

August 27, 1998

Mr. Wm. Gerald Hardy, Chief Hazardous Waste Branch Land Division Alabama Department of Environmental Management 1751 Cong. W. L. Dickinson Drive Montgomery, AL 36130-1463 Solutia Inc. 300 Birmingham Highway Anniston, Alabama 36201 *Tel* 205-231-8447



Re: ADEM Comments on Revised Supplemental Interim Measures Work Plan and Revised Design
Solutia Inc. Anniston, AL Facility
EPA ID No. ALD 004 019 048

Dear Mr. Hardy:

This letter responds to the comments on the captioned documents contained in your letter of August 13, 1998. Each of your comments is reproduced below in italicized text and is immediately followed by our response. The text of the Supplemental Work plan has also been revised in response to Comment No. 3. The changes occur on pages 1, 11 and 12. However, because of the need to repaginate the document, the entire revised text is attached.

1. Page G-6: This sheet depicts a profile of the new 42 inch HDPE pipeline, including a profile of the 3' x 6' box culvert crossing under West 10th Street. The bottom of the box culvert is reportedly less than 18 inches from the top of a city water main. As this distance may, be significantly less than 18 inches, the Department recommends that the city be offered the opportunity to review and oversee plans and construction in this area. In this way, the city may offer or perhaps require that a contingency plan be implemented in the event that this clearance is less than optimal. Such action may reduce construction delays and allow construction to remain within code requirements. The same procedure is recommended for the 6 inch sanitary line, which the culvert also crosses over.

Response: - Copies of the design drawings have been provided to the City Engineer's office and discussions have been held with the Anniston Water and Sewer Board. Both agencies have indicated that the current design is acceptable to them.

2. <u>Page G-6</u>: The 3'x 6' culvert has a. step down below West 10th Street, and in turn, steps up to the invert of the downgradient existing 2'x 5' box culvert. It appears that

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the invert of the 3' x 6' culvert is approximately 17 inches below the invert of the downgradient 2' x 5' culvert. This step-up may lead to a buildup of sediment that cannot be flushed from the line. While this may be unavoidable as a matter of existing design constraints, the Department recommends that Solutia confirm that proper thrust restraint provisions have been considered at the step-up. Regarding the sediment issue, it is likely that sediment buildup will stabilize and be minimal once the construction is complete, vegetation is established, and once erosion becomes minimal. However, it is conceivable that upon completion of construction, the line may need to be cleaned out. Please inform the Department whether or not Solutia intends to clean out the line periodically or at least upon completion of construction or if the line velocity will be such that the line is designed to be self-cleaning.

Response: - The existing design includes consideration of the thrust forces that will develop at the step-up. Analyses indicate that the design is adequate to resist these forces. With regard to sediment buildup, Solutia agrees that buildup at this point is likely to decrease once construction is complete and vegetation is established on the cover. Further, any sediment buildup will be removed during any significant storm event. The flow velocity in the culvert during even a modest storm will be in excess of the minimum cleaning velocity of approximately two feet per second. Nevertheless, Solutia will remove sediment from the culvert in the event this proves to be necessary.

3. Construction Drawings, Pages G-13 through G-15: Solutia has modified its Supplemental IM Workplan for the north side improvements to include cap and drainage improvements at two miscellaneous parcels located at the East and West sides of the facility. These parcels include one for Bethel Church and one for the Alabama Power Company substation. In order to properly document the progress and basis of these east and west side interim measures, the IM Workplan revisions should include a narrative discussion of all proposed interim measures. Thus, please resubmit the revised IM Workplan/detailed design to include a narrative discussion (i.e., purpose, cleanup objective, description of proposed activities and function at completion, basis of adding them to workplan at this time, etc.) of these activities. Also address if post-removal sampling will be conducted, as mentioned in the Department's July 16, 1998 letter to Solutia (regarding ADEM's review of Solutia's July 2, 1998 amendment to the North Side IM Workplan to address removal and consolidation of contaminated media from 10 off-site parcels).

Response: - The work proposed for these areas does not constitute new Interim Measures requiring ADEM's approval. The cover to be placed on the Bethel Church area is part of the Interim Measures which were described in a Work Plan submitted on June 16, 1997 and which was approved by ADEM its letter of July 28, 1997. As noted in that Work Plan, the cover in the East Side was intended to be constructed in two stages. The first of these was completed in 1997 and included the majority of the cover. However, the area around Bethel Missionary Baptist Church could not be covered until the church was demolished in the spring of 1998. Post-removal sampling was not required in the approved Interim Measures Work plan and, consequently, is not included in the current work scope.

The work planned at the West End landfill includes the repair of an area of cover where the soil layer over the geomembrane has slumped and placement of additional cover material in an area adjacent to the landfill to minimize erosion effects. Both of these are considered to be routine maintenance activities. In consequence, post-removal sampling is not required.

Although these additional construction activities do not require approval, the text of the Supplemental Interim Measures Work plan has been revised to include brief descriptions of these activities.

4. <u>References to Closure Design</u>: Solutia refers to Interim Measures activities as "Closure Design". The Department notes that these activities, while closure related, are proposed Interim Measures at this time. However, it is conceivable, upon approval, implementation, oversight of performance, and completion of RFI/CMS activities that the Department may re-evaluate the status of the completed activities and consider them as Final Closure activities. This issue will be addressed at a later time during the corrective action process.

Response: - The comment is noted.

5. <u>Potential for Flooding</u>: Solutia states that the flow capacity of the existing 2' x 5' culvert is estimated to be 100 cfs or roughly ½ of the peak flow (200 cfs) from contributing sources. During peak flow conditions, stormwater from the west end landfill area will surcharge the pipeline/culvert system and back up into the impounded overflow area for temporary storage, until flows recede to nominal levels.

The flow from the West End Landfill appears adequately contained; however, there is a drainage area component along West 10th Street that may have an ensuing drainage problem during peak or high flow periods. It appears that this drainage area includes regions designated as W3 and W4, as well as other areas outside (north and west) of the regions depicted by Solutia's "Simplified Sketch of Basin" included in the Revised Workplan. During extended high flow periods, the impounded area has an integral spillway which also releases any overflow to this same general area. Overflow from the spillway is designed to be contained in a 5 ft deep sub-basin prior to draining to the 2' x 5' culvert via a 30 in x 54 inch metal arch culvert and 36 inch diameter concrete pipe crossing under West 10th Street. However, it is unclear at what frequency this sub-basin may overflow. Likewise, there is a 12" CMP and a 15" concrete pipe along West 10th Street that drain areas south and north of the street, respectively. Both of these lines drain to the common 2' x 5' existing box culvert.

Because this 2'x 5' storm sewer is inadequate to handle runoff from a significant storm event, the potential exists to flood residential sites in the vicinity of West 10^{th} Street, as well as the street area itself. Hence, the Department recommends that Solutia notify the City of Anniston's Engineering Office to discuss and resolve this matter.

Response: - The potential for such flooding is recognized. However, it should also be recognized that the flow components identified in this comment currently discharge to the 2 ft. X 5 ft. box culvert and flooding has historically occurred in this area. The measures proposed in this Work Plan will alleviate some of this flooding by providing storage in the system and, in consequence, will result in smaller peak flows being discharged to the culvert. The potential for such flooding has been discussed with the City Engineer, who has expressed satisfaction that the proposed construction will reduce the effects of flooding from significant storm events.

As you are aware, the construction contractor is currently mobilizing equipment to the site and proposes to start construction of the North Side Cover in the very near future. Thus, your early review and approval of these responses and the attached revised text would be appreciated. If you have any questions or require additional information, please contact me.

Sincerely,

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SOLUTIA IN

Alan G. Faust

Manager of Remedial Projects

1. INTRODUCTION

This supplemental Interim Measures Work Plan (IMWP) has been prepared pursuant to a letter to Monsanto, now Solutia Inc. (Solutia), from the Alabama Department of Environmental Management (ADEM) dated March 11, 1997. In that letter, ADEM informed Solutia that it had determined that certain Interim Measures previously proposed by Solutia were deemed appropriate to minimize the potential for constituents to leave Solutia's Anniston, Alabama Facility. ADEM also deemed these Interim Measures to be Best Management Practices (BMP) pursuant to the National Pollutant Discharge Elimination System (NPDES) Permit issued to the Facility on December 31, 1996. As such, this supplemental IMWP constitutes a portion of the BMP Plan for the Facility required by the NPDES Permit and is incorporated into that Plan by reference.

Detailed designs and procedures for the implementation of three of these measures were provided to ADEM in an IMWP dated June 16, 1997. This IMWP was approved by ADEM in a letter dated July 28, 1997 and construction of those three Interim Measures was substantially completed by December 31, 1997. Upgrading of the in-plant stormwater system and diversion of non-contact cooling water to the in-plant wastewater treatment facility have also been completed. All major sewer lines conveying stormwater flow to NPDES monitoring point DSN 001 have been lined with a rigid resin impregnated felt lining and new piping has been installed in the Plant to convey non-contact cooling water to the in-plant waste water treatment facility. A final report describing the completed Interim Measures was submitted to the Department on March 31, 1998 in accordance with the requirements of Condition III.F.3.b of the Alabama Hazardous Wastes Management and Minimization Act (AHWWMA) Post-Closure Permit for the Facility.

Thus, the only Interim Measure which remains to be implemented is the containment of soils and sediments on property owned by Solutia downgradient of the West End Landfill. This supplemental IMWP identifies the objectives of this Interim Measure, provides details of the actions and procedures for implementation, and provides a schedule for implementation in accordance with the requirements of Condition III.F. of the Post Closure Permit.

The Work Plan also makes reference to two other construction activities, designs for which are included in the drawings. Neither of these activities is included in the scope of the Interim Measure described in this Work Plan. Nevertheless, brief descriptions of these activities are provided in Section 5.

2. EXISTING SURFACE WATER DRAINAGE PATTERNS

Currently, stormwater from the northern slopes of Coldwater Mountain flows north to Highway 202. A series of natural drainage swales conveys water down the side of the mountain and along the south side of the highway to a series of culverts which carry the water under the roadway. The individual drainage basins, which contribute flow to the individual culverts, were identified and discussed in the approved IMWP and are shown on the attached Figure 3.

The recently completed Interim Measures have altered the natural drainage patterns from the areas denoted as 2 and 3 on Figure 3. Runoff from any storm less than the 50-year, 24-hour storm on these areas flows to a ditch on the southern side of Highway 202 and is conveyed under the road by three culverts: a 36 in. diameter culvert located immediately east of Clydesdale Avenue, a 24 in. diameter culvert east of this and, farthest to the east, a 48 in. diameter culvert. These culverts are designated as monitoring points DSN 009, DSN 010 and DSN 011 respectively in the facility NPDES permit. The discharges from the three culverts are diverted into a detention basin (the Lower Detention Basin) which was completed in March 1997. The basin is designed to store the runoff from a 25 year, 24 hour storm falling on the South Landfill and to pass a 100 year, 24 hour storm on the same catchment area. Discharge from the basin occurs via an 18 in. diameter pipe which empties into a discharge structure on Tenth Street at a maximum rate of 16 cfs. The detention basin is also equipped with an emergency spillway which, when necessary, empties into the discharge structure on Tenth Street. For storms which exceed the intensity of a 50-year, 24-hour event, some runoff from Area 2 will flow under Highway 202 through a 4 ft. x 6 ft. box culvert located west of Clydesdale Avenue. The runoff then flows through the southeastern corner of the manufacturing portion of the Solutia property (the plant) into a ditch on the western side of Clydesdale Avenue and crosses under Clydesdale Avenue in a 4 ft. x 6 ft. box culvert. Once across Clydesdale, the flow is conveyed to the Tenth Street discharge structure in a 36 in. diameter HDPE pipe.

The specific drainage basin which contributes stormwater runoff to the area north of the West End Landfill and is the subject of this supplemental Work Plan is located south of the West End Landfill and west of the South Landfill. This basin is denoted as Area 1 on Figure 3. Runoff from this area is conveyed under Highway 202 by a 4 ft. x 4 ft. box culvert located on the west

side of Monsanto Drive. The inlet to this culvert is designated as monitoring point DSN 008 in the facility NPDES permit. The runoff is then directed through an open channel around the western and northern edges of the West End Landfill into a drainage ditch running along the western boundary of the Solutia Plant. The runoff is conveyed to the north under the railroad tracks by a 36 in. diameter culvert and then flows partially in open channel and partially in culvert north to Tenth Street, at which point it enters a storm sewer running eastward under Tenth Street. This sewer discharges to a ditch running easterly along the northern side of the railroad tracks into an unnamed tributary of Snow Creek

Hydrologic studies of this drainage basin (refer to Attachment 1) demonstrate that the culverts under Highway 202 and the railroad tracks are inadequate to pass the runoff from a significant storm event. As a result, stormwater ponds behind these two structures and the maximum flow which exits the culvert under the railroad tracks from any appreciable storm event is approximately 100 cubic feet per second (cfs). Consequently, stormwater control measures north of the railroad tracks need only be designed to accommodate this flow rate, together with flow contributions from the areas north of the tracks. The design flows into the system are discussed in the Section 3.3.

3. INTERIM MEASURES

3.1 Overview

The primary goal of the Interim Measures identified in this supplemental IMWP is to contain soils and sediments on property owned by Solutia downgradient of the West End landfill. Those areas that may act as potential sources of constituents and the mechanisms which could transport these materials offsite have been identified by an extensive soil and sediment sampling program conducted within AOC B since 1995. Soils and sediments in certain areas north of the tracks are potential sources of constituents. Previous sampling efforts conclusively demonstrate that the primary transport mechanism is surface water and, in particular, stormwater flows which exceed the capacity of the culvert systems in the drainage ways north and east of the Solutia plant. Because the affected soils and sediments are generally confined to the floodplain areas of the drainage ways, the implementation of a comprehensive stormwater management system and the isolation and containment of soils provide the best means of achieving the primary goal of the Interim Measures program. This program is based on the requirement that areas in which affected soils and sediments have been identified will be isolated and contained with appropriate covers to prevent offsite migration.

Details of the actions designed to fulfill this goal are provided in the following sections, while design drawings for the planned construction are included in Attachment 2.

3.2 Soil Cover

A cover will be constructed on Solutia-owned property north of the railroad tracks. The objective of the cover is to isolate and contain potentially affected surficial soils and control stormwater drainage through this area. A large number of soil and sediment samples from within the area have been analyzed for PCBs. The results of these analyses are summarized on Figure 1 showing sample locations at which the PCB concentration was above or below a screening level of 5 mg/kg. The extent of the cover has been selected to include all of the sample locations on Solutia-owned property where PCB concentrations exceeded the screening level, unless such locations will be covered by other permanent structures such as the perimeter berm to be built on

the northern half of the property to create an impoundment basin. Since the soil berm will be an average of about 5 feet high over most of its length, it will function as a cover as well. Based on this criterion, the extent of the cover is shown on Figure 2.

Prior to constructing the cover, existing utilities which will be under the cover will either be rerouted or abandoned, unless those utilities will be required by properties not owned by Solutia. Meetings have been held with the various utility companies, and the only major utility which may require relocation is the electrical distribution system in the area to be covered. If necessary, this system will be relocated outside of the work area. All other services will be discontinued by the utility companies.

The entire area within the cover limits shown on Figure 2 will be cleared, with the exception of established mature trees. A 6-oz weight, continuous filament, needle punched, non-woven geotextile will be installed in cleared areas to define the boundary between the cover and the former soil surface. Over the geotextile, a minimum of 14 inches of soil cover will be placed and a vegetative cover will be established by hydroseeding the cover soils. The existing drainage ditch will be covered by the same textile and backfilled with as much as 3 to 5 feet of clean fill.

Once the geotextile fabric is placed within a drainage ditch and the ditch is backfilled to original grade, a 40 mil HDPE geomembrane liner will be placed over the ditch area on Solutia-owned property and will be covered by the 14 in. thick soil cover. The width of the geomembrane will be a minimum of 20 feet to allow it to extend well past the edges of the ditch which, in most places, is less than 10 feet wide. In those areas where the cover abuts property not owned by Solutia, a drainage swale will be constructed near the edge of the cover to prevent runoff from Solutia's property from entering the adjacent properties.

The area to be covered is presently fenced and this fence will be maintained by Solutia as part of the normal Operations and Maintenance activities for this area. Further, no construction activities which involve excavation will be permitted without the prior approval of Solutia.

3.3 Stormwater Management

Stormwater runoff entering the site from the culvert under the railway tracks will flow into a 36 in. diameter welded HDPE pipe which will be connected to the existing 36 in. diameter with a sleeve connection. From there, the flow will be directed into a 42 in. diameter welded HDPE pipeline, through a combination of bends and manholes, to the corner of West Tenth Street and Parkwin Avenue, where it will transition into a 3 ft. x 6 ft. box culvert through a manhole structure. Flow from this new culvert will be directed into an existing 2 ft. x 5 ft. culvert which runs along the north side of Tenth Street, under Clydesdale Avenue, and which discharges into a tributary of Snow Creek east of Clydesdale Avenue and north of the railroad tracks.

An impoundment will be created by the construction of a low berm (maximum of 10 feet high) along West Tenth Street, Parkwin Avenue, and Duncan Avenue, as shown on the drawings included in Attachment 2. It will collect stormwater runoff from the covered area, as well as the overflow from a manhole structure to be constructed within the berm near the corner of West Tenth Street and Parkwin Avenue (the Secondary Inlet structure shown on the design plans included in Attachment 2). A perimeter ditch will be constructed on the outside of the berm along its northern and western sides to convey stormwater runoff from adjacent properties to a 30 in. x 54 in. sewer running eastwards under West Tenth Street. A perimeter ditch is not required on the eastern side of the berm since the natural drainage is to the east. The berm will be equipped with an emergency spillway on the north side which will allow for stormwater release into the storm sewer system in the event of major storms which exceed the 100-year, 24-hour design storm. In such a low probability event, flow over the spillway will be collected by a ditch on the northern side of the berm and conveyed along the southern side of Tenth Street by a 30 in. x 54 in. metal arch culvert. This arch transitions into a 36 in. diameter concrete culvert which crosses Tenth Street and is connected to the 2 ft. x 5 ft. concrete block culvert on the northern side of the street. The collection ditch on the northern side of the berm is designed to pond up to 5 ft. of water from the spillway overflow. Any spillway discharge which cannot be managed by this system will enter the surface drainage system in the surrounding area through a combination of overland sheet flow into existing drainage channels and flow into the neighboring stormwater sewers via curb inlets.

Hydrological analyses have been performed to evaluate the effect of routing stormwater flow through the proposed pipelines and impoundment and the results are provided in Attachment 1. These analyses indicate that the existing sewer system along West Tenth Street is inadequate to handle the runoff from a significant storm event. However, the peak discharge from a significant storm can be significantly reduced by routing the runoff through the impoundment and, in fact, the analyses demonstrate that the peak discharge from Solutia-owned property resulting from a 100-year, 24-hour storm will be reduced by as much as 60 percent. The flow contributions to the system from this design storm are as follows:

- Runoff from the catchment area south of the railroad tracks will be discharged at a maximum rate of 100 cfs from the 36 in. diameter culvert under the tracks. This flow will be conveyed into the existing 2 ft. x 5 ft. box culvert on the north side of Tenth Street by a 42 in. diameter HDPE pipeline.
- The peak discharge from the area to be covered between the railroad tracks and Tenth Street is estimated to be 50 cfs under the design storm conditions. This runoff will flow to the northeast as surface sheet flow and will collect in the impoundment area created by the perimeter dike. The ponded water will enter the box culvert along Tenth Street through the perforated Secondary Inlet structure to be constructed in the northeastern corner of the impoundment.
- The peak discharge from the area west of the berm is estimated to be 50 cfs and will be conveyed to the north side of the berm by the perimeter ditch constructed along the western and northern sides. Flow from this ditch will drain into the existing 30 in. x 54 in. metal arch culvert running along the southern side of Tenth Street and then into the 2 ft. x 5 ft. concrete block culvert along the northern side of the street via the 36 in. culvert under Tenth Street.
- The flow capacity of the 2 ft. x 5 ft. concrete culvert along Tenth Street is estimated to be 100 cfs. Since the total peak inflow to this culvert is likely to be about 200 cfs (100 cfs from the 42 in. pipeline, 50 cfs from the covered area, and 50 cfs from the area to the west of the berm), the culvert will clearly be surcharged. The surcharge will be stored in

the impoundment, which has been designed to detain and store that portion of the 100year, 24-hour peak storm discharge from the 42 in. diameter pipeline and the covered area which exceeds the maximum capacity of the 2 ft. x 5 ft. culvert. The runoff from the covered area will flow directly into the impoundment by sheet flow, while the surcharge flow from the 42 in, diameter pipeline will enter the impoundment through the perforated Secondary Inlet structure. Thus, this structure will function as both an inlet as well as an outlet. Water stored in the impoundment will drain into the pipeline and be conveyed across Tenth Street when the capacity of the 2 ft. x 5 ft. culvert permits (i.e., the Secondary Inlet will function as an inlet structure). At other times, stormwater flowing in the pipeline which cannot be accommodated by the culvert will be stored in the impoundment (i.e., the Secondary Inlet will function as an outlet structure). Because the outlet pipe from the impoundment will be the same size as the inlet, water detained in the impoundment will begin to drain immediately after the peak discharge from the design storm is past. Consequently, the retention time in the impoundment will be short and the ponded water is expected to drain in less than 48 hours. The transient nature of the storage, together with the fine grained nature of the soils underlying the impoundment, will result in negligible percolation of the ponded water into these soils.

3.4 Fencing

A fence has been constructed around the perimeter of the areas be covered.

3.5 Reporting

All reporting requirements identified in Condition III.F of the Post-Closure Permit will be satisfied.

3.6 Operations and Maintenance

An Operations and Maintenance (O&M) Plan for the Interim Measures described in the approved IMWP has been submitted to ADEM for review and approval. Within 90 days of approval of this supplemental IMWP, the O&M Plan will be revised to include the supplemental measures.

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3.6 Expected Benefits

The supplemental Interim Measures described in this Work Plan will achieve the following:

- manage stormwater runoff in such a way that the possibility of transport of soils and sediments from Solutia-owned property is minimized;
- prevent erosion and sediment transport from areas containing affected soils and sediments north of the facility;
- reduce the potential for surface water infiltration into soils on the north side; in particular, those soils in immediate proximity to the ditches where higher PCB concentrations were found. The potential for infiltration will be minimized by the presence of a low permeability geomembrane;
- prevent direct contact with affected materials;
- reduce the peak stormwater discharge from Solutia-owned property by approximately 60 percent.

The completion of these measures will assure appropriate management and containment of soil and sediments on property in and around the Solutia Anniston plant. The measures will satisfy the standards defined in OSWER Directive 9902.3-2a for the major technical components of remedial actions. The measures will be protective of human health and the environment in that they provide containment of the affected media, prevent direct contact with affected media and minimize the potential for migration of constituents to the environment. In addition, since most of the affected properties in the area are currently owned by Solutia, access to these properties will be restricted

4. SCHEDULE

Construction of the supplemental Interim Measures identified in this Work Plan is scheduled for completion by the end of November, 1998.

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5. OTHER CONSTRUCTION ACTIVITIES

The design drawings provided in Attachment 2 include construction activities in two other locations:- the West End Landfill, and the site of the former Bethel Missionary Baptist Church. Neither of these is included in the Interim Measure described in this Work Plan and neither of them requires ADEM approval prior to construction, since this approval has already been obtained.

At the West End Landfill, the soil cover over the geomembrane layer has slumped in a very localized area. The slump has not compromised either the integrity or the performance of the cover, but should be repaired. It is apparent that the slumping was caused by poor slope drainage in this area and, consequently, the repair measures consist of excavating the slumped soil, placement of perforated drain pipes in the area, and replacement of the cover soils. Additionally, some minor erosion has occurred in an area adjacent to the landfill and the construction activities will include regrading of this area with fill. Both of these measures are considered to be normal maintenance activities on completed and approved measures and, thus, do not require specific approval from ADEM. Further, since only clean soil will be excavated from the landfill cover, no post-excavation testing is required.

The work planned for the Bethel Church site is a part of the Interim Measures constructed in 1997. These measures were described in an Interim Measures Work Plan (IMWP) submitted to ADEM on June 16, 1997 and which was approved on July 28, 1997. As noted in the IMWP, the cover in the East Side had to be constructed in two stages. The first of these was completed in 1997 and included the majority of the proposed cover. However, since Bethel Church could not be demolished until the spring of 1998, the area around the church could not be covered until now.

The cover to be placed in this area is identical to that placed in the rest of the East Side in 1997. As such, no new approvals are required from ADEM for this portion of the work.