



environmental management, inc.

From: Deni Chambers, CEM
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Date: November 19, 2010

To: Shannon Harbour, PE
Nevada Division of Environmental Protection (NDEP)

RE: Response to NDEP's November 5, 2010 Comments on *Environmental Covenants, Institutional and Engineering Control Plan, Tronox Facility, Henderson, Nevada*, dated October 6, 2010

1. *General comment, TRX should provide the Engineering and/or Institutional Control language proposed for each proposed control area in an appendix to the revised Deliverable.*

Response: A table has been provided in Appendix A of the revised Environmental Covenants, Institutional and Engineering Control Plan (the IC/EC Plan) which provides the requested language and identifies each Institutional/Engineering control area (I/E area), the engineering and/or institutional control that is proposed for implementation, the excavation polygons that are impacted by the control area, the assessor's parcel numbers that the control area is located in and the estimated volume of soil that will remain in place.

2. *Pages 4-8, Areas of the Site Planned for Engineering and Institutional Controls, TRX should provide more details and specifics for each area including but not limited to the following:*
 - a. *Legal description of each control area in regards to the parcel it is located within and its exact location within that parcel.*

Response: A legal description of each I/E area will be provided once excavations are completed and the limits of each control area are defined. These legal descriptions will be provided in an addendum to this IC/EC Plan.

- b. *Elevation of the depth of contamination for each excavation polygon associated with each control area. Please note that the elevation should be surveyed within an accuracy of +/- 0.1 ft. against a known and permanent benchmark/monument.*

Response: The currently known elevation of the depth of contamination for each excavation polygon associated with the I/E areas are shown on the figures and are listed in Table 1 of this IC/EC Plan. Once excavations are completed, the elevations of the depth of contaminated soil remaining in each excavation polygon will be surveyed within an accuracy of +/- 0.1 ft. against a known and permanent benchmark/monument. The IC/EC Plan will be updated with this information once the surveying is completed.



c. *An estimate of the volume of impacted soil to be left in place within the control area*

Response: An estimate of the volume of impacted soil to be left in place within each I/E area has been provided in each I/E area-specific section and in Table 1 of the IC/EC Plan.

d. *An estimate of the volume of impacted soil to be left in each excavation polygon within the control area.*

Response: An estimate of the volume of impacted soil to be left in each excavation polygon within each I/E area has been included in Table 1 of the IC/EC Plan.

e. *Rationale/justification as to why it is not feasible to move these features even on a temporary basis.*

Response: The rationale/justification regarding why it is not feasible to move features identified as requiring institutional/engineering controls has been provided in each I/E area-specific section of the IC/EC Plan.

f. *An accurate listing of excavation polygons that will be affected by the control area*

Response: The IC/EC Plan has been revised to provide an accurate listing of excavation polygons that will be affected by each I/E area. This information is provided in both Table 1 and in each I/E area-specific section of the IC/EC Plan.

g. *Specifics on depth to footings, piping, etc. as appropriate.*

Response: Specific information regarding estimated depth to footings or depth to piping within each control area has been provided in the I/E area-specific sections. Information that is useful for understanding why these I/E areas have been established has been provided in each of these sections.

h. *Specific analysis of impact to each effected excavation polygon*

Response: Specific information regarding the impact of the I/E areas on each excavation polygon has been provided in the IC/EC Plan.

i. *Appropriately scaled Figures for each control area that note Site features and details as well as proposed setbacks. Additionally, excavation polygons (areas of contamination) and depths should be posted over the control areas to show where contamination will be left in place.*

Response: Appropriately scaled figures for each control area are now provided in the IC/EC Plan. Details shown in these figures include Site features, proposed setbacks (if appropriate), excavation polygons and depths of contamination within each excavation polygon.



- j. *Propose and describe field identification methods (e.g. concrete monuments with rebar, colored tape, snow fencing) and any maintenance required so that when future earthwork occurs, construction crews will know when they are intruding on a specific area in the field subject to an Environmental Covenant. The methods proposed should consider those presented Section 6.3.2 of ASTM Standard Guide E2435-05 Application of Engineering Controls to Facilitate Use or Development of Chemically-Affected Properties.*

Response: Field identification methods for each I/E area have been included I/E area-specific section in the IC/EC Plan.

3. *Pages 4-8, Table 1, and Figure 1, in addition to the general comment above, NDEP has the following comments on following I/E areas:*

- a. *I/E 1, Overhead Utility Rack, please provide additional information on the operation and necessity of this proposed control area.*

Response: The requested information has been added to in the Environmental Covenants Plan.

- b. *I/E 2, Sodium Chlorite Filter Cake Process Area, the area shown on Figure 1 is larger than the referenced 40' by 40' area of the concrete slab; please revise so that this proposed control area only encompasses the concrete slab. TRX should additionally note that the depth of RZ-B-13 (0.33 ft) does not prohibit scraping up to the slab. Hand excavation can be utilized as necessary to protect the integrity of the slab.*

Response: The actual slab size is 45' by 50'. This information has been corrected in the IC/EC Plan and the accurate size/location of the slab has been added to the figure for this I/E area (Figure 6).

- c. *I/E 3, Overhead Pipe Rack,*

- i. *Please provide additional information on the operation and necessity of this area.*
- ii. *NDEP did not observe that this control area in RZ-B-20 but adjacent to RZ-B-19. Please clarify.*

Response: The requested information has been added to the IC/EC Plan and the accurate size/location of this control area has been added to the figure for this I/E area (Figure 7). The location of the control area for the Overhead Pipe Rack has been moved based upon information related to the depth of footings for the support poles for the Overhead Pipe Rack, and therefore excavation polygons RZ-B-20 and RZ-B-21 are the only excavation polygons that are affected by this I/E area.



- d. *I/E 4, Unit Buildings, please explain why un-operational Unit Buildings cannot be demolished.*

Response: Tronox is currently in bankruptcy. Funds for demolishing non-operational buildings are not available at this time and insurance funds are not available for demolition.

- e. *I/E 5, Chemstar Access Road, please provide Chemstar plant hours of operation in particular hours where roadway is utilized. Additionally, discuss phased excavation and backfill including the use of trench plates, etc. to facilitate excavation of the roadway with minimal impact to Chemstar operations.*

Response: We are still trying to obtain this information from Chemstar, and we will incorporate this information into the IC/EC Plan the next time it is updated. Utilizing a phased approach to excavate the Chemstar Plant Access Road Area, including trench plates and shoring, is very time- and resource-intensive. The phased approach would require excavating the area in strips, backfilling and compacting each strip before proceeding to the next strip and covering these narrow strips with trench plates during Chemstar's operational hours. This approach is very time-consuming and will adversely impact Tronox's ability to meet the NDEP-mandated remediation deadline.

- f. *I/E 6, Steam Plant and Associated Utilities and Infrastructure, TRX should discuss alternate excavation techniques (e.g. hand excavation, etc.) in regards to protecting the integrity of this proposed control area.*

Response: The requested information has been added to the IC/EC Plan. Tronox will be utilizing hand excavation, if necessary, adjacent to buildings, footings, supports, concrete slabs, etc. The accurate size/location of this I/E area has been added to the figure for this control area (Figure 10).

- g. *I/E 7, Gas Lines, Meters, and Telemetry Wiring, please discuss alternative excavation techniques (e.g. hand excavation, etc.) in regards to protecting the integrity of this proposed control area.*

Response: The requested information has been added to the IC/EC Plan. Tronox will be utilizing hand excavation, if necessary, adjacent to buildings, footings, supports, concrete slabs, etc. The accurate size/location of this control area has been added to the figure for this control area (Figure 11).

- h. *I/E 11, Perchlorate Remediation Process Pipelines, please provide the depth of these pipelines and how the proposed cut-slopes for the berms would impact excavation in the vicinity of this proposed control area.*

Response: The Perchlorate Remediation Process Pipelines are contained within I/E 17, the groundwater and WC ponds, and therefore a separate I/E area for these pipelines is no longer proposed. The limits of I/E 17 are based upon the need to stay clear of the Perchlorate Remediation Process Pipelines, and utilized the following



information/criteria: a 10 foot offset from the top of the Perchlorate Remediation Process Pipelines, and an excavation that is sloped 3:1 to the design excavation depth.

- i. *I/E 12, Equalization Tanks, please discuss alternative excavation techniques (e.g. hand excavation, etc.) in regards to protecting the integrity of this proposed control area.*

Response: Please note that I/E 12 is the diesel tank and tank containment structure, not the equalization tanks. The requested information has been added to the Environmental Covenants Plan. Tronox will be utilizing hand excavation in localized areas, if necessary, adjacent to buildings, footings, supports, concrete slabs, etc. in order to protect the integrity of features within this I/E area. The accurate size/location of this I/E area is presented in Figure has been added to the figure for this control area (Figure 16).

- j. *I/E 13, GW-11 and WC Ponds, TRX should update this section and reference TRX's Revised Engineering Evaluation of Slope Stability, WC and GW-11 Pond Embankments document as appropriate.*

Response: The requested information has been added to the IC/EC Plan.

4. *Page 9, Preparation of Risk Management Plan, the proposed Risk Management Plan should include a soil management plan for the soils within the control area for the instances that soil will need to be disturbed or removed for O&M, repairs, etc. Please note that this plan should be referenced in the above-requested engineering and/or institutional control language for each of the proposed control areas.*

Response: An Environmental Risk Management Plan is being prepared for the Site, which will include information regarding managing soils within control areas that may need to be disturbed or removed. References to this Environmental Risk Management Plan have been provided in the IC/EC Plan.

