SONOCO

December 2, 2014

SCDHEC – BLWM
Division of Compliance and Enforcement
Attn: Beverly McLeod
2600 Bull Street
Columbia, South Carolina 29201-1708

Re: Consent Agreement 13-04-SW
Revised Phase I Remediation Proposal

Dear Ms. McLeod:

Please find attached the Revised Phase I Remediation Proposal, Former Ash Staging Area and Former Industrial Ponds. Sonoco has reviewed the comments from the SCDHEC memorandum dated November 13, 2014. Sonoco has further evaluated the original document and made several revisions to incorporate these comments, where applicable. The attached report is re-issued in its entirety to accommodate the PE review requirement.

Please e-mail me at larry.pattengill@sonoco.com, or call me directly at 843-383-3463 if you have any questions or concerns about this submission.

Sincerely,

Larry Pattengill, Director
Global Environmental Services
Sonoco Products Company

1 North Second Street
Hartsville, S.C. 29550-3305 USA
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Remediation Proposal Revision

Former Ash Staging Area and Former Industrial Ponds

Original - November 3, 2014

Revised – December 3, 2014

SONOCO PRODUCTS COMPANY
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SIGNATURE PAGE

This document, entitled *Remedial Proposal Revision, Former Ash Staging Area and Former Industrial Ponds*, has been prepared to evaluate potential remediation alternatives associated with the former Boiler Ash Staging Area and former Industrial Ponds located at Sonoco's facility adjacent to Patrick Highway in Hartsville, Darlington County, South Carolina. This report has been prepared in accordance with accepted quality control practices and has been reviewed by the undersigned.

Sonoco Products Company

12/2/14

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12/03/2014
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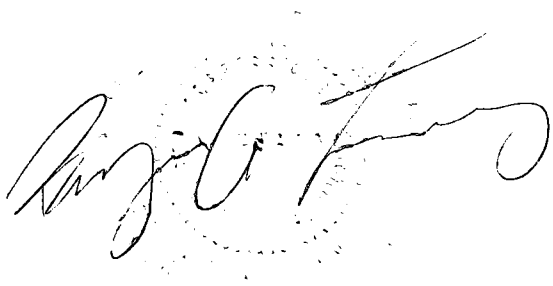

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Executive Summary

Sonoco is presenting this report as part of the requirements under Consent Order 13-04-SW to communicate the recommended remediation actions for both the former ash staging area as well as the former industrial ponds located on Sonoco property in Hartsville, SC. This document contains a full remedial investigation and feasibility study of multiple options for remediation of both areas including a discussion of the impact on screening criteria associated with each option. Sonoco has been working with several environmental contractors as well as SCDHEC and has undertaken extensive assessment and sampling to fully characterize both areas in order to determine the impact of these areas on the surrounding ecology. Over the past year, at a cost in excess of $500,000, Sonoco has worked with SCDHEC to develop a comprehensive characterization plan that included the collection of over 5,000 data points from 79 separate sample locations including analysis for over 64 analytes per location. Based on Sonoco's evaluation of all the data collected, in conjunction with expert opinions from independent multiple third party environmental contractors, as well as feedback from SCDHEC representatives, there is minimal to no impact on the surface water around or the groundwater below either of these former industrial areas. Based on all of the information available at this time, Sonoco is presenting the following recommendations for remediation of the two areas.

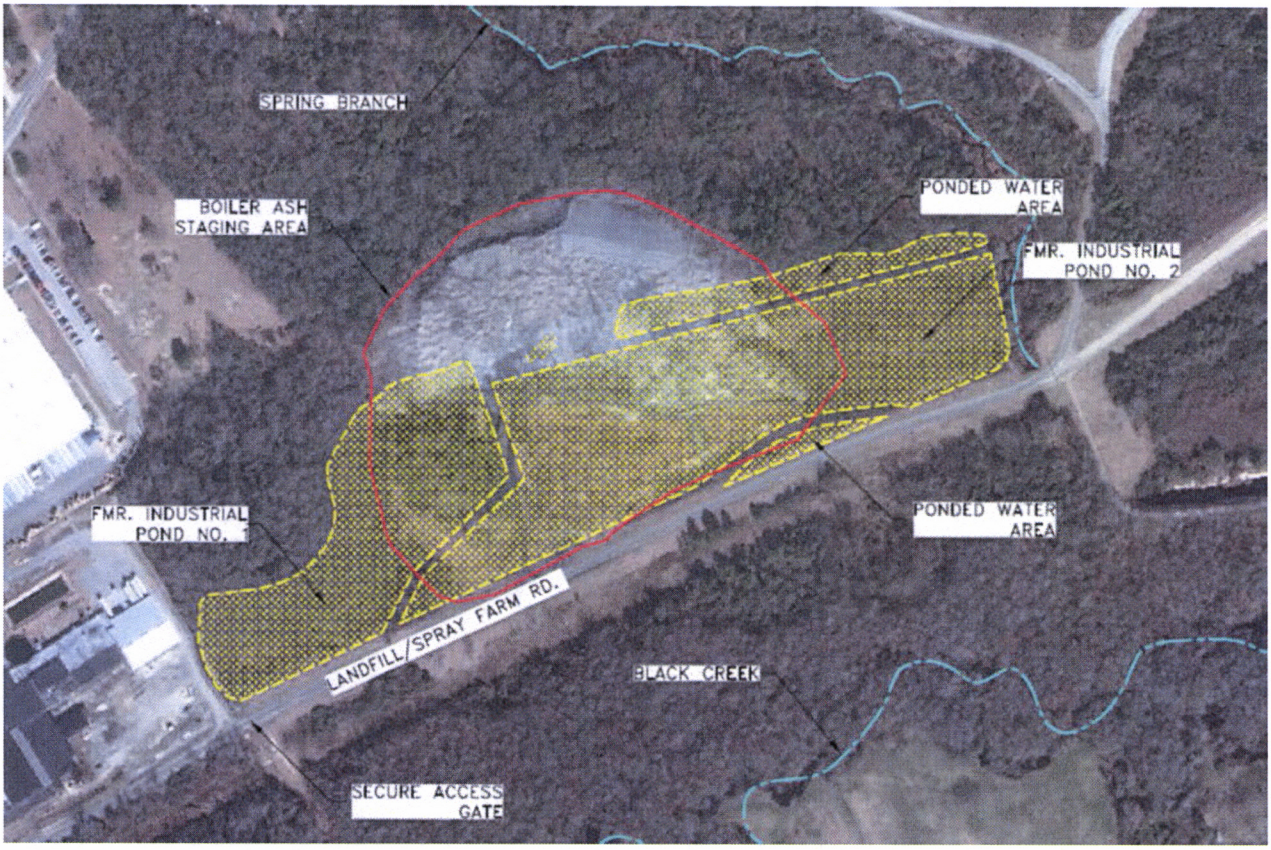
For the former ash storage area, Sonoco recommends closing this area in place. The data collected and analyzed as well as the option ranking evaluation both indicate that leaving the material in place with no action would be appropriate to protect the environment and human health, however, Sonoco is proposing to go the extra step, even though it is more costly. This will give both SCDHEC and Sonoco management a higher level of assurance that the area is properly addressed to minimize any potential future impact to either the environment or human health. Sonoco further proposes to work with SCDHEC to develop proper closure requirements that gives the area an extra level of protection, including capping the area and creating a natural habitat. Furthermore, the site is not accessible to the public nor can it be seen from any public road. In conjunction with this option, Sonoco will continue a groundwater and storm water monitoring program to document the ongoing negligible impact to the environment.

For the former industrial ponds area, Sonoco recommends to leave the area undisturbed and allow natural attenuation to continue to occur[1]. Again based on the data collected for this area, there is minimal to no impact to surface water or groundwater in this area. These ponds were de-commissioned over 50 years ago and are well into the self-remediation process. The option ranking evaluation for this area supports this recommendation. There is significant mature vegetation that has become a natural habitat for local wildlife. Sonoco believes that disrupting the existing natural attenuation process at this point would create significant additional unwarranted environmental risk. In conjunction with this option, Sonoco will continue a groundwater and storm water monitoring program to document the ongoing negligible impact to the environment.

[1] The industrial pond remediation proposal is submitted assuming these will not be designated wetlands. The recommended remediation option is not impacted by the Corps of Engineers determination, if the industrial ponds are wetlands. That determination affects all other alternatives except the natural attenuation option.

Sonoco understands that there are multiple options for the remediation of both the former ash staging area and the former industrial ponds, however, the impacts to the surrounding ecology have been well documented to be minimal, and Sonoco is concerned that the other options of physically removing materials creates additional unwarranted risk to the immediate and surrounding areas. Additionally, Sonoco believes that the options recommended for the remediation of both the former ash staging area as well as the former industrial ponds achieve appropriate remediation in the shortest timeframe. The evaluation of each option has been based on sound environmental engineering practice independent of cost.

With both recommended closure options, Sonoco intends to re-enforce security measures, continue to assure that the site is not accessible to the public, and continue a groundwater and stormwater monitoring program to document the ongoing negligible impact to the environment. Sonoco appreciates SCDHEC oversight and assistance in resolving these issues and looks forward to continued assistance as these areas are formally closed.



1.0 OPTIONS FOR REMEDIATION OF FORMER ASH STAGING AREA

The Phase I Baseline Investigation Report, Boiler Ash Stating Area, Consent Agreement 13-04-SW, as prepared by GEL Engineering, LLC, dated 29 May 2014, makes the following statements:

"... Soil Samples ... Soil sample findings indicate that the site soils do not appear to be adversely affected by site activities."

"... Ash Samples ... Comparison of the boiler ash results to the soil, groundwater, surface water, and sediment samples indicates that the ash does not appear to have released contaminants to the surrounding environment."

"... Wastewater Solid and Sludge Samples ... The wastewater solid and sludge sample data indicate that the wastewater solids are relatively stable and not a significant source of contaminants to the surrounding environment."

"... Groundwater Samples ... Site activities do not appear to have impacted groundwater quality underneath or downgradient from the BASA (Boiler Ash Staging Area) showing that the ash and wastewater solids/sludge are not leaching contaminants to groundwater in an appreciable manner."

"... Surface Water Samples ... All four samples analyzed for bioassay (acute aquatic toxicity) passed with 0% mortality (Ceriodaphnia dubia). This finding provides a direct measurement showing that overall surface water quality is good."

"... Sediment Samples ... The survival with 0% mortality of the Ceriodaphnia in the bioassay samples documents that surface water quality associated with the sediments is good. Although some constituents in sediment exceed screening levels, the sources of these constituents are not clear."

Based on the above referenced information and the current site conditions associated with the ash staging area and former industrial ponds, Sonoco respectfully requests that the South Carolina Department of Health and Environmental Control, SC DHEC, allow Sonoco to close the ash pile and former industrial ponds in place. The technical details of the closure in place will be proposed in a follow up document.

Described in the following sections is the list of alternatives that were considered for the remediation of the former ash staging area and the former industrial ponds. Also included in this discussion is a ranking of the alternatives and discussions on each of the considerations that were used in the review of each alternative.

1.1 NATURAL ATTENUATION WITH SECURITY UPGRADES

The option of leaving the former ash staging area "as is" but with an upgraded site security system was considered based on the data that indicated the area subsurface soils and groundwater had not been significantly impacted from the ash staging area. Proposed with this option would be the grading and seeding of the exposed side slopes of the ash pile to prevent erosion. Also proposed would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized. More detailed comments on the ten screening criteria are shown below.

1.1.1 Protection of Health and Environment

The test data shows that there is minimal impact on the groundwater and there appears to be minimal transmission pathways to the groundwater from the soil beneath the ash pile. Since no one is using the water from this aquifer and there is limited access to this area from unauthorized personnel, the protection of human health and the environment is rated relatively high for this option. The most significant negative concern to this option is that by doing nothing, the existing pile could possibly deteriorate over time and allow more water to flow through the ash, potentially leaching some contaminants of concern to the groundwater below the ash staging area. However, the pile is stable and the groundwater data show there are minimal impacts currently to groundwater and surrounding soils.

1.1.2 Compliance with Regulations

Storm water runoff and groundwater monitoring would be controlled under Sonoco's existing NPDES permit.

1.1.3 Reduction of Toxicity, Mobility, or Volume through Treatment

This option would have minimal effect on mobility of any contaminants in the ash pile. The chemical mobility would be reduced compared to current operations in that existing open faces will be compacted and seeded to provide extra protection from rainfall infiltration.

1.1.4 Implementation

This option would present the easiest process to implement. Other than securing the site from unauthorized access and addressing some of the unprotected faces of the pile, there would be minimal implementation issues.

1.1.5 Time to Implement

This option would require the shortest time to implement since the only site actions required would be to secure the site from unauthorized access and some grading and seeding to prevent erosion. This could be accomplished in less than 12 months from authorization to proceed.

1.1.6 Overall Costs

This would be the lowest cost alternative due to the minimal work that would be required at the site. In addition to the cost associated with shaping and seeding the ash, there would also be the cost of upgraded site security, and continued the storm water and groundwater monitoring.

Engineering ... $25,000
Site development (grading and seeding) ... $100,000
Long term (15 years) monitoring ($15k/year x 15 years).... $225,000
Total ... $350,000

1.1.7 Community Acceptance

Sonoco assumes that community acceptance of this alternative would not be an issue since there is no harm to the Community's environment. The site is out of sight and does not cause any relevant impact on the quality of life in the Community.

1.1.8 Environmental Impact

The data shows that the site is currently having a minimal negative environmental impact. The site is surrounded by quality vegetative growth and the data shows that any contaminants of concern are not mobile.

1.1.9 Long-Term Effectiveness and Permanence

This option does not have a negative effect on long term sustainability as compared to the other options. There would be no mobile sources associated with this option and there would be minimal disturbance of the localized ecosystem.

1.1.10 Risk to the Company

The short term risk would be minimal, whereas the long term risk would be higher due to possible infiltration of the ash pile from rainwater, however, the pile is stable and the groundwater data shows there are minimal impacts currently to groundwater and surrounding soils.

1.2 CLOSE IN PLACE WITH SCDHEC OVERSIGHT AND CONSENT

The option of "closing in place" the subject ash pile with an upgraded site security system was considered based on the data that indicated the area subsurface soils and groundwater had not been significantly impacted from the former ash staging area. Proposed with this option would be the overall shaping of the ash pile and the installation of an impermeable cover to control infiltration of rainfall. An appropriate storm water management system would be installed to minimize any impacts on the surrounding ecosystem. Also proposed would be a comprehensive storm water and groundwater monitoring program to ensure that environmental impacts were minimized. More detailed comments on the ten screening criteria are shown below.

Natural Area Surrounding Former Ash Staging Area

1.2.1 Protection of Health and Environment

During closure activities the only impact on health would be the impacts on any workers responsible for reworking the pile and placing some form of cover on the pile. The only impact on the environment would be the greenhouse gas generation due to any mobile equipment used during the reworking of the pile.

1.2.2 Compliance with Regulations

Storm water runoff and groundwater monitoring would be controlled under Sonoco's existing NPDES permit.

1.2.3 Reduction of Toxicity, Mobility, or Volume through Treatment

With a proper closure procedure, there should be minimal probability of mobility of any contaminants of concern. The mobility of any contaminants of concern would be reduced because they will be contained within the ash and not enter the environment via air or water due to an impermeable cap and other technological controls. Sonoco will also maintain a comprehensive monitoring program. Toxicity testing has shown that the site currently does not have a toxicity effect on the receiving environment and this is not expected to increase with this option. The volume of any chemicals of concern is not expected to change with this closure option. These chemicals will be encapsulated within the closed area.

1.2.4 Implementation

This option would present some challenges to implementing due to protecting the currently potential jurisdictional wetlands immediately adjacent to the ash staging area. However, based on the advice of outside consultants, there are construction techniques available to minimize the implementation challenges.

1.2.5 Time to Implement

This option would be the second shortest option to implement. It is expected to take approximately 2-3 years to complete the project after all appropriate approvals are received.

1.2.6 Overall Costs

This would result in the second lowest cost after the "natural attenuation" option. The actual cost would be dependent on agreements with DHEC as to the form and method of closure in place.

Engineering ... $75,000
Project management ... $100,000
Site development (shaping and installation of impermeable cover)... $2,000,000
Long term (15 years) monitoring ($15k/year x 15 years) ... $225,000
Total ... $2,400,000

1.2.7 Community Acceptance

There should be minimal impact on the surrounding community with this process. All of the activities would take place inside the fenced waste treatment property which is not accessible by the public and cannot be seen from any adjacent roadways. Also, this process will not generate airborne dust that would leave the site. This process would not impact the community's water supply.

1.2.8 Environmental Impact

This option would cause some short term impact on the on-grade and above grade ecosystems during the construction of the ash closure system. The plants, including grasses, shrubs and trees would have to be removed to facilitate reshaping of the ash pile during the closure process. The ash pile currently has a hard cap where the lime used in the boiler operation has set up like a low grade concrete. Removing the cap would open up the ash below for possible rainwater penetration during construction. Construction techniques could be implemented to minimize or prevent rainwater penetration during construction. Current data shows the ash pile has a minimal negative environmental impact and the placement of cap would help ensure against future environmental impacts.

Natural Cap on Former Ash Staging Area from Existing Material

1.2.9 Long-Term Effectiveness and Permanence

Of the options considered this option should provide the best long term effectiveness, permanence and sustainability results. The surrounding ecosystem would have minimal invasive activity during this closure process. Also, as compared to the two options that utilized hauling the ash away, there would be no trucks on the roadways with this option, thus reducing mobile source emissions and fugitive emissions during transport. Also, long term effectiveness and permanence objectives would be met with the installation of a closure cap. Once the site is closed in place with an appropriate closure cap, there is not expected to be any impact on any of the sub grade soils, surface water, or groundwater.

1.2.10 Risk to the Company

This option, once remediation is complete, should propose minimal risk to the Company. Once closed there will be no impact on soils, surface water or groundwater.

1.3 LOAD AND HAUL ASH TO AN ON-SITE BOILER

The option of loading and hauling the coal ash to an on-site boiler that could use the remaining unburned carbon in this ash as well as the inorganic fraction as a bed media was considered. After detailed consideration, this option does not appear to be favorable to the operation of the boiler and there was significant concern that the loading and hauling of the ash would have a negative effect on the surrounding ecosystem. Also, this option was determined to be very cost prohibitive and the time to achieve complete removal would be excessive, approximately 8-10, even up to 20 years depending on numerous regulatory and operational limitations. Included in this proposal would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized as much as possible. More detailed comments on the ten screening are shown below.

1.3.1 Protection of Health and Environment

At risk with this option would be the impacts on the workers located at the ash pile that are responsible for loading and hauling the ash to the on-site boiler. Also at risk would be the workers that are responsible for transferring the ash to the boiler. There could also be a minimal impact to the ambient environment due to any potential ash dust that would release during transport.

1.3.2 Compliance with Regulations

Compliance with current air regulations could be met, however, this option may present some difficulties meeting compliance with future boiler regulations. As of January 1, 2016, new Boiler MACT rules go into effect. Because Sonoco intends to operate the boiler in which the ash could be re-burned under the new boiler MACT rules, Sonoco must stop burning all materials designated as a "waste," six months ahead of this deadline. Because the staged ash would potentially not meet several of the requirements for the new Boiler MACT rules, there could be issues with Federal EPA approval of this option. Under the Boiler MACT rules, Sonoco would not be able to burn a "waste" material in the boiler. In order for a material not to be a "waste" under the regulations, it must be a valuable commodity, stored for a reasonable time period, have an appropriate heating value, and contain less contaminants than alternate fuels. The staged ash may not meet all of these requirements. Compliance with storm water and groundwater regulations would be met with this option.

1.3.3 Reduction of Toxicity, Mobility, or Volume through Treatment

There is a significant risk that when the pile is opened up for digging, loading, and hauling to the boiler the contaminants of concern down in the pile may become more mobile than is the case with the current sealed, gypsum like, cover on the top. The other mobility risk with this option is that when the pile is excavated down to the existing soil boundary, this soil boundary might be compromised by the equipment activity and open up a pathway for contaminants of concern to move into the groundwater. However, once all of the ash was removed the mobility and volume of chemicals of concern would have been eliminated.

1.3.4 Implementation

This option would be one of the most difficult options to implement due to the complexity of making equipment modifications to the boiler to accept this ash as well as the complexity of loading and hauling acceptable ash to the boiler and taking unacceptable ash to a landfill. Also, due to these complications and the amount of ash that is to be hauled away, this remediation project could take up to 20 years to fully implement.

1.3.5 Time to Implement

This option would take approximately 8-20 years to complete due to the time to install appropriate hardware on the boiler, obtain EPA approval, and the time to incorporate the ash in with the existing fuel needs.

1.3.6 Overall Costs

This would be the second highest cost option, only slightly below the cost of trucking the ash to an off-site landfill. In addition to the trucking costs there would be the installation and maintenance cost associated with the in plant ash handling system. Also included in the higher costs would be the cost of increased maintenance to the affected boiler.

Engineering ... $150,000
Project management ($25,000/year x 8 years) ... $200,000
Loading, Trucking, Unloading (700,000 cy @ $1.25/cy/mi x 2 miles) ... $1,750,000
Modification to boiler feed system ... $2,000,000
Additional 8 year (as a minimum) boiler maintenance ($100,000 / year x 8 years) ... $800,000
Loading, Trucking, Unloading Extra Ash (70,000 cy @ $1.25/cy/mi x 2 miles) ... $175,000
Landfill Tipping fee (70,000cy x $25/cy)... $1,800,000
Long term (15 years) air, groundwater, and stream monitoring ($40k/year x 15 years) ... $600,000
Total ... $7,475,000

1.3.7 Community Acceptance

The only issue with community acceptance to this option that Sonoco can foresee would be the number of trucks crossing Patrick Highway taking the ash from the pile back to the in plant boiler. This would be the same crossing route utilized by company trucks currently hauling waste materials to the on-site landfill and to date Sonoco has not received any complaints on this issue, nor have there been any accidents with our vehicles on this crossing. However, the probability of complaints or accidents increases with this process.

1.3.8 Environmental Impact

This option would cause both short and long term negative environmental impacts. The impacts of digging, loading, and hauling the ash from one side of Patrick Highway to the boiler will be more traffic and potential fugitive ash releases. The long term operation of the boiler and damage that may be caused to the environment around the ash pile due to digging and loading the ash on trucks for a period of several years is also significant.

1.3.9 Long-Term Effectiveness and Permanence

This option provides value as to long term sustainability. It will take 8-20 years to complete the project and during this time frame there will be approximately 15,000 – 17,000 trucks making a 1 mile round trip to the on-site boiler.

This increased truck traffic will increase mobile source emissions. Current truck traffic includes 2 trucks of ash per day taken from the boiler to the landfill. Putting an additional 8 loads per day of staged ash (which has minimal BTU value and will result in minimal reduction in volume) in the boiler means truck traffic for ash from the former staging area to the boiler increases by 8 truckloads per day and the truck traffic for ash from the boiler back to the landfill increases by approximately 6-8 truckloads per day.

In addition, the boiler currently burns rejects from the paper making process, greatly reducing the volume of this waste stream to the current landfill. Because the input to the boiler is limited, returning the staged ash to the boiler would also displace this beneficial disposal practice increasing the number of trucks going to the landfill by an additional 4 trucks per day carrying the displaced paper mill rejects. Overall, the result of this option would be an increase of approximately 18 truckloads of material being hauled over the proposed route.

1.3.10 Risk to the Company

This option would provide both short and long term risk to the company in both the potential damage to the boiler and damage that may be caused to the environment around the ash pile due to digging and loading the ash on trucks for a period of several years.

Former Ash Staging Area Site Overview

1.4 LOAD AND HAUL THE ASH TO AN OFF-SITE LANDFILL

The option of loading hauling the ash to a new, yet to be permitted and constructed, off site landfill was considered. After detailed consideration, this option does not appear to be favorable due to negative impacts to the surrounding ecosystem during the digging and loading phase of this operation. Also, this option was determined to be very cost prohibitive and the time to achieve complete removal would be excessive, approximately 10+ years. It is estimated that it would take approximately 3-4 years to get a new landfill permitted and constructed on Company owned land in Marlboro County. It would then take at least 6 years to haul all of the ash to this landfill site. The hauling process would have between 15,000 and 17,000 truckloads traveling from Hartsville to a site just east of Society Hill. This would be equivalent to approximately 600,000 to 700,000 truck miles. Included in this proposal would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized as much as possible. More detailed comments on the ten screening criteria are shown below.

1.4.1 Protection of Health and Environment

At risk with this option would be the impacts on the workers located at the ash pile responsible for loading and hauling the ash to new ash landfill and the landfill workers. There could be a significant impact to the ambient environment due to any potential ash dust that would release during transport. Also significant impact to the environment would be the greenhouse gases that would be released from the multitude of trucks hauling the ash.

1.4.2 Compliance with Regulations

This option would require compliance with all SC DHEC requirements for a new landfill. Sonoco has identified a company owned site in Marlboro County that should meet these requirements and thus would initiate a determination of need, design, and permitting process for this new landfill in accordance with SC DHEC requirements. Also, during the removal process stormwater runoff and groundwater monitoring would be controlled under Sonoco's existing NPDES permit.

1.4.3 Reduction of Toxicity, Mobility, or Volume through Treatment

There is a significant risk that when the pile is opened up for digging, loading, and hauling to the boiler that any contaminants of concern down in the pile may become more mobile than currently is the case with the current sealed, gypsum like, cover on the top. The other mobility risk with this option is that when the pile is excavated down to the existing soil boundary, this soil boundary might be compromised by the equipment activity and open up a pathway for contaminants of concern to move into the groundwater. Once all of the ash was removed, the mobility and volume of chemicals of concern would have been eliminated.

1.4.4 Implementation

This option would be one of the more difficult options to implement due to the complexity of loading and hauling ash to an offsite landfill. Also, this remediation alternative would take several years to complete due to the lengthy process required to permit and construct a new landfill.

1.4.5 Time to Implement

This option would require the most time to implement. Sonoco would expect it would take approximately 4 years to permit, design, and construct a new landfill in Marlboro County. After the new landfill was constructed it would take at least 6 years to transport the ash, by truck, to this landfill.

1.4.6 Overall Costs

This cost would be the highest of the considered options. The costs would include permitting and constructing a new landfill approximately 18 miles from the current site on company owned land. Also included in the cost would be the loading and transporting the waste ash to the proposed site 18 miles away.

Engineering ... $100,000
Project management ($25,000/year x 10 years) ... $250,000
Loading, Trucking, Unloading (700,000 cy @ $1.25/cy/mi x 20 miles) ... $17,000,000
Permitting and constructing new landfill ... $4,000,000
Long term (15 years) monitoring, 2 sites, ($30k/year x 15 years) ... $450,000
Total ... $21,800,000

1.4.7 Community Acceptance

This option would probably have the most resistance from the local community due to the large number of ash hauling trucks that would be traveling daily from Hartsville to the proposed site in Marlboro County. Sonoco would also expect negative comments about building a waste landfill in Marlboro County even though it would be on Company land that is not visible from the highway or adjacent residences.

1.4.8 Environmental Impact

This option would create the most negative environmental impact due to having contaminants of concern at a new location as well as the risk associated with transporting the ash and the associated green-house gas emissions. The other environmental impacts would be the possibility of damage to the local ecosystem due to digging and hauling the ash as alluded to in earlier detailed comments.

1.4.9 Long-Term Effectiveness and Permanence

This option provides the least long term sustainability value in that it will take more than 10 years to complete the project and during the 10 year time frame there will be at least 15,000 – 17,000 trucks making a 40 mile round trip to the proposed offsite landfill. This increased truck traffic will increase mobile source emissions above what is currently in this region. Once all of the ash was removed the mobility and volume of chemicals of concern would have been eliminated.

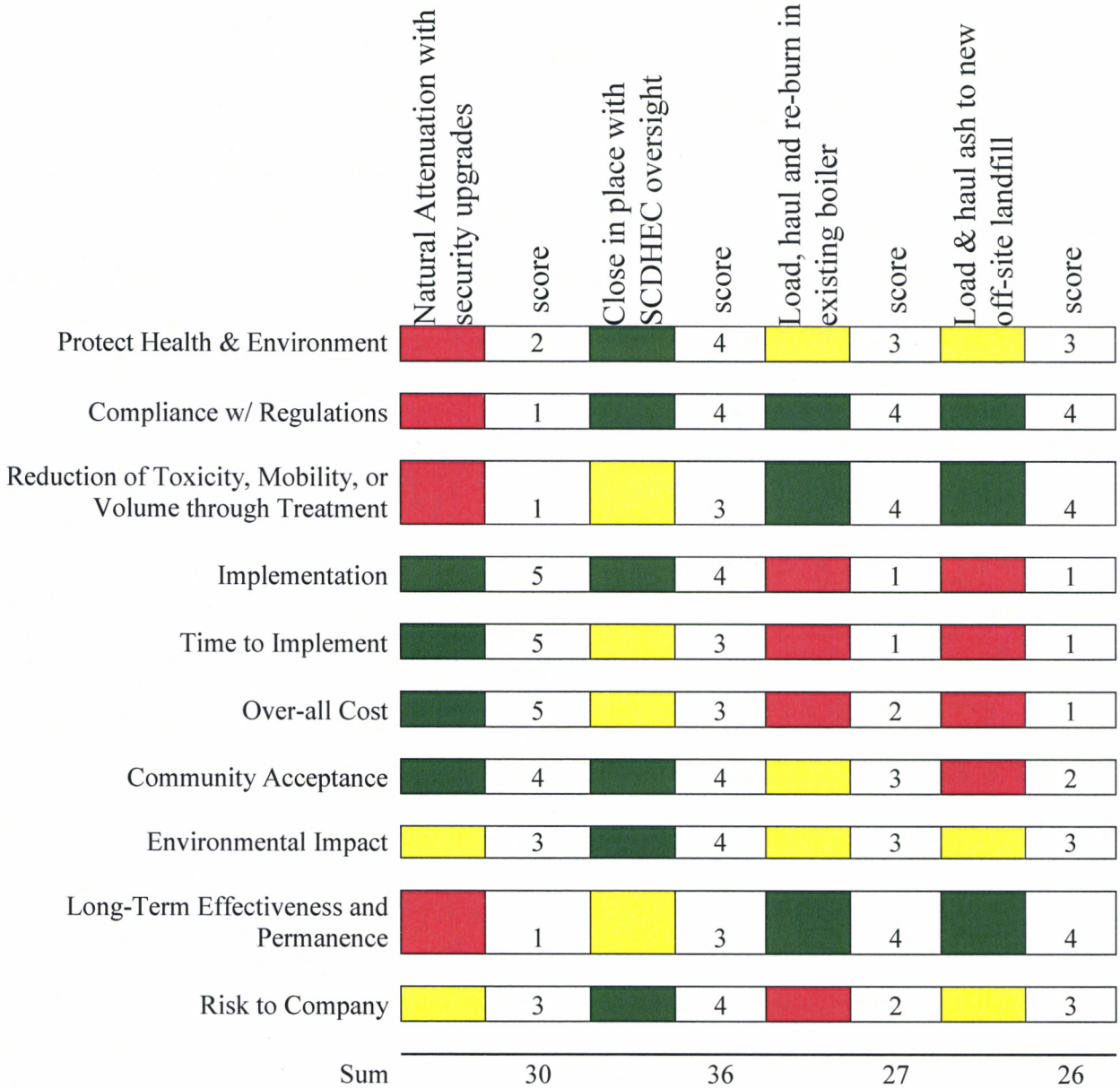
1.4.10 Risk to the Company

This option would create the highest risk to the company due to the amount of trucks that would be on the highways daily. It is estimated that it would take approximately 15,000 to 17,000 trucks to haul the ash to the new landfill. This would result in approximately 600,000 – 700,000 road miles of truck traffic. The other risk to the company would be the possible damage to the local ecosystem due to digging and hauling the ash.

Natural Growth on the Former Ash Staging Area

1.5 REMEDIATION OPTIONS RANKING TABLE FOR FORMER ASH STAGING AREA

Based on the discussion presented in the previous sections, Sonoco has summarized the options for the remediation of the former ash staging area in the table below. Each option is ranked from 1 to 5 (1 being most impact and 5 being least impact) based on the impact to each of the screening criteria. The color coding is also provided to reflect the overall impact of each option. Green is minimal impact, Yellow is medium impact, and Red signifies higher impact for each of the screening criteria used to develop the overall best option for remediating the former ash staging area.



	Natural Attenuation with security upgrades	score	Close in place with SCDHEC oversight	score	Load, haul and re-burn in existing boiler	score	Load & haul ash to new off-site landfill	score
Protect Health & Environment		2		4		3		3
Compliance w/ Regulations		1		4		4		4
Reduction of Toxicity, Mobility, or Volume through Treatment		1		3		4		4
Implementation		5		4		1		1
Time to Implement		5		3		1		1
Over-all Cost		5		3		2		1
Community Acceptance		4		4		3		2
Environmental Impact		3		4		3		3
Long-Term Effectiveness and Permanence		1		3		4		4
Risk to Company		3		4		2		3
Sum		30		36		27		26

Rank: 1 = Most Impact, 5 = Least Impact

2.0 OPTIONS FOR REMEDIATION OF FORMER INDUSTRIAL LAGOONS

2.1 LEAVE SITE UNDISTURBED AND CONTINUE NATURAL ATTENUATION

This option is being given consideration as a remediation alternative for the former industrial lagoons that ceased operations in the early 1960's. The environmental test data indicates that the subsurface soil and groundwater immediately underneath and downstream of these ponds is not significantly impacted. Since the site has been taken over by native plants and trees, this alternative would allow the plants and trees to remain in place and allow natural attenuation of this area to continue without disturbance. Included in this proposal would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized as much as possible. More detailed comments on the ten screening criteria are shown below.

Industrial Pond No.1 Adjacent to the Former Ash Staging Area

2.1.1 Protection of Health and Environment

The test data shows that there is minimal impact on the groundwater and there appears to be minimal transmission pathways to the groundwater from the soil beneath the industrial ponds. Since there is no use of this aquifer for local citizens and there is limited access to this area from unauthorized personnel, the protection of human health and the environment should be rated relatively high for this option.

2.1.2 Compliance with Regulations

The U. S. Army Corps of Engineers (USCE) has tentatively asserted jurisdiction of these ponds as wetlands. Leaving the ponds undisturbed maintains compliance with the wetlands regulations. Other site related regulations would be met.

2.1.3 Reduction of Toxicity, Mobility, or Volume through Treatment

This option would have minimal effect on mobility of any contaminants as the data indicates the contaminants of concern are not mobile. This option would not have any impact on the volume of waste material.

2.1.4 Implementation

This option would present the easiest process to implement. Other than securing the site from unauthorized access, there would be minimal implementation issues.

2.1.5 Time to Implement

This option would require the shortest time to implement since all that would be required are site actions to secure the site from unauthorized access. This could be accomplished in 6 to 12 months from authorization to proceed.

2.1.6 Overall Costs

This would be the lowest cost alternative due to the minimal work that would be required at the site.

Engineering ... $15,000
Site development ... $50,000
Project management ($10,000/year x 10 years) ... $100,000
Long term (15 years) monitoring ($5k/year x 15 years) ... $75,000
Total ... $240,000

2.1.7 Community Acceptance

Sonoco assumes that community acceptance of this alternative would not be an issue since there is no harm to their environment and the site is out of sight and does not cause any relevant impact on their quality of life.

2.1.8 Environmental Impact

There would be no impact on the environment associated with this option.

Natural Growth in the Former Industrial Pond No. 2

2.1.9 Long-Term Effectiveness and Permanence

This option presents no negative effect on long term sustainability. As compared to the other options, there would be no mobile sources associated with this option and there would be minimal disturbance of the localized ecosystem.

2.1.10 Risk to the Company

There should be minimal risk to the Company with this option. The groundwater and subsurface soils data indicate that there are no impacts from these former industrial ponds that ceased being used more than 50 years ago.

Natural Growth in the Former Industrial Pond No. 2

2.2 REMOVE TREES AND VEGETATION THEN PERFORM IN-SITU TREATMENT

This option is being given consideration as a remediation alternative for the former industrial ponds that ceased operations in the early 1960's. The environmental test data indicates that the subsurface soil and groundwater immediately beneath and downstream of these ponds is not significantly impacted. This option was given consideration since there is evidence that some old sludge, pre-1962, are still in the bottom of the subject ponds. This option would have the trees and native plant life removed and an in situ sludge treatment system installed. The evaluation of this alternative indicated that there is a risk of negatively impacting the surrounding ecosystem with this process and that the cost and time required could be significant. Included in this proposal would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized as much as possible. More detailed comments on the ten screening criteria are shown below.

2.2.1 Protection of Health and Environment

There should be minimal risk to workers in this option other than normal risks of working with the removal of trees. There would be more risk to the environment due to the uprooting of the trees which currently slows down storm water runoff and takes up excess rainwater through evapotranspiration.

2.2.2 Compliance with Regulations

As stated above, the option is proposed assuming that the former industrial waste ponds are not declared jurisdictional wetlands. If that is the situation, storm water controls would be implemented during the activities. If these ponds are declared jurisdictional wetlands, the USCE will be involved in any site activities.

2.2.3 Reduction of Toxicity, Mobility, or Volume through Treatment

This option may reduce toxicity, if any exists, from its current state and would reduce mobility of any movement of contaminants of concern, if such exists, as long as the in-situ treatment option chosen did not result in side effect formation of more mobile contaminants. This option also has the slight possibility of opening up a pathway for mobility once the vegetation is completely removed and the in-situ system is set up sub-surface. As stated previously, test data does not indicate that there is currently any toxicity to the receiving environment from this site but that could change if the protective vegetation is removed. There would be a decrease in volume of chemicals of concern as these would be reduced via the in situ remediation

2.2.4 Implementation

This option would present some challenges to implement in that the trees and other plant growth would have to be removed during the driest time of the year so as to not significantly damage the surrounding ecosystem.

2.2.5 Time to Implement

This option would take approximately 5 or more years to complete.

2.2.6 Overall Costs

This would present the second highest cost option for the industrial pond remediation project. There would be the cost of removing all of the plant life and then the cost of an in situ treatment system along with a storm water collection system.

Engineering ... $75,000
Site development ... $250,000
Project management ($25,000/yr x 5 yrs and $10,000/yr x 5 years) ... $175,000
In-situ treatment ($75,000/yr x 5 years) ... $375,000
Laboratory testing ($25,000/yr x 5 years) ... $125,000
Long term (15 years) groundwater monitoring ($5k/year x 15 years) ... $75,000
Total ... $1,075,000

2.2.7 Community Acceptance

Sonoco assumes that community acceptance of this alternative would not be an issue since there is no harm to their environment and the site is out of sight and does not cause any relevant inconvenience to their quality of life.

2.2.8 Environmental Impact

This option would detrimentally impact the existing ecosystem and provide little, if any, risk reduction.

Natural Growth in the Former Industrial Pond No. 2

2.2.9 Long-Term Effectiveness and Permanence

This option provides minimal sustainability value as it is detrimental to the current ecosystem.

2.2.10 Risk to the Company

This option would provide some risk to the Company if the removal of the plant life had an impact on the subsurface soils or shallow groundwater that would require unplanned further remediation. Also there would be a risk if the in situ remediation was not as effective as planned and another form of remediation then had to be initiated.

Substantial Older Growth in Former Industrial Pond No. 2

2.3 REMOVE TREES, VEGETATION, AND ANY SLUDGE FOR LANDFILL DISPOSAL

This option is being given consideration as a remediation alternative for the former industrial ponds that ceased operations in the early 1960's. The environmental test data indicates that the subsurface soil and groundwater immediately underneath and downstream of these ponds is not significantly impacted. This option was given consideration since there is evidence that some old sludge, pre-1962, are still in the bottom of the subject ponds. This option would have the trees and native plant life removed followed by digging out the remaining sludge, dewatering it, and then disposing of it in an approved landfill. The evaluation of this alternative indicated that there is a risk of negatively impacting the surrounding ecosystem with this process and that the cost and time required could be very significant. Included in this proposal would be a storm water and groundwater monitoring program to ensure that environmental impacts were minimized as much as possible. More detailed comments on the ten screening criteria are shown below.

2.3.1 Protection of Health and Environment

There would be risk to workers in this option with the removal of trees and underlying sludges. There would be more risk to the environment due to the uprooting of the trees which currently slows down storm water runoff and takes up excess rainwater through evapotranspiration. Protection of the environment would be a challenge in that a waste material is to be excavated after it has been in place for more than 50 years. It could be difficult to know where the sludge stops and the native soils begin. Also during the excavation process, the area could be opened up, i.e. natural cover removed, and a pathway be established to the underlying soils and shallow groundwater.

2.3.2 Compliance with Regulations

As stated above, the option is proposed assuming that the former industrial waste ponds are not declared jurisdictional wetlands. If that is the situation, storm water controls would be implemented during the activities. If these ponds are declared jurisdictional wetlands, the USCE will be involved in any site activities.

2.3.3 Reduction of Toxicity, Mobility, or Volume through Treatment

Removal of the sludge, while difficult, would ultimately reduce the toxicity and mobility of the pollutants of concern, however, it can't be ignored that there could be significant risk of the pollutants becoming mobile during the removal process. Certainly there would be more short term exposure to the environment associated with implementing this option than currently exists; however this method would reduce long-term mobility risk.

2.3.4 Implementation

This option would present some challenges to implement in that the tree and other plant growth would have to be removed during the driest time of the year so as to not significantly damage the surrounding ecosystem. There would also be the additional challenge of removing the surface soil and old sludge in a manner that would not cause damage to the underlying soils and groundwater. Additionally there would be the challenge of getting the excavated materials dry enough to transport to an acceptable landfill for ultimate disposal.

2.3.5 Time to Implement

The option would require the most time to implement. Sonoco expects it would take approximately 4 years to complete this project.

2.3.6 Overall Costs

This would be the highest cost option of the three options that are proposed. There would be the cost of removing all of the plant life, the cost of removing all of the soils, and any sludge left from the industrial pond era. After the sludge was removed there would be the cost of trucking and a tipping fee for landfill disposal.

Engineering ... $125,000
Site development ... $150,000
Dig, dry and haul to on-site landfill (75,000 tons x $20/ton) ... $1,500,000
Landfill tipping fee (75,000 tons x $25 / ton) ... $1,900,000
Long term (15 years) monitoring ($5k/year x 15 years) ... $75,000
Total ... $3,750,000

2.3.7 Community Acceptance

There might be some minimal community resistance to this project due to the number of trucks that would be required, if the decision were made to haul the sludge to an off-site landfill.

2.3.8 Environmental Impact

It is expected that this option negatively impacts the environment as it would destroy an existing habitat of a viable ecosystem.

2.3.9 Long-Term Effectiveness and Permanence

This option destroys an existing viable ecosystem and contributes to greenhouse gas emissions as the material is dug out and hauled to a landfill, however, when the waste material is completely removed there should be no impact on the receiving environment.

2.3.10 Risk to the Company

This option would provide some risk to the Company if the removal of the plant life had an impact on the subsurface soils or shallow groundwater that would require unplanned further remediation. There would also be the risk that the soils removal process created problems that were not identified at the start of the project and thus cause the use of more time and financial resources.

Former Industrial Pond No. 1

2.4 REMEDIATION OPTIONS RANKING TABLE FOR FORMER INDUSTRIAL LAGOON AREA

Based on the discussion presented in the previous sections, Sonoco has summarized the options for the remediation of the former industrial lagoon area in the table below. Each option is ranked from 1 to 5 (1 being most impact and 5 being least impact) based on the impact to each of the screening criteria. The color coding is also provided to reflect the overall impact of each option. Green is minimal impact, Yellow is medium impact, and Red signifies higher impact for each of the screening criteria used to develop the overall best option for remediating the former industrial lagoon area.