag will be opened and carbon allowed to flow gradually into the tank. The agitating action quickly wets the surfaces of the carbon and attrits the carbon particles to break up any lumps.

Screen underflow containing carbon fines from the kiln feed dewatering screen and the carbon sizing screen will flow to the carbon fines settling tank. Carbon fines will be recovered using a plate and frame filter and sold or disposed of. A concrete containment slab on grade and containment walls will contain precipitation and process spills. The regeneration area sump pump will return the solutions and spills to the process.

<u>Reagent Storage and Mixing</u>

Reagents requiring handling, mixing, and distribution systems include:

- Sodium cyanide (NaCN)
- Quicklime (Pebble Lime) (CaO)
- Aero 404
- Potassium Amyl Xanthate (PAX)
- Caustic (sodium hydroxide) (NaOH)
- Ammonium Bisulfite (ABS)
- Copper Sulfate (CuSO4)
- Hydrochloric Acid (HCl)
- Sulfuric Acid (H2SO4)
- Lead Nitrate (PbNO3)
- Flocculant
- Antiscalant
- UNR 811A

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The dry reagents will be stored under cover, then mixed in reagent tanks and transferred to distribution tanks for process use.

The reagent building will be a steel framed structure with metal roofing. In general, the building is open, but metal siding will be installed where necessary to keep reagents dry. The floors will be slab on grade concrete with concrete containment walls to capture spills and any precipitation that enters the sides of the structure.

Reagents which are not compatible to be stored together will be kept in separate containment areas within the reagent storage area. Sump pumps in the different containment areas will return these materials to the appropriate process stream.

Sodium Cyanide (NaCN)

Sodium cyanide solution will be added to the ore in the leach circuit to recover gold and silver. Also, sodium cyanide solution will be used to promote the removal of gold and silver from the carbon in the carbon stripping circuit.

Dry sodium cyanide will be delivered in bulk quantity by 20 ton trucks. Sodium cyanide solution will be prepared by adding water to a sodium cyanide mix tank and circulating the solution between the mix tank and the bulk truck until all the dry cyanide has been dissolved. The tanker truck will then be emptied and thoroughly rinsed before leaving site. Throughout the mixing process, the bulk tanker is parked on containment that drains to the main cyanide area containment inside the reagent building. Sodium cyanide solution will be distributed to the CIL circuit and barren strip solution tank using individual metering pumps.

Quicklime (Pebble Lime) (CaO)

Milk of lime slurry will be produced by hydrating pebble quick lime in a lime slaker. Milk of lime slurry will be used to control pH in various parts of the process. Milk of lime slurry will be distributed to the CIL circuit, cyanide detoxification tanks and thickeners using timer controlled on-off valves in a circulating loop.

Dry pebble quicklime will be delivered to the site in bulk quantity by 20 ton trucks and will be pneumatically off loaded to a cone bottom lime silo storage bin. The bin will be equipped with a bin vent type dust collector.

AERO 404

AERO 404 promoter will be added to the SAG mill and rougher flotation circuit to enhance flotation of gold and gold-bearing sulfide minerals.

AERO 404 will be delivered as an aqueous solution in bulk tanker trucks. AERO 404 may be added directly or may be diluted for ease of metering. AERO 404 will be added to the SAG mill prior to flash flotation and to the rougher flotation conditioning tank using individual metering pumps.

Potassium Amyl Xanthate (PAX)

PAX (collector) will be added to the SAG mill and rougher flotation circuit to enhance the flotation of gold and gold-bearing sulfide minerals. Dry PAX will be delivered to the site in flo-bins or supersacs. The PAX mix system will include a conical bottom, agitated mix tank and a sloped bottom distribution tank. PAX will be added to the SAG mill prior to flash flotation and to the rougher flotation conditioning tank using individual metering pumps.

Caustic (NaOH)

Caustic soda solution will be used in the carbon strip circuit to neutralize acidic solutions after acid washing the carbon and as a reagent in the carbon stripping process. In addition, caustic can be added, if needed, to the cyanide mixing system to maintain the proper pH of the cyanide solution.

Liquid caustic soda (50% solution) will be delivered in bulk tanker trucks. Caustic will be off loaded to a heated and insulated storage tank. Caustic will be distributed to the appropriate location on an as needed basis using individual delivery pumps.

Ammonium Bisulfite

Ammonium bisulfite will be added to the tailing detoxification circuit as the primary source of sulfur dioxide (SO2) to oxidize free cyanide and weak acid dissociable (WAD) metal cyanide complexes (INCOTM process).

Liquid ammonium bisulfite will be delivered in 20 ton bulk tanker trucks and offloaded into a storage tank. The ammonium bisulfite solution will be pumped directly from the storage tank to the cyanide detoxification tanks using a metering pump.

Copper Sulfate

Copper sulfate will be added to the cyanide detoxification tanks to provide copper ions as a catalyst for the cyanide detoxification process. Dry copper sulfate will be delivered in supersacs and stored in a dry area. The copper sulfate system will comprise an agitated mixing tank and a holding tank.

Hydrochloric Acid

Hydrochloric acid will be used in the carbon strip circuit to acid wash carbon. Hydrochloric acid (30%) will be delivered in 20 ton bulk tanker trucks. Acid will be off loaded from the bulk truck to a storage tank. A dilute acid solution will be prepared by pumping acid directly from the storage tank to the acid wash circulating tank as needed.

Sulfuric Acid

Sulfuric acid will be used in the grinding and rougher flotation circuits to maintain pH. Sulfuric acid (93%) will be delivered in 20 ton bulk tanker trucks. Acid will be off loaded from the bulk truck to a storage tank. Metering pumps will be used to deliver sulfuric acid to the SAG mill and to the rougher flotation conditioning tank.

Lead Nitrate

Lead nitrate will be added to the pre-aeration tank to enhance leaching. Dry lead nitrate will be delivered in 25 kg pails and stored in a dry area. The lead nitrate system will comprise an agitated mixing tank and a holding tank. A metering pump will be used to deliver lead nitrate solution to the pre-aeration tank feed box.

Flocculant
Flocculant will be added to the pre-aeration thickener, to the flotation tailing thickener and to the cyanide recovery thickener to enhance solids settling. Pre-engineered flocculant mixing systems will be used to mix and distribute dry flocculant. The dry flocculant will be delivered in supersacs.

Antiscalant
Antiscalant will be added to the reclaim water and internal reclaim water tanks to prevent scaling in pipelines, tanks, etc. The antiscalant will be delivered in bulk tanker trucks and will be added to the process using metering pumps directly coupled to vendor supplied tanks.

UNR 811A
If needed, UNR 811A may be added to the reclaim water tank and the internal reclaim water tank using metering pumps directly coupled to vendor supplied tanks. UNR 811A is used to abate mercury production by complexing mercury to form a stable organic sulfide precipitate. Although mercury production is expected to be negligible, the system is being installed to ensure mercury can be addressed if ever needed.

Flux
Flux will be added during the smelting stage to remove contaminants from the electrowinning sludge. Dry pre-mixed flux will be delivered in 10 lb pre-packaged bags that come in drums on pallets. Flux will be manually added to the melting furnace.

Water Systems

Water for the Haile Project will be supplied from a variety of sources over the life of the mine. Fresh water (non-potable) will be supplied from pit depressurization wells. Water from the wells will be pumped to a fresh water tank. The fresh water tank will supply the requirements for reagents, crushing area dust suppression, and for use as makeup water in ore processing. In addition, fresh water will be available at the truck shop and the truck wash.

Water will be recovered from the pre-aeration thickener, from the flotation tail thickener, and from the cyanide recovery thickener for reuse in the process. The recovered water from the 'non-cyanide' unit operations of the process (i.e., flotation tail thickener overflow and pre-aeration thickener overflow) will be directed to an Internal Reclaim water tank. Recovered water from the cyanide recovery thickener will be directed to the Reclaim water tank. Make-up water from the fresh and/or reclaim water tanks will be added to the internal reclaim water tank as required.

Water will be reclaimed from the tail pond using reclaim water pumps mounted on floats. Reclaimed water will be pumped to the reclaim water tank, located near the process plant, for subsequent use as make-up water in ore processing.

Compressed Air Systems

An air compressor and air receiver will be installed for operation and maintenance at the primary crushing area.

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Plant air compressors will provide service and instrument air for grinding through cyanide detoxification unit operations. An air dryer will remove moisture in instrument air. Plant air and instrument air receivers will be provided.

Individual low pressure blowers will be located in the flotation area to provide air to the flash flotation cell and to the rougher flotation cells.

A low pressure blower will provide air to the bottom of the pre-aeration tank and to the CIL tanks.

A low pressure blower will provide air to the cyanide detoxification tanks.

Tank mounted reciprocating air compressors will be installed for operation and maintenance at the truck shop and at the mill maintenance building.

Process Containment and Events Pond

To ensure all process upset conditions do not impact the environment, the process facility has been designed with the following safe guards:

Process Containment

The process facilities will be designed to contain any spills caused by an upset in process. Each area, as described previously in this document, will be designed such that it is built on a concrete floor that has cast in place concrete walls. The floor area and wall heights will be designed to capture any process spills and the floors will be sloped toward a collection sump for cleanup and the return of process solutions or slurries back to the process streams for which it is best suited. Table IV-1 summarizes the main containment areas.

TABLE IV-1. Process Containment Philosophy

Containment Area	Indoor / Outdoor	Containment System	Containment Volume	Sump Pumps to
Grinding Building	Covered	Concrete Pad with stem walls	110% of Largest Vessel	Cyclone feed pump box
Flotation and Regrind	Covered	Concrete Pad with stem walls	110% of Largest Vessel	First flotation cell
Pre-Aeration Thickener	Outdoor	Concrete Pad with stem walls	110% of Largest Vessel	First flotation cell
Leach Area	Outdoor	Concrete Pad with stem walls	110% of Largest Vessel + 100 Year/ 24 hour storm event	First Leach Tank
Final Tailing Thickener	Outdoor	Concrete Pad with stem walls	110% of Largest Vessel + 100 Year/ 24 hour storm event	Tailing Thickener
Reagent Area	Covered	Concrete Pad with stem walls	110% of Largest Vessel in each containment area	Pump Truck
Fresh and Reclaim Water Pad	Outdoor	Concrete Pad with stem walls	110% of Largest Vessel + 100 Year/ 24 hour storm event	Reclaim Water Tank
Tailing Line	Outdoor	Lined Trench and Pond	110% of the entire pipeline volume + 100 year/ 24 hour storm event	Tailing Thickener
Truck Shop Tank Farm	Outdoor	Concrete Pad with stem walls	110% of Largest Vessel + 100 Year/ 24 hour storm event	Pump Truck
Refinery	Indoor	Concrete Pad with stem walls	110% of Largest Vessel	Pump Truck
Fuel Tanks	Outdoor	Local concrete slab and sumps for minor spills. Double walled tanks on concrete		

Events Pond

The Events Pond will be designed to capture any solutions or slurries that escape the main process containment facilities, tailing slurry pipeline or reclaim water line. Each containment area has been designed to capture spills in accordance with Table IV-1. Should multiple events occur, any material that would not fit within the containment area will report to the events pond. The additional solution or slurry from the failure would exit the containment area through a pipeline and would flow by gravity to the lined pond.

The tailing and reclaim pipelines are designed to have double containment involving either a pipeline within a pipeline or a pipeline within a lined containment structure or trench. Should a failure of the tailing pipeline occur or should an unanticipated power failure occur, the material from the pipeline would drain to the Events Pond for contained collection of the pipeline material.

Once the event materials have been collected and the failures have been repaired, the material that reported to the events pond will be removed and returned to the process area for which it is best suited.

C. Hazardous Waste and Storage Tanks

Currently, Haile Gold Mine is a conditionally exempt small quantity generator of hazardous waste. During the new mining activities, this will likely be increased to a small or large quantity generator of hazardous waste pursuant to the Resource Conservation and Recovery Act ("RCRA") regulations administered by the South Carolina Department of Health and Environmental Control ("DHEC"). There will be no on-site treatment storage or disposal ("TSD") of hazardous waste from the facility. Thus, it is anticipated that any hazardous waste generated will remain on site for no greater than 90 days before being shipped to an off-site TSD facility.

The waste streams that are anticipated to be generated from the tailing facility are conditionally exempt from hazardous waste regulations under the "Bevell Amendment" to RCRA.

Other minor sources of hazardous waste may also be generated. Employees who handle such waste materials will be properly trained in the waste management in a manner consistent with DHEC regulations. Haile will develop a Solid and Hazardous Waste Management Plan that will identify and characterize all waste streams at Haile to ensure proper storage, handling, and disposal.

Multiple above ground storage tanks containing petroleum products will be located at the project site. Each of these tanks will be either double-wall or equipped with secondary containment, as required by 40 CFR Part 112, and are associated with fueling and maintenance activities for the construction and operation activities located on the mine property.

D. Site Wide Water Management

Across the project site a detention structure, diversion channels, culverts, conveyance pipes, sediment collection channels, and sediment detention basins are proposed to control site-wide surface water runoff due to stormwater.

The site wide water balance is a key operational consideration for Haile Gold Mine. At all times, adequate storage must be available in the TSF for both mill process and meteorological water. Project storage and treatment facilities must be adequately sized for the volume of contact water that is anticipated to be generated. The purpose of the site wide water balance is to estimate:

- Process solution storage at the Duckwood Tailing Storage Facility (TSF);
- Rates and volumes of surface water runoff generated from various areas on site;
- Available water supply verses demands for mill and mine operations;
- Amount of TSF reclaim, contact water and non-contact water used in mill and mine operations;
- Amount of contact water requiring treatment.

The water balance model was developed as a tool to aid in the design of TSF and water management facilities and assist with future water management planning. It is intended to be a tool that allows Haile to better understand water management decisions for safe operations of the facility.

The water balance was developed to analyze in a probabilistic manner accurate estimates of how wet and dry periods will impact water management. Multiple possible scenarios are modeled covering a range of potential occurrences. Results from these multiple realizations provide a range of potential outcomes allowing risk-based decision making.

The general design criteria have been developed considering the following: The site wide water balance was developed to include all major facilities that are expected to add water to the system, facilities that store water, facilities that use water and water treatment that removes water from the system. A schematic of the overall system is provided on Figure IV-4.

Water that is added to the system is grouped into two categories: contact water that requires treatment before it can be released and non-contact water that does not require treatment. Non-contact water may require detention for sediment, but is not expected to be run through the water treatment plant.

<u>Contact Water</u>

- Free water in the TSF
- Runoff and underdrain from PAG Overburden and Low Grade Ore Stockpile
- Direct precipitation and runoff accumulating in the active and inactive pits

<u>Non Contact Water</u>

- Runoff from Topsoil Stockpiles
- Runoff from Overburden Storage Areas
- Groundwater from Pit Depressurization
- Runoff from Undisturbed Ground
- Run-on from Upgradient Areas
- Runoff from TSF Outer Perimeter
- Runoff from the Plant Site

The site wide balance used annual, end of year mine facility areas in conjunction with runoff coefficients to estimate runoff, seepage, or pumping rates on a monthly basis.

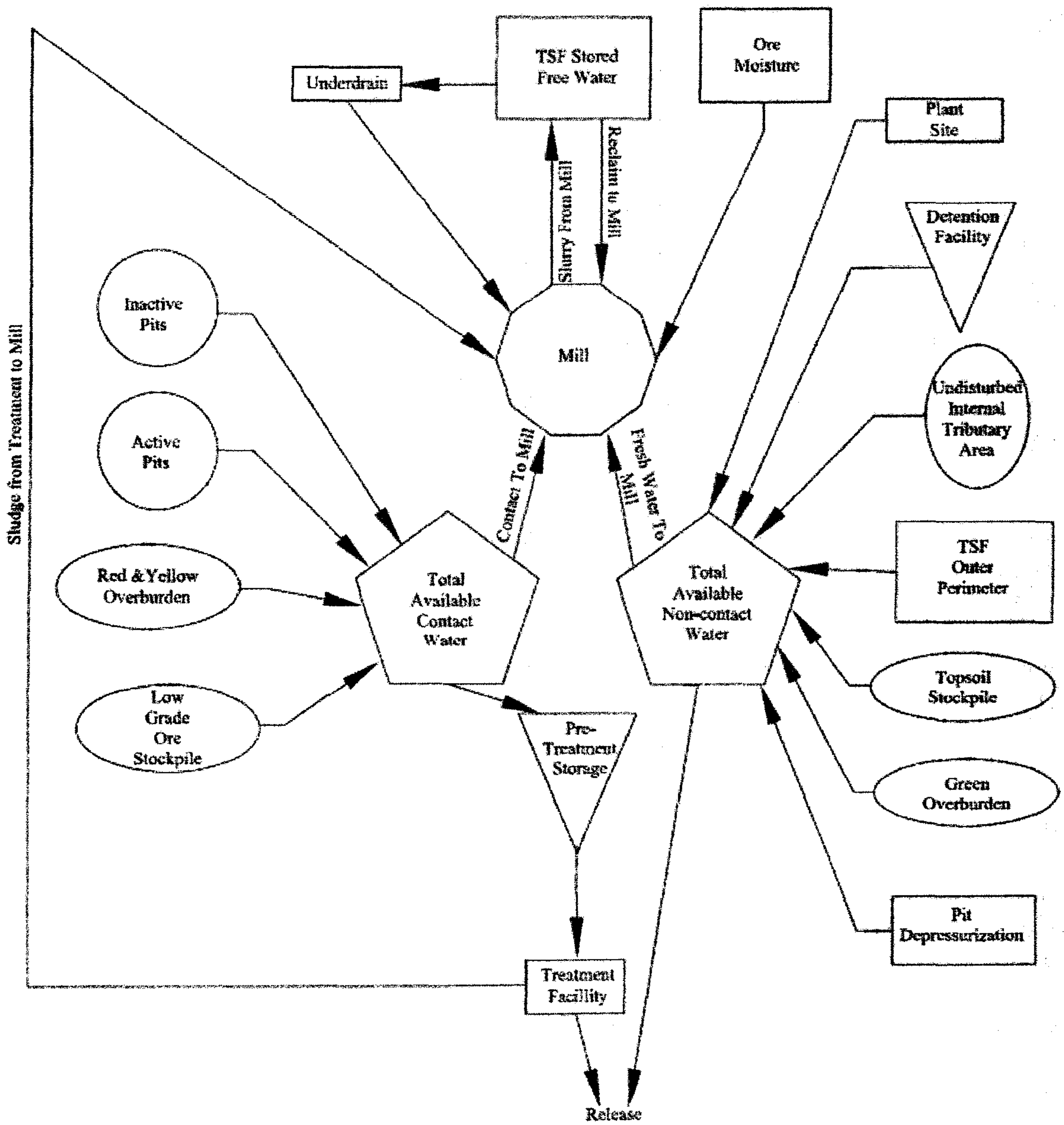

Figure IV-4. Schematic of the Overall System

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Duckwood Tailing Storage Facility

The TSF will be the primary storage vessel for operational water used to meet mill water demands. Free water from tailing slurry and precipitation add water to the TSF. Geometric data for the TSF modeled in the water balance includes total surface area of the impoundment, exposed liner areas and tailing surface areas throughout time. For safety purposes, it was assumed that freeboard is required in the TSF for the Probable Maximum Precipitation (PMP). The General PMP event produces 47.96 inches of rainfall; therefore a minimum of four feet of freeboard is required to store the runoff volume associated with the storm.

Overburden Storage Areas

There will be 8 overburden storage facilities on the mine site. Seven of the overburden storage facilities will contain non-acid generating (NAG) material. Runoff from these storage areas will be detained in sediment ponds, then be released without treatment. This water is considered non contact water.

One overburden storage facility will contain potentially acid generating (PAG) material. This storage area will be constructed with a geomembrane-lined basin and collection underdrains. Runoff and underdrain flow from this facility will be considered contact water.

A low grade ore stockpile is located adjacent to the PAG overburden storage area. It will be constructed as part of the PAG OSA. Runoff and underdrain flow from the low grade ore stockpile will be considered contact water and require treatment prior to release.

Pit Development

Seven open pits will be in operation at various times throughout the life of the mine. Direct precipitation on and runoff collected in the pits will be considered contact water and will require treatment prior to release. It is assumed that runoff will be pumped out of the pits to a pre-treatment storage area.

A system of pumping wells will be used to depressurize groundwater surrounding the open pits. Depressurization of the pits is expected to be a significant, consistent source of water throughout the project. It is anticipated that this water will be of good quality and can be used as the fresh water source for mill makeup, for dust suppression or released.

Water Treatment and Pre-treatment Storage

Treatment will be required before any contact water can be released from the system. A water treatment facility with a capacity of 1,200 gpm was used for the water balance model. Monthly contact water runoff rates may peak at rates significantly higher than 1,200 gpm. A pre-treatment storage pond was added to the system to reduce the need to treat water at a high peak rate. During wet periods contact water can be stored for treatment at a later time so that the treatment rate can be significantly less than the peak runoff rate. During dry periods the treatment rate will exceed the runoff rate and water stored in the pond will be treated.

Haile Gold Mine Creek Detention Structure

A large portion of runoff from the mine will originate from miscellaneous undisturbed areas within the mine and the Haile Creek basin upstream of the mine site. This water will not come in contact with the mine facilities and is considered non contact. This water will be diverted with a diversion channel and discharged downstream of the mine. If required, it may be captured and used to meet fresh water demand at the mine.

Dust Suppression and Miscellaneous Water

Additional fresh water demands for dust suppression and miscellaneous use was added to the model. These additional water demands are assumed to be met using runoff from non-contact water generated on site or groundwater pit depressurization.

Plant Site

Runoff from the plant site is considered non contact water as all process water internal to the system will be captured internally and not allowed to comingle with meteoric water. Plant site runoff will be captured and contained for sediment removal and then released with other non-contact water or used to meet mill fresh water demands.

The model was run using a monthly time step. The model has an assumed start of Month 0 and includes the first year of preproduction and 16 years of operations for a total of 204 months (17 years).

Water Balance Results

Water balance results indicate that sufficient storage will be maintained in the TSF to contain all slurry water. Free water reclaimed from the TSF, contact water and non contact water will be used to meet mill and mine water demands. All free water from the TSF will either remain in the TSF of be used in the milling process. Contact water that is generated on site that is not used for mine related purposes will need to be treated prior to being released to the environment. Non contact water that is not used is anticipated to be collected for sediment control, as needed, and released.

Contact Water Storage and Treatment Requirements

Water treatment capacity is designed for a rate of 1,200 gpm. During average precipitation conditions, contact water will be generated at average monthly rates of up to approximately 850 gpm. During potential wet years, contact water will be generated at average rates that exceed the treatment plant design capacity. The pre-treatment water storage facility will be used to temporarily store water in these instances and regulate treatment rates.

Water treatment is highly dependent on precipitation that will occur at the mine with all contact water requiring treatment derived from rainfall and runoff. Generally water requiring treatment is expected to grow as the mine develops, reaching a maximum in Years 5-8 of operations. During these years it is anticipated that the water treatment plant could be run at its maximum design rate if wet months or years occur. In this event approximately 18 million gallons of water would need to be stored in the pre-treatment facility to regulate treatment at 1,200 gpm. During extreme drought conditions, little to no water treatment may be required. On an annual basis, water treatment requirements were predicted to range from none for drought conditions to an average annual rate of nearly 1,200 gpm for wet months or years.

Non Contact Water Release

Non contact water that is not used in the mill process will be released from the system. A majority of contact water is generated from rainfall and therefore the amount of non contact water to be released from the system is dependent on precipitation patterns. Given drought conditions, non contact water is expected to be released at average annual rates ranging from approximately 150 gpm to 900 gpm. Given average precipitation, non contact water is predicted to be released at average annual rates in the 2,000 gpm to 2,600 gpm rates.

Water generated from pit depressurization pumping is anticipated to be one of the significant sources of non contact water, and one that is not directly related to current precipitation patterns. As a result of this water supply, water is expected to be released from site at most times during the planned mine life.

Makeup Water Requirements

The site wide water balance predicts that given typical meteorological conditions, makeup water from outside sources is not expected to be required to meet mine water demands. In Year 2 through Year 8 of operations, water from pit depressurization is anticipated to be high enough that no outside makeup water would be required. During initial startup and later operations, pit depressurization pumping is not expected to be as great. During these periods the water balance is predicting that makeup water could be required if an extreme drought occurred. During the initial months of startup peak makeup of approximately 800 gpm could be required. During later operations the peak anticipated makeup water rate is 400 gpm for a drought where no precipitation occurs.

Conclusions

Precipitation values and design storms were developed for frequencies up to the 500-year, 24-hour storm event, as well as the Probable Maximum Precipitation values. The peak flows and resulting discharge volumes were evaluated for sizing each of the water management structures including the diversion channels, culverts, runoff collection channels, and Haile Creek detention structure. Watershed delineation was based upon topographic maps with 5-foot contour intervals and took into consideration the dynamic design life of the facility by evaluating each water management structure at the most critical design phase with the greatest peak discharge.

A site wide water balance was completed for the Haile Gold Mine to ensure that adequate storage is available in the Duckwood TSF for both mill process and meteorological water. Project water storage and water treatment facilities were adequately sized for the volume of contact water that is anticipated to be generated and take into account the influence of how dry and wet periods impact the overall site wide water management.

E. Reclamation Plan Overview

Overview

Provided below is an overview of the reclamation plan proposed to address the requirements of the South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management - Division of Mining and Solid Waste Permitting – Application for a Mine Operating Permit Form MR-500. Specifically, this planned work will address Section 48-20-90 – "An operator shall submit with his application for an operating permit a proposed reclamation plan".

Haile Gold Mine Reclamation Plan Summary

The Haile Gold Mine Reclamation and Closure Plan is designed to reclaim land disturbed by mining, overburden disposal, ore processing operations, and associated support facilities to a stabilized condition that will provide for the long-term protection of land and water resources, minimize the adverse impacts of mining, and support the intended post-mining land use. The plan will meet all applicable regulatory requirements. All surface water controls will be designed to withstand the peak flow from the 100-yr, 24-hr storm event.

The plan describes the general reclamation procedures and methods for achieving the final closure requirements and objectives. In addition, the plan serves as a basis for calculating reclamation costs, long-term post-reclamation maintenance and the required financial assurance.

During operations, Haile will take the opportunity to perform aspects of the final reclamation activities concurrent with operations. Concurrent reclamation will be performed on disturbed areas once all planned mining activities in the area are completed and no future mining activity is expected. Final reclamation will commence immediately upon cessation of mining and milling operations. Final reclamation will be completed as soon as practicable after mining activities cease at the facility.

Due to continued exploration success there are unknowns associated with the final configuration of the mine site over 15 years in the future. For this reason, the reclamation and closure plan presented is more conceptual than detailed. As mining activities at the Haile Gold Mine progress, the reclamation and closure plan will be continuously refined and expanded, while adhering to the concepts outlined in this document. Financial assurance will be provided for proposed reclamation and closure activities to ensure that reclamation and closure will not become a financial responsibility of the State of South Carolina.

Overburden Classification

The overburden that will be generated during the development of the Haile Gold Mine will be classified into three categories based on the potential for acid generation. Red overburden contains strongly acid generating material and has the potential to generate low pH and very high metals and sulfate content in contact water. Yellow overburden contains moderately acid generating material and has the potential to generate low pH but low to moderate metals content in contact water. Green overburden is inert to alkaline and could generate moderately low pH with low to non-detectable metals content in contact water, but is expected to meet stormwater requirements.

Reclamation Activities

The reclamation plan will provide stable slopes, manage discharge water quality and establish vegetation over all portions of the mine site except those areas designated as post-closure pit lakes, pit highwalls adjacent to the post-closure pit lakes, and any roads and access areas necessary for post-closure activities and land use(s).

Haile Gold Mine already has good experience and understanding of what vegetation will grow at the site from its historical reclamation successes. However, during the mine operating period Haile Gold Mine will establish vegetation test plots and perform other studies to establish and refine appropriate vegetation species and seeding rates, soil and fertilizer requirements, and overall vegetation procedures to ensure sustainable vegetation post-closure.

The proposed facilities at the Haile Gold Mine fall into seven general facilities types. (1) backfilled pits, (2) unfilled pits (future pit lakes), (3) red/yellow overburden areas, (4) green overburden areas, (5) Haile Gold Mine Creek, (6) tailings storage facility (TSF), and (7) plant site, roads, powerlines, pipelines, and other ancillary facilities. Following is a description of the proposed reclamation activities planned for each type of facility:

Backfilled Pits
Of the seven pits included in the mine plan, four pits, Mill, Haile, Red Hill, and Chase Hill, will be completely backfilled with overburden and a fifth, Snake Pit, will be partially backfilled with overburden. The pits will be backfilled as part of overburden placement during operations after completion of pit development.

Yellow overburden will be placed in the pits up to a level that will ensure this material is permanently inundated with water following the cessation of depressurization pumping, limiting the ability of the material to generate acid rock drainage (ARD). Additional precautions will be taken during fill placement to limit ARD generation prior to inundation. The measures include lime amendment, placement of overburden in lifts, and placement of a saprolite layer on top of yellow overburden. Lime, or other suitable pH buffering material, will be placed concurrently with the backfill. The backfill will be placed in lifts not more than 50 feet thick and the final lift will be capped with a 5 ft layer of saprolite to limit oxygen transport into the overburden pile. Lime addition and saprolite layer construction will be performed as part of normal mine operations.

Green overburden will be placed above the yellow overburden (and above the long term inundation surface) to complete backfilling and promote positive drainage off the pit backfills. During reclamation, the green overburden will be vegetated using established procedures.

Snake Pit will be partially backfilled. As with the other overburden backfill, yellow overburden will be placed below the level that will ensure permanent inundation, amended with lime and sealed with a minimum 5 ft thick saprolite cover layer. Additionally, a minimum 20 foot thick saprolite cover will be placed on the exposed yellow overburden slope of the Snake Pit backfill. This will occur on final backfill slopes below the post mining inundation level. Final slopes will be constructed with alternating benches and angle of repose slopes to have an overall slope of 3H:1V or flatter.

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Green overburden will be placed in Snake Pit above the yellow overburden (and above the long term inundation surface). Final slopes will be constructed to have an overall slope of 3H:1V or flatter. Concurrent with placement of the green overburden, the angle of repose slopes will be pushed down to develop inter-bench slopes of 2.5H:1V slopes with surface water controls to limit erosion. During reclamation, the green overburden will be vegetated using established procedures.

Unfilled Pits

Two of the pits, Ledbetter and Small, will not be backfilled during mining or reclamation and will remain as pit lakes. At least one year prior to mine closure, a pit lake study will be performed to predict final water levels and water quality within the pit lake. During reclamation, a security fence and safety berm will be established around the remaining pit highwall. All surface water inlets or outlets to the pit lakes will be improved to limit erosion and control flow into and out of the pit lakes.

Red/Yellow Overburden Areas

One overburden area, Johnny's Overburden Area, will be designated to receive all red overburden and any yellow overburden not needed for the pit backfills. Overburden in this area will be placed on a geomembrane liner and any seepage generated during operations will be collected for treatment. The overburden will be placed in lifts not more than 50 ft high with a minimum 20 foot thick saprolite layer at the outside perimeter. The final lift will be covered with a 5 foot thick layer of saprolite. The final slopes will be constructed with alternating benches and angle of repose slopes to have an overall slope of 3H:1V or flatter. Concurrent with placement of the overburden, the angle of repose slopes will be pushed down to develop inter-bench slopes of 2.5H:1V slopes with surface water controls to limit erosion.

During reclamation, the entire Johnny's Overburden Area will be covered with a geosynthetic liner and a minimum of 2 feet of growth media material. The growth media will be vegetated using established procedures.

Seepage will continue to be collected and treated in the same manner as that used during the operating period. As inflows to the overburden have been effectively eliminated, the seepage from the overburden is expected to decrease significantly over time. Once seepage has been reduced sufficiently, passive treatment cells, utilizing an anaerobic treatment, will be constructed in the lined seepage collection ponds. This passive treatment cell will provide discharge quality water from the overburden area with minimal maintenance requirements. Haile already has good experience and understanding of the use of passive treatment systems at the existing mine.

Green Overburden Areas

An additional seven overburden areas at the Haile are designated to receive only green overburden (James Overburden Area, Hayworth Overburden Area, Hilltop Overburden Area, Red Hill Overburden Area, Haile Overburden Area, 601 Overburden Area, and Ramona's Overburden Area). Overburden in these areas will be placed on a prepared subgrade. All final slopes of the overburden area will be constructed with alternating benches and angle of repose slopes to have an overall slope of 3H:1V or flatter. Concurrent with placement of the overburden, the angle of repose slopes will be pushed down to develop inter-bench slopes of 2.5H:1V slopes with surface water controls to limit erosion. During reclamation, the green overburden will be vegetated using established procedures.

Haile Gold Mine Creek

During mining activities, portions of Haile Gold Mine Creek will be impacted by Ledbetter Pit and Haile Pit development.

Ledbetter Pit will be reclaimed as a pit lake. The creek will be redirected in an engineered channel during operations. After mining ceases, low flows in the creek will continue to flow in the engineered channel and high flows will be diverted into the pit lake. The pit lake will rise to a level that will discharge into Haile Gold Mine Creek downstream of the pit. Once the pit lake reaches its final elevation, Haile Gold Mine Creek will be directed into the lake and will flow through the pit lake. Engineered structures will control creek flow into and out of the lake and the engineered channel will be abandoned at this time.

During mining operations in Haile Pit, Haile Gold Mine Creek and the North Fork Creek will be redirected into engineered channels in a similar manner to that used for the Ledbetter Pit. However, during mining operations the Haile Pit will be backfilled to restore near original topography in the vicinity of these two original drainages such that Haile Gold Mine and the North Fork Creek will be re-established on top of the backfilled pit.

Tailings Storage Facility

The Tailing Storage Facility (TSF) will consist of an above grade lined impoundment, filled with tailing material. A drainage collection system above the lined facility will collect seepage water from the tailings and return it to the impoundment. As the outboard slopes of the TSF achieve final configuration, they will be vegetated using established procedures.

At the cessation of milling, the TSF will be reclaimed using a dry closure approach. In order to dewater the tailing facility, the water treatment plant will be reconfigured to treat the tailings pool and drainage water. Water collected from the underdrains and any remaining free water in the impoundment will be treated in the reconfigured water treatment plant and discharged though the same outfall used during operations.

The upper surface of the tailings will be stabilized using soil fill placed by low ground pressure equipment where necessary. As the surface of the tailings is stabilized and shaped for positive drainage of stormwater, a geosynthetic liner will be placed over the tailings in stages. A minimum of two feet of growth media will be placed over the geosynthetic and the entire area will be vegetated using established procedures.

Once the surface of the TSF has been successfully reclaimed, the perimeter of the tailings facility berm will be opened to allow storm water to freely drain off the covered and reclaimed tailings surface without disturbing the tailings. Surface water controls will be established at the spillway outlet location to prevent the erosion of the embankment during periods of high flow.

Seepage will continue to be collected and treated in the same manner as that used during the closure activities. Once inflows to the tailings have been effectively eliminated, the seepage from the tailings facility is expected to decrease significantly over time as the tailings approach ultimate consolidation. Once seepage has been reduced sufficiently, a passive treatment cell, utilizing an anaerobic treatment, will be constructed in the lined underdrain collection pond. This passive treatment cell will provide discharge quality water from the TSF with minimal maintenance requirements.

Plant Site, Roads, Powerlines, Pipelines, and other Facilities

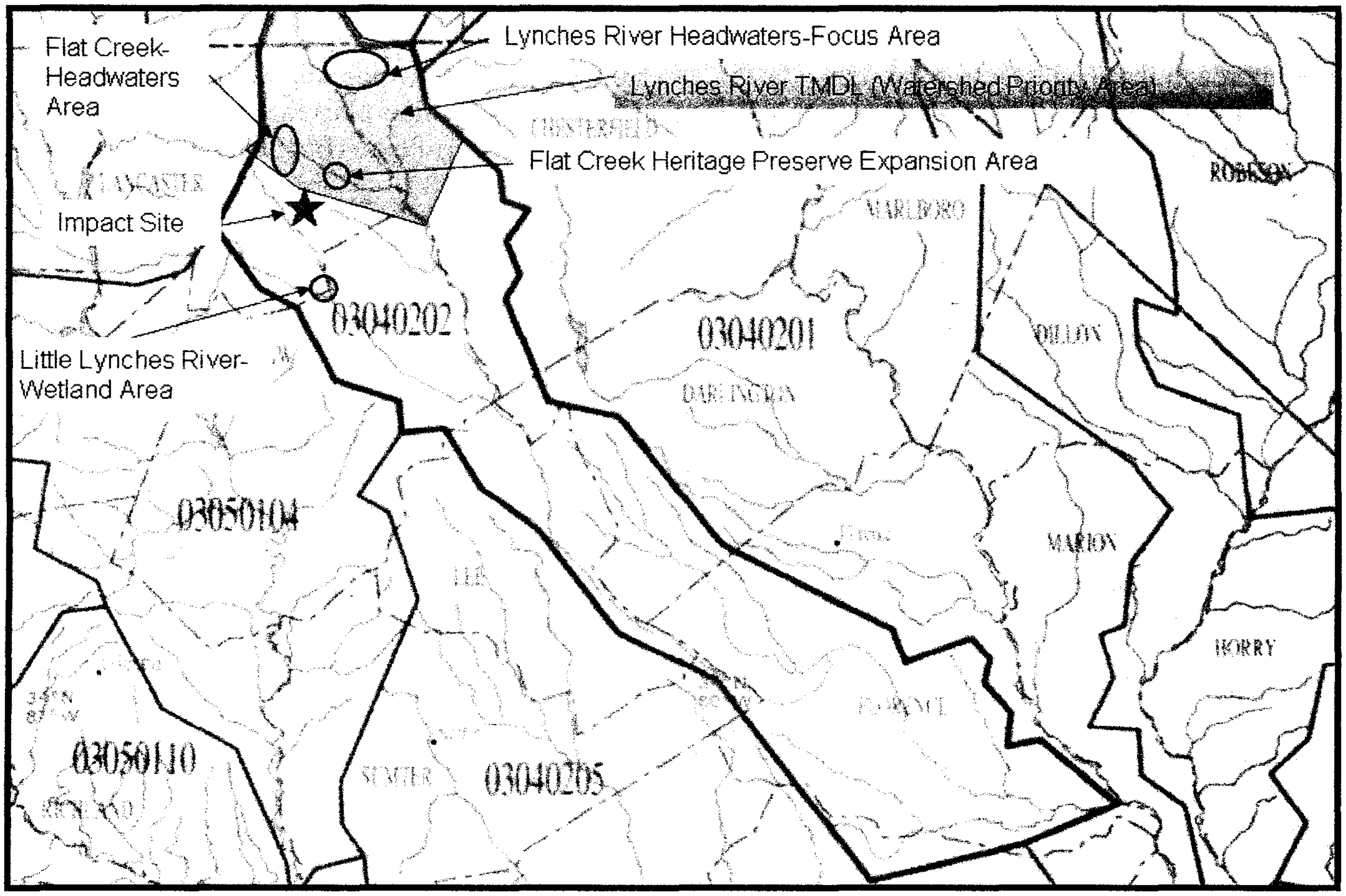
Other facilities at the mine, including the plant site, growth media stockpiles, sediment and settling ponds, disturbed land, roads, powerlines, pipelines and surface water controls, that are not required for post-closure monitoring or maintenance will be regraded, demolished, salvaged and/or removed as appropriate. All areas will be graded to promote drainage and growth media placed if needed to support vegetation. All disturbed areas will be vegetated using established procedures.

Post-Closure Monitoring

The Haile Gold Mine will require post closure maintenance and monitoring. In addition to general site monitoring and maintenance, passive treatment cells will require replacement approximately every 25 years or as necessary. Ground water and surface water samples will be collected and analyzed. It is anticipated that surface and ground water will be monitored for a period of 10 years following mine closure. The passive treatment cells will require periodic maintenance.

1.4 Site Selection and Site Overview

HGM is proposing to utilize four separate mitigation areas to address the mitigation obligation under the 404 permit. The selection rationale, and a summary of each area, is shown below. The detailed conceptual mitigation plan for each area is provided in the subsequent section of the plan.
Flat Creek Headwaters Mitigation Area (See Section 2, 2A, and 2B for details)



A core conservation strategy is to focus efforts on the Flat Creek watershed, which is located in HUC 03040202-Lynches River and within the Lynches River TMDL area. In the Flat Creek watershed HGM proposes to restore and enhance 14,565 linear feet of stream, and place conservation easements on over 250 acres of riparian buffer protecting approximately 47,150 linear feet of stream, .

The mitigation area proposed is ideal for several reasons. First, it is in the same 8-digit watershed as is the Haile Gold Mine site, which satisfies the USACE requirement for mitigation to be in the same watershed as the impacts. Second, the watershed is small enough, approximately 32,000 acres in size, that the mitigation will have a meaningful uplift on water quality through the efforts under this mitigation plan. Third, Flat Creek is 303 (d) listed and within the Lynches River TMDL area. Finally, the Flat Creek area has been a primary focus area in the Midlands for conservation efforts by The Nature Conservancy (TNC), US Fish and Wildlife Service (FWS) and SC Department of Natural Resources (DNR).