

December 20, 2007

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**RESPONSE TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
COMMENTS DATED MAY 16, 2007 (E-MAIL FROM PETER RAMANAUSKAS) ON THE
INTERIM MEASURES WORK PLAN (IMWP)
FOR SWMU 13 – MINE FILL B
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA**

Comments provided by the United State Environmental Protection Agency (USEPA) are shown in bold font. Responses following each EPA comment are shown in regular font. Changes to the IMWP are italicized and enclosed in quotation marks.

Comment EPA-1a: The text of Section 1.1 mentions PCB contaminated soil and sediment in the vicinity of Building 169 and 171.

Response to EPA-1a: There is PCB-contaminated soil located between Buildings 171 and 169. There is also PCB contaminated soil located between Buildings 169 and 166. The text in the first paragraph of Section 1.1 has been revised as follows:

"...The IMWP provides requirements for the excavation and off-site disposal of polychlorinated biphenyl (PCB) contaminated soils and sediments located in the vicinity of Buildings 166, 169, and 171 and within the drainage channels that receive surface water runoff from these areas..."

Comment EPA-1b: Section 1.3.2 states that the therminol boilers located near Buildings 166 and 171 leaked oils containing PCB. What was the PCB source for B-169?

Response to EPA-1b: No PCB source was found in Building 169. The second bullet in Section 1.3.2 was provided as information on the types of activities that occurred in Building 169. Section 1.3.2 has been revised as follows:

"SWMU 13 is located in the central portion of NSWC Crane as shown on Figure 1-1. Figure 1-2 is an aerial photograph of SWMU 13 and Figure 1-3 is a map showing the facility locations at MFB. MFB has been in use since 1941 when NSWC Crane was commissioned, and explosive ordnance was produced at MFB from 1941 until 1973. Since 1973, the facilities at MFB have been used to renovate ordnance and equipment. This IMWP focuses on the PCB-contaminated soils and sediments in the area of Buildings 166 and 171. It is believed that therminol boilers located near Buildings 166 and 171 were used to heat oil-containing PCBs. The heated oil was then transported to the melt buildings (Buildings 166 and 171), where the oil was used as a heat-transfer medium in the melting of explosive mixtures (Halliburton NUS, 1992).

"The major sources of contamination at MFB included the following:

- The washdown of explosive formulations from building roofs onto the ground surface and exhausts vented from ventilation systems.*
- The therminol boilers located near Buildings 166 and 171 leaked oils containing PCBs.*
- The Building 169 paint booth where an enamel coating containing 22 percent naphtha by weight and bituminous solvent-type coating containing 30 percent naphtha by weight were applied to shells.*
- The bullet loading process which used titanium tetrachloride and vanadium oxytrichloride.*

"The therminol boilers and surrounding contaminated soil were removed in 1989, but subsequent soil samples collected near the former locations of the boilers indicated that PCB concentrations were greater than 10 mg/kg in residual soils.

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"MFB was remediated in 1999, 2000, and 2001 as part of a bioremediation program that included sampling, excavation, on-site treatment through bioremediation (composting) of explosives-contaminated soil, and backfilling of the compost at MFB. The types of analytes measured before and after the remediation included volatile organic compounds (VOCs), explosives, metals, and PCBs (Aroclor 1242, 1254, and 1260)."

Comment EPA-1c: The bullets in this section mention all three buildings, yet this work plan addresses only PCB impacts near B-169 and B-171. What is the status of B-166?

Response to EPA-1c: The contamination source from Building 169 was from the washdown activities that occurred in Building 169. Refer to Response to Comment EPA-1b.

Comment EPA-2: Section 2.2: Please present the 1990 TCLP action levels and EP Tox test results of 1985.

Response to EPA-2: The second paragraph in the section titled Initial Assessment Survey (1985) has been removed from the text.

Comment EPA-3a: Section 2.3: Please clarify why a ground surface to 2 foot bgs depth is set for the preliminary cleanup goal of 1 mg/kg. The sediment goal should be 1 mg/kg regardless of depth.

Response to EPA-3a: The 2 foot bgs depth is for the protection of ecological receptors. The cleanup goal of 1 mg/kg for sediments is set regardless of sediment depth. The first sentence in the second Paragraph of Section 2.3 has been revised as follows:

"For SWMU 13, a preliminary cleanup goal of 1 mg/kg for the protection of ecological receptors has been established for the surface soil (ground surface to 2 feet bgs) and sediments regardless of depth."

Comment EPA-3b: Verify that land use at MFB is and will remain low-occupancy. Will proposed future use of MFB render the area high-occupancy such that removal to 1 mg/kg is best undertaken at this time?

Response to EPA-3b: There are no current or future uses of the MFB that would render the area as high occupancy.

Comment EPA-4: Referring to the bullets in Section 3.0, why not decide which route to take now?

As noted in Section 3.2.1, the removal volume difference is estimated at an additional 90 cubic yards under Option 2. This doesn't seem to be an excessive amount of material to manage to get you to unrestricted use of 1 mg/kg for PCB.

Response to EPA-4: The Navy does not intend on removing the optional excavation areas at this time. The activities discussed in the SWMU 13 IMWP were intended to be simply interim removal actions. The Navy's primary goal for the site (to remove PCB contaminated soils from the surface soils and from within the drainage channels) is to eliminate the potential of PCB-contaminated sediments from migrating to the facility and off-site waterways through the process of sedimentation and to achieve acceptable direct contact risk for facility workers and ecological receptors. The Navy's intent of excavating/removal of surface soil and sediment to obtain this goal needs to be accomplished utilizing the available funding and is occurring prior to establishing the corrective measure cleanup goals [i.e., prior to development of a Corrective Measures Proposal (CMP)]. Therefore, the EMAC contractor will be asked to provide additional costs for the optional excavations.

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As stated in the Section 3.2.8, the total volume of excavation is estimated to be 1,910 cubic yards (base case), 1,960 cubic yards (Option 1), and 2,320 cubic yards (Option 2). Therefore, the difference in excavation volumes between the Base Case and Option 1 is 50 cubic yards, and difference between the Base Case and Option 2 is 410 cubic yards (volume numbers include soils and sediment excavation volumes). However, because the presented volumes are based on locations of known contamination rather than on known clean locations, the estimated excavation volumes will likely increase. Likewise, based on existing analytical data, it is anticipated that the excavation volumes associates with Option 1 and Option 2 will also increase following the collection of verification samples.

Based on these uncertainties and the Navy funding constraints, the Navy has elected to have the EMAC contractors provide a base case proposal with incremental costs for the optional excavations. Optional excavations maybe remediated based upon Navy funding.

No change will be made to the document in response to this comment.

Comment EPA-5: Referring to the bullets starting on page 3-2, soils and sediments (including those removed from underground culverts and sumps) are to be characterized for disposal based on in-situ characterization concentrations/delineations (40 CFR 761.61). You may not excavate and then characterize for disposal. Greater than 50 mg/kg PCB soils must go to a TSCA approved or RCRA Subtitle C landfill. Less than 50 mg/kg soils may go to a solid waste landfill.

If bedrock is encountered and cleanup goals have not been achieved, the condition of the bedrock should dictate whether additional work is required to achieve the goal (i.e. intact vs. weathered).

Sediments should be excavated to 1 mg/kg for ecological risk purposes.

Water drained during dewatering activities can only be discharged to a surface water drainage channel if it is less than 0.5 ug/L PCB.

Response to EPA-5: The IMWP has been re-written to indicate that in-place concentrations will be used to define areas where PCB concentrations are greater than 50 mg/kg. These locations will be excavated and disposed off-site at a TSCA-approved or RCRA Subtitle C landfill. The text has also been revised to indicate that additional disposal characterization sampling will be performed based on the requirements of the selected disposal facility.

Additionally, the IMWP has been revised to indicate that excavation will stop at bedrock and verification samples will be collected. In the event that verification samples indicate that additional volume needs to be excavated, the condition of the bedrock will determine the extent of additional excavation (i.e., weathered bedrock will be excavated and intact bedrock will remain in place).

Next, the Navy agrees that surface soil and sediment containing PCB concentrations greater than 1 mg/kg require excavation for protection of ecological receptors. The excavation areas and volumes will be reviewed and revised as necessary to ensure that surface soils [0 to 2 feet below ground surface (bgs)] and sediment to all depths containing PCB concentrations greater than 1 mg/kg are removed. However, below a depth of 2 feet the soil becomes subsurface soil and the use of 25 mg/kg [Toxic Substance Control Act (TSCA) low occupancy standard] will be used as Option 1 for subsurface soil removal.

Finally, the text has been revised to indicate that dewatering pads will be constructed to contain any liquids that accumulate. Further, to avoid improper discharge or disposal of collected water,

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the text has been revised to require characterization of water prior to discharging or off-site disposal.

The IMWP has been updated to indicate that soils and sediments disposal is based upon in-situ characterization.

Comment EPA-6: Referring to the second to last paragraph of Section 3.2.1, sediments that accumulate in erosion and sediment control devices (e.g. In-stream sediment trap mentioned in the second bullet on page 4-2) should be sampled prior to off-site disposal to determine concentration and prior to placement as backfill material to ensure it is not contaminated above cleanup levels.

Response to EPA-6: The second to the last Paragraph in Section 3.2.1 has been revised as follows:

"Sediment that accumulates in the erosion and sediment control devices (see Section 4.0) prior to verification that all contaminated surface soils have been removed from the excavation areas will be stockpiled, dewatered (if necessary), and characterized for proper disposition (e.g., use as backfill, disposed as hazardous material, or disposed as non-hazardous material). Following verification of contaminant removal, sediment that accumulates in the erosion and sediment control devices will be stockpiled, dewatered (if necessary), and characterized for proper disposition."

Additionally, the second to the last paragraph in Section 3.2.2 has been revised with this same text and the remainder of the document has been revised as appropriate to incorporate this text.

Comment EPA-7: Referring to the first two sentences of Section 3.2.2, sediments removed from drainage channels may not be stockpiled or containerized together for disposal characterization. In-situ concentrations dictate disposal options. See Comment 5.

Response to EPA-7: Agreed. Refer to response to Comment EPA-5

Comment EPA-8: Referring to the second sentence on page 3-7, U.S. EPA recommends stockpiling excavated sediments on a dewatering pad and sampling collected water prior to discharge. See also Comment 5. This seems to be proposed in Section 3.2.14. We want to ensure it is done for all collected waters which have been in contact with contaminated soils/sediments.

Response to EPA-8: Agreed. Refer to response to Comment EPA-5.

Comment EPA-9a: Referring to the sump noted in the first paragraph of Section 3.2.3, is it known how the sump sediments may have become contaminated?

Response to EPA-9a: It is unknown how the sump sediments became contaminated. The Navy is currently deciding whether to investigate the origin of this contamination prior to or during the implementation of the SWMU 13 IMWP. If it is determined that an investigation will be performed prior to IMWP implementation, the sediment removal requirements within the IMWP will be revised as required. In the event that it is decided that the origin of the contamination will be determined during the implementation of the IMWP, the IMWP will be revised to include sampling protocols. For either sampling approach, the sumps will be cleaned and potential sources that could re-contaminate the sumps and associated plumbing will be remediated.

Comment EPA-9b: Could there be a continuing source of PCB contamination to the sump?

Response to EPA-9b: Refer to Response to Comment EPA-9a.

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Comment EPA-9c: Where does this sump discharge and should any continuing discharge be prevented?

Response to EPA-9c: Refer to Response to Comment EPA-9a

Comment EPA-9d: Water collected from sumps and culverts must be tested prior to discharge surface waters to ensure it is less than 0.5 ug/L PCB. See also Comment 5. Following the cleaning of the culverts and sump, they should be wipe sampled (<10 ug/100 sq. cm.)

Response to EPA-9d: It is agreed that the water used to clean the sump and culverts needs to be collected and characterized for proper disposition (e.g., discharged to drainage channels, storm drains, sanitary sewer system, or treated/disposed off-site). Waters that are discharged to surface waters must have PCB concentrations less than 0.5 µg/L. Waters that are disposed off-site must meet the criteria of the disposal facility. As noted in the comment, all waters used throughout the removal of SWMU 13 contaminated soils will be containerized and characterized for proper disposition. The text has been reviewed and changes have been made as appropriate to detail this requirement. (See the response to Comment EPA-5.)

The IMWP has been updated for the requirement that water collected from the sumps and culverts must be characterized prior to discharge and that wipe samples will be collected from the clean surfaces of the culverts and sump. The total PCB concentration of the characterized water action level is 0.5 µg/L. The various updated text includes following two provisions:

- Waters with the total PCB concentration less than 0.5 µg/L can be discharged to a local stabilized drainage channel or storm drain.
- Waters with the total PCB concentration greater than or equal to 0.5 µg/L must be transported off-site for disposal.

Additionally, the text has been modified for total PCB concentration media cleanup standard for the culverts and sump by wipe sample of 10 µg per 100 square centimeters."

Lastly, the use of wipe samples on the sump and within the culverts will be added to the verification sampling protocol. However, due to the length of culverts and their size, wipe samples are only able to be collected from the ends of the cleaned culverts."

Comment EPA-10: To what "drains" does Section 3.2.4 refer? All collected and potentially impacted water must be sampled prior to discharge. See also Comment 5.

Response to EPA-10: "Drains" refers to floor drains. For clarification, the fifth and sixth sentences in Section 3.2.4 have been revised as follows:

"Prior to pressure washing, all floor drains within the area to be cleaned will be plugged to prevent the migration of liquids and sediments from the removal area. Following the removal of sediments, the floor drains will be unplugged and the sediments will be dewatered (if necessary) and consolidated with the drainage channel sediments for characterization, and off-site disposal."

Additionally, for consistency with the response to Comment EPA-5, the next to the last sentence in Section 3.2.4 has been revised as follows:

"However, containerized liquids require characterization sampling prior for proper disposition."

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Comment EPA-11: Referring to Section 3.2.5, will these biodegradable temporary access trails be constructed in known clean areas? What is meant by "PC contamination"? What mechanisms will be in place to prevent contamination of access trails and haul roads at Crane (e.g., trucks hauling impacted material do not enter exclusion zone)?

Response to EPA-11: The biodegradable access roads presented in Section 3.2.5 are meant for use in wooded areas, upon review of the site, the use of biodegradable access trails will be replaced with standard gravel access roads. Therefore, Section 3.2.5 has been revised as follows:

"Because the contaminated soil and sediment are not located in areas that are readily accessible by the existing roadways, temporary access roads will be constructed to provide access to the individual excavation areas. The temporary road will be removed after completion of verification sampling and analysis activities and restoration of the excavation areas. Access roads will be constructed by placing geotextile on the existing ground surface and placing coarse aggregate on top of the geotextile (minimum 6-inch thickness). Upon removal of the access road, if coarse aggregate is verified clean (i.e., not contaminated from the process of hauling materials), the coarse aggregate will be salvaged for Navy use. The coarse aggregate will be transported to a location identified by the OICC. This location will be identified prior to the start of work. It is anticipated that this location will be within 1/2-mile of the excavation areas. The EMAC contractor will stockpile this material at the identified location.

"In addition, the EMAC contractor will be required to install the decontamination pads adjacent to each excavation areas. This will prevent the movement of excavation vehicles over clean haul roads and will keep haul vehicles outside of the exclusion zones."

Comment EPA-12: Referring to Section 3.2.6, the Navy should seek to avoid leaving excavated soils and sediments in dewatering pads for time periods that may trigger TSCA storage regulations. Perhaps text should be added to the end of the paragraph to explicitly state that this will be avoided. Regarding the second paragraph of this section, see Comment EPA-8.

Response to EPA-12: The following sentence has been added to the end of the first Paragraph in Section 3.2.6:

"The EMAC contractor must transport the material to the off-site disposal facility as soon as possible (within 90 days) to avoid exceeding any time restriction on contaminated material storage."

The second paragraph of Section 3.2.6 has been updated to require water characterization prior to discharge per response to Comment EPA-5.

Comment EPA-13: There is a typo in Section 3.2.7: "tails".

Response to EPA-13: "...temporary access tails" has been replaced with "temporary gravel access roads" in the second to last sentence of Section 3.2.7.

Comment EPA-14: Referring to Section 3.2.13, wash water should be sampled prior to discharge.

Response to EPA-14: Agreed. Refer to response to Comment EPA-5.

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Comment EPA-15: Section 3.2.14 states that an 8-mil thick polyethylene geomembrane will be overlaid with a gravel drainage layer. Is there any concern about piercing this liner with the gravel and/or soil/sediment/machinery loads?

Response to EPA-15: The purpose of the gravel layer is to allow the drained water to flow to a collection point and to act as an indication layer (i.e., a layer that separates the membrane from the soil/sediment that is being remediated) during the removal of contaminated soil or sediment. Typically, this layer is a minimum of 6 inches thick that will provide adequate protection of the liner system and will adequately distribute loads of construction machinery. The 6-inch thickness (minimum) requirement will be added for the gravel layer.

To address concerns regarding puncturing of the liner during the remediation process, verification samples will be collected from surface soils located beneath support facilities (decontamination pad, dewatering pad(s), and material storage area) as detailed in Section 5.

For clarification, the fourth sentence in Section 3.2.14 has been revised as follows:

"At a minimum, the dewatering pad(s) shall be constructed of an 8 millimeter (mil) thick polyethylene geomembrane overlain by a 6-inch thick gravel drainage layer. To ensure that the liner is not punctured during field operations verification samples will be collected from the foot print of the dewatering pad following the removal of the pad to verify the integrity of the liner."

Comment EPA-16: Referring to the first bullet on page 5-2, the first two sentences are confusing when it discusses excavation floor verification samples. The first sentence indicates floor samples will be taken while the second sentence indicates that is not the case. Which is it?

Response to EPA-16: Based on the shape of the existing drainage channels and proposed excavation, there will be no excavation floor samples. The first sentence of the second bullet of Section 5.2 has been deleted.

Comment EPA-17: Referring to the second full sentence on page 5-3, how many sample aliquots will make up one composite?

Response to EPA-17: All verification composite samples will be made up of six sample aliquots. The third bullet of Section 5.2 has been revised follows:

"...material storage area). In addition, verification samples will be collected from the temporary access roads. The verification samples will be collected at a rate of one composite sample (made up of soil collected at 6 grab locations) for every 1,000 square feet of temporary access road (i.e., if the access road is 10 feet wide composite verification samples will be collected at an approximate rate of one per 100 linear feet of temporary access road). A minimum of one verification sample will be collected from each length of temporary access road. Based on the proposed location of temporary access roads, eight verification samples will be collected from the temporary access roads and ..."

Comment EPA-18: The last bullet on page 5-3 states that if the field test kits are "non-detection", the sample will be confirmed at a fixed-based lab. Might this also be the case if the field test kit result is below 1 mg/kg or 25 mg/kg? The text also states that if the field test kit result is positive, the Navy "may or may not direct" the contractor to perform additional excavation. What is the decision criteria here? If greater than 1 mg/kg? 25 mg/kg? This seems to be implied in the last bullet on page 5-4.

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Response to EPA-18: Based on the historic correlation between test kit results and fixed base laboratory sample results, and the downtime associated with sending samples to a fixed base laboratory, non-detections on test kits will be the trigger to send samples to a fixed-base laboratory. During the verification sampling process, should the correlation between the test kit results and the fixed-base laboratory results improve, this approach might be utilized. However, the decision not to excavate additional soils will always be based upon fixed-base laboratory results.

As for the decision to excavate additional soil based on the results of the verification samples, the intent of the document is to, at a minimum, remove surface soils [0 to 2 feet below ground surface (bgs)] with unacceptable contaminant concentrations. Additional excavation at depth greater than 2 feet bgs will be determined by the Navy through election to implement Option 1 or Option 2 as discussed in response to Comment EPA-4. However, the text has been revised to indicate that sidewall verification results greater than 1 mg/kg will result in additional lateral excavation. Additionally, the text has been revised to indicate that support facility verification sample results greater than 1 mg/kg will result in the removal of an additional 6 inches of soil from below these support facilities and collection of additional verification samples.

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**RESPONSE TO COMMENTS (RTCs) DATED JUNE 12, 2008
FROM UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
(E-MAIL FROM PETER RAMANAUSKAS)
ON THE INTERIM MEASURES WORK PLAN (IMWP) EPA RTCs DATED JUNE 9, 2008
FOR SWMU 13 – MINE FILL B
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA**

Comments provided by the EPA are shown in bold font. Responses following each EPA comment are shown in regular font. Changes to the IMWP are italicized and enclosed in quotation marks.

EPA-1(6-12-08)

Regarding EPA-5c: At this time, under the risk-based approvals process, the TSCA program requires that > 50 ppm soils must be disposed of in a TSCA-approved landfill (not at a RCRA landfill).

Response to EPA-1(6-12-08): Agreed. The typographical error has been corrected. The response to EPA-5c (4-10-08) has been revised as follows:

“Response to EPA-5c (4-10-08): All initial characterization of soil and sediments is based on the in situ characterization. The segregation and off-site disposal of excavated material will be based on in-place soil and sediment concentrations. Soil and sediments containing total-PCB concentrations greater than 50 mg/kg will be stockpiled separately and transported and disposed at a TSCA regulated landfill. No in-place sediments have been identified at concentrations greater than 50 mg/kg.

“Based on the available analytical data, six sample locations contain total-PCBs at concentrations that exceed 50 mg/kg. Figures 3-1, 3-2, and 3-3 have been revised to indicate the locations of the soils that must be stockpiled separately for disposal at a TSCA regulated landfill. Additionally, the text and volume tables have been updated to indicate the inclusion of material to be disposed at a TSCA regulated landfill. Additional sampling for disposal will be performed based upon requirements of the selected landfill.

“Numerous revisions to the IMWP text have been made in response to this comment for the primary work and Options 1 and 2. Language revisions will be similar to the following:

- Off-Site Disposal of Soils – Excavated soil containing PCBs will be disposed at an appropriate off-site facility based on the in-place (in-situ) concentration of PCBs. Soils with in-situ PCB concentrations greater than or equal to 50 ppm (50 milligrams per kilogram (mg/kg)) will be surgically removed and segregated from soils with in-situ PCB concentrations less than 50 ppm. Soils with PCB concentrations greater than or equal to 50 ppm will be disposed in a TSCA-approved or TSCA landfill. Soils with PCB concentrations less than 50 ppm will be disposed at an NSWC Crane-approved solid waste landfill.”

EPA-2(6-12-08)

Regarding EPA-6: For the channel excavation areas, we propose you also take a composite sample every 100 ft along the low-point of the trench (i.e. along the bottom of the V/U). Since the language associated with the sampling will be incorporated in this IMWP and the approved QAPP for the project containing different sampling language will not be modified, describe how will you ensure that the contractor will be following the correct sampling scheme. Please reiterate in the IMWP how many aliquots will make up a composite sample.

Response to EPA-2(6-12-08): To accommodate the collection of an additional composite sample along the centerline of the drainage channel following excavation, the text has been revised to

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include the collection of five composite samples for every 100 linear feet of drainage channel excavated. Due to the irregular shape of the excavation, the fifth composite sample will be collected from an area designated as the base of the excavation along the centerline of the channel. This area will measure approximately 4 feet wide centered on the center of the drainage channel. In addition the text has been revised to identify that 4 aliquots make up one composite sample. The text in Section 5.2, Subsection, "Drainage Channel Excavation Areas" has been revised as follows:

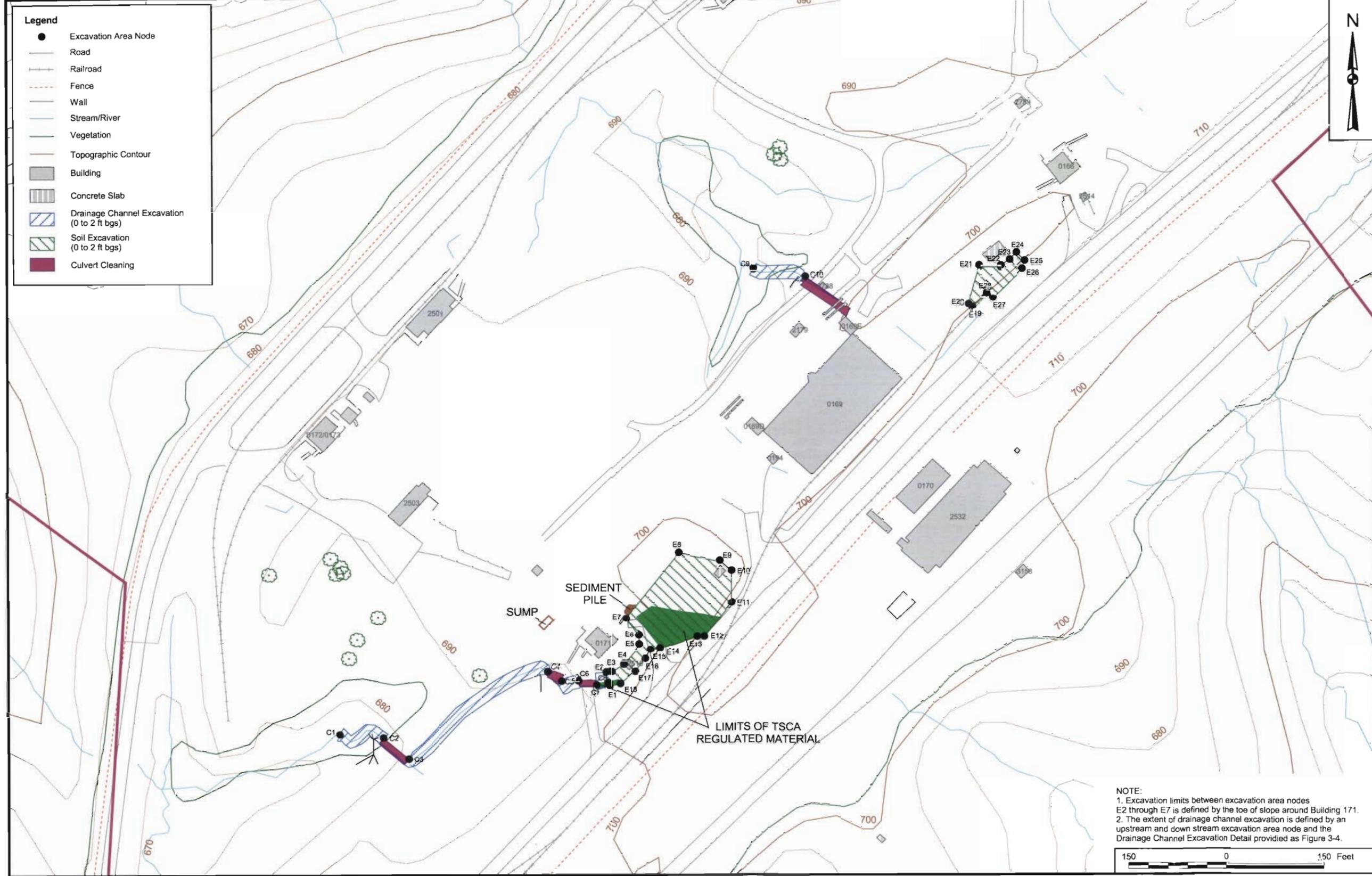
- *"Drainage Channel Excavation Areas - Verification samples will be collected from the exposed drainage channel base and sidewalls and the exposed overflow area floors. As shown on Figure 5-1, due to the irregular shape of the drainage channel excavation, two verification samples will be collected from the exposed overflow floor areas (Areas 1 and 5) located on each side of the channel (i.e., from the channel overflow areas), two verification samples will be collected from the two exposed drainage channel sidewall surfaces (Areas 2 and 4), and one verification sample will be collected along the exposed drainage channel base where the exposed base is not bedrock (Area 3). Verification samples will be composite samples as described in the QAPP (TINUS, 2006). Each composite sample will be made up of soil collected from four aliquots. These five verification samples make up one set of verification samples. At a minimum, one set of verification samples will be collected from each drainage channel at a rate of 1 set of verification samples for every 100 linear feet of drainage channel excavation, with a minimum of one set of verification samples for each drainage channel excavation. Therefore, based on the proposed length of drainage channel excavation (470 feet split across four channel segments), seven sets of samples, consisting of five verification samples per set, will be collected from the proposed SWMU 13 drainage channel excavation areas. In the event that a drainage pipe is encountered during the drainage channel excavation process, the frequency of verification sample collection will be increased to one set of verification samples for every 25 linear feet of drainage channel excavation for a distance of 100 feet downstream of the exposed drainage pipe. The verification samples will be analyzed for PCBs. The results of these verification samples will be evaluated to determine whether PCB contamination remains in the exposed surface soil at concentrations greater than 1 mg/kg. In the event that a verification sample result exceeds 1 mg/kg (from floor samples or sidewall samples), the Navy may direct that the excavation be extended in the appropriate direction(s) to remove this soil. The extent of additional excavation will depend on the location and concentration of the exceedances. Additional verification samples will be collected following any additional excavation. Excavation expansion may continue until verification samples indicate that PCB concentrations are less than 1 mg/kg. The length of drainage channel excavation is based on the results of the RFI and 2006 sediment-sampling events. The results of the verification sample will not increase the length of drainage channel excavation areas."*

The revised Figure 5-1 is presented in Attachment 1.

EPA-3(6-12-08)

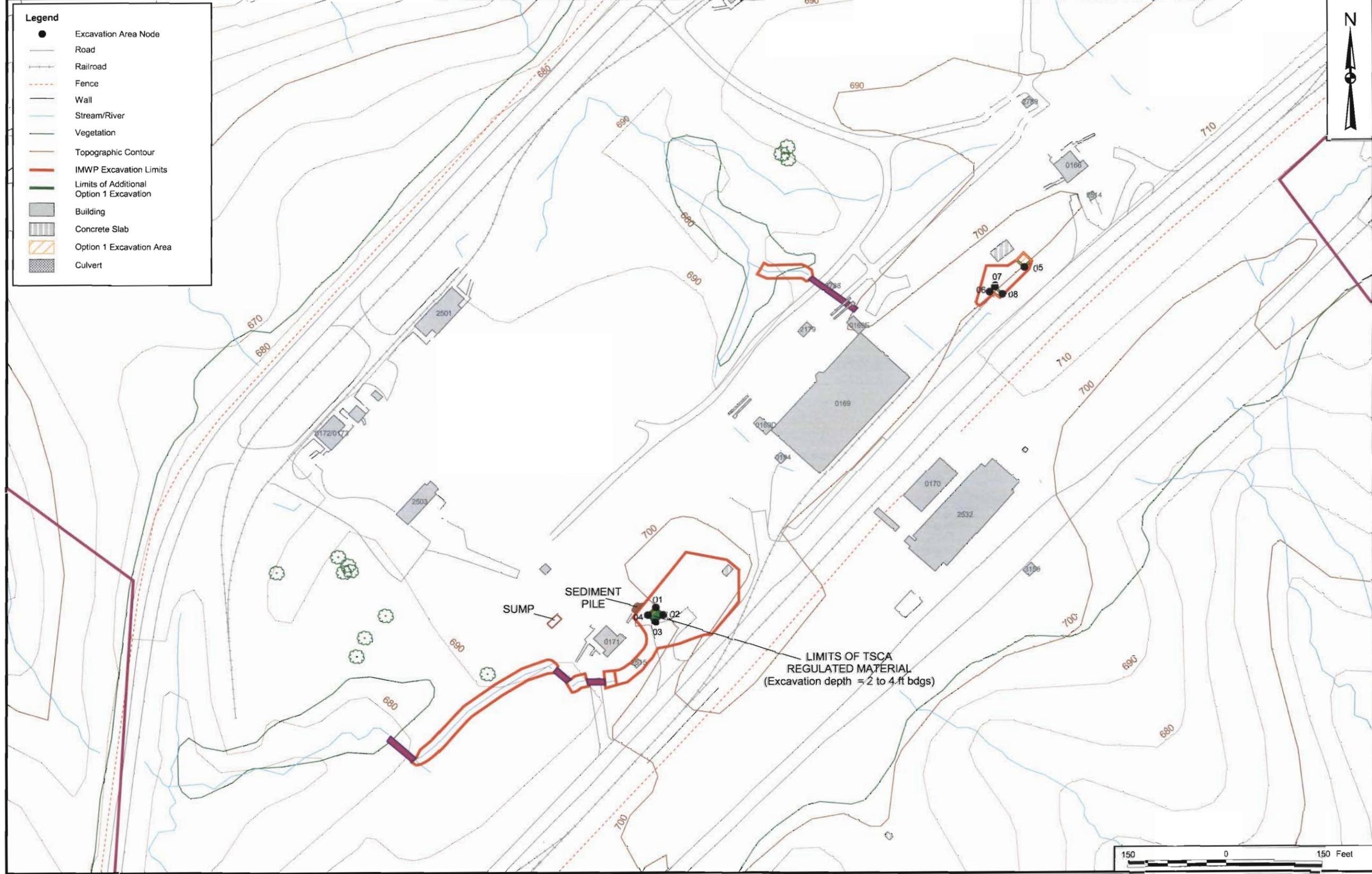
Regarding Finally, and I apologize if we didn't mention it before, but George Ritchotte at IDEM should have a copy of the final workplan and the responses to comments as IDEM will have to write an approval letter as well. These are typically coordinated approvals with EPA. When you send the package, you can let George know that we are OK with it.

Response to EPA-3(6-12-08): This comment is noted.



NOTE:
 1. Excavation limits between excavation area nodes E2 through E7 is defined by the toe of slope around Building 171.
 2. The extent of drainage channel excavation is defined by an upstream and down stream excavation area node and the Drainage Channel Excavation Detail provided as Figure 3-4.

CONTRACT NO. 112G00352		REV 0
APPROVED BY	DATE	
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DRAWING NO. FIGURE 3 - 1		
IMWP EXCAVATION AREAS SWMU 13 - MINE FILL B INTERIM MEASURES WORK PLAN NSWC CRANE CRANE, INDIANA		
		
DRAWN BY S. PAXTON	DATE 2/16/07	
CHECKED BY T. SMITH	DATE 5/05/08	
COST/SCHED-AREA	SCALE	AS NOTED



Legend

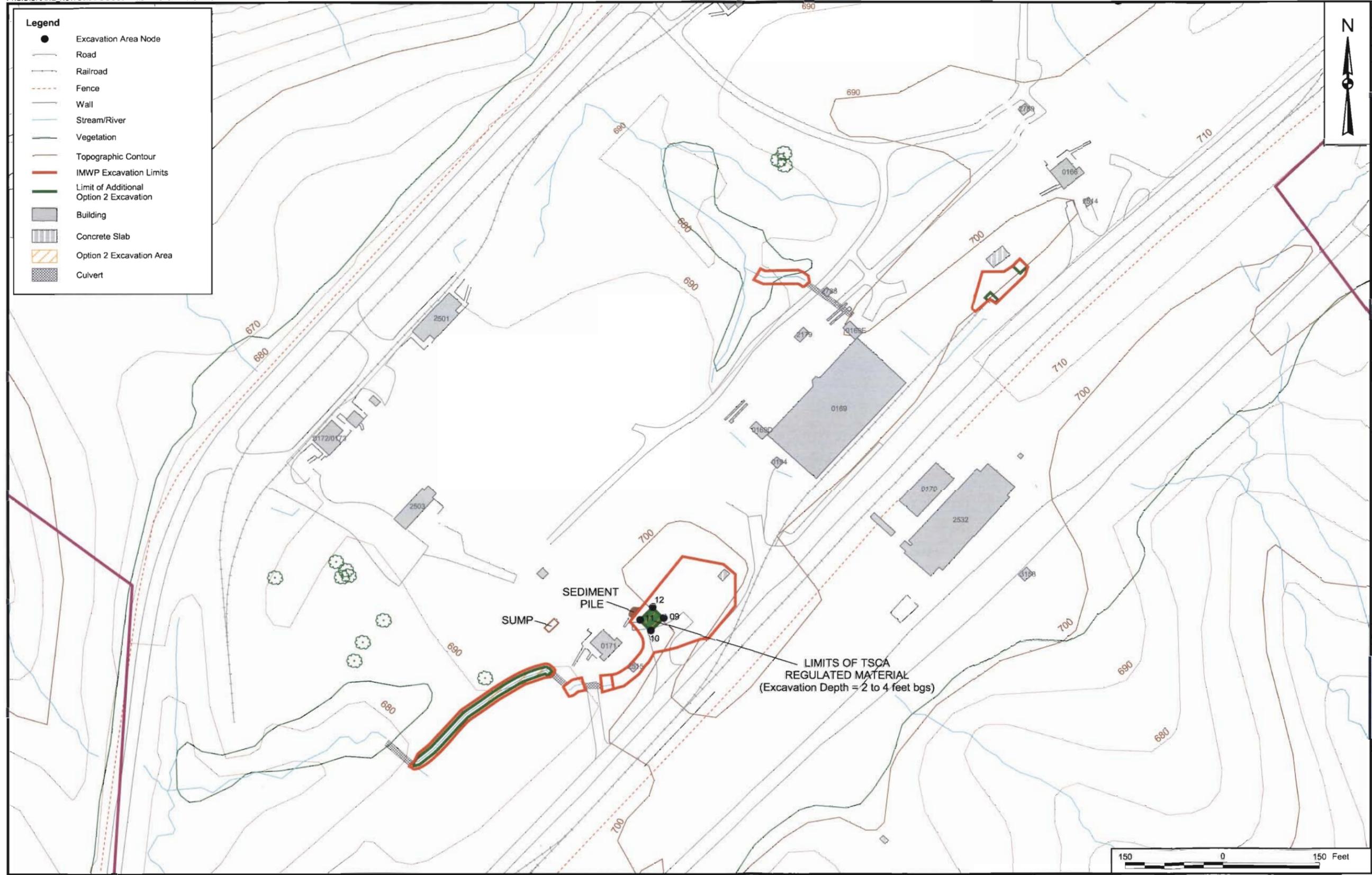
- Excavation Area Node
- Road
- - - Railroad
- ⋯ Fence
- Wall
- Stream/River
- Vegetation
- Topographic Contour
- IMWP Excavation Limits
- Limits of Additional Option 1 Excavation
- Building
- ▨ Concrete Slab
- ▨ Option 1 Excavation Area
- ▨ Culvert

CONTRACT NO. 112G00352	DATE	REV 0
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DRAWING NO. FIGURE 3 - 2		

OPTION 1 - EXCAVATION AREA
 SWMU 13 - MINE FILL B
 INTERIM MEASURES WORK PLAN
 NSWC CRANE
 CRANE, INDIANA



DRAWN BY S. PAXTON	DATE 2/16/07	COST/SCHED-AREA	SCALE AS NOTED
CHECKED BY T. SMITH	DATE 5/05/08		



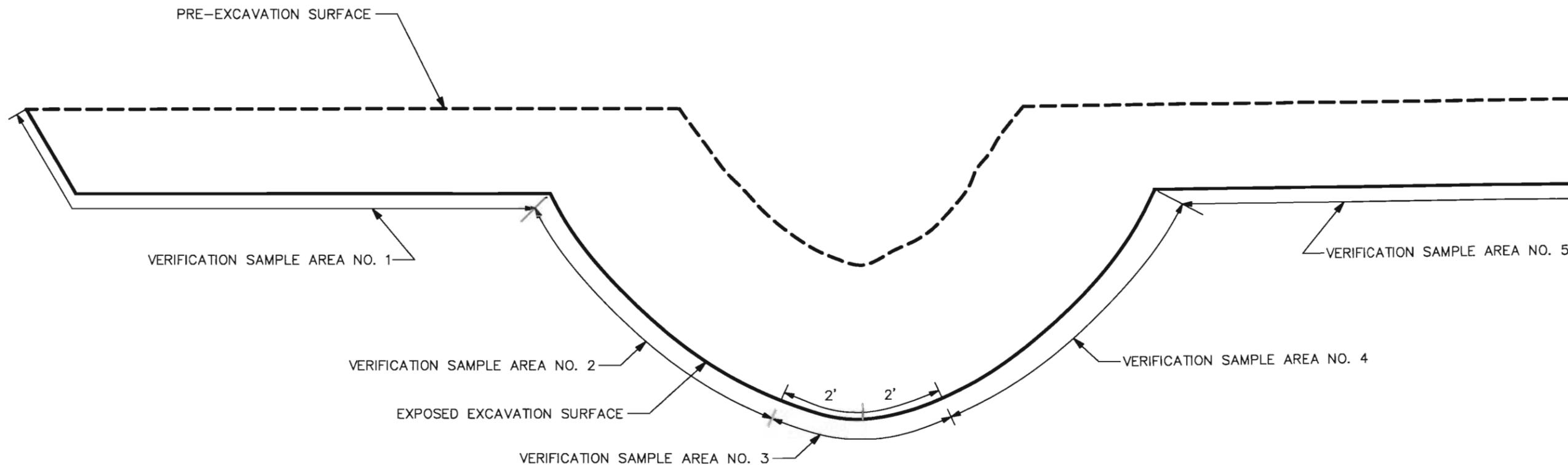
CONTRACT NO. 112G00352	DATE	REV 0
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APPROVED BY	DATE	

OPTION 2 - EXCAVATION AREA
SWMU 13 - MINE FILL B
INTERIM MEASURES WORK PLAN
NSWC CRANE
CRANE, INDIANA



DRAWN BY S. PAXTON	DATE 2/16/07	SCALE AS NOTED
CHECKED BY T. SMITH	DATE 5/05/08	
COST/SCHED-AREA		

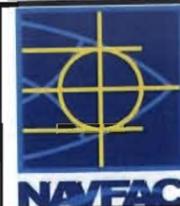
DRAINAGE CHANNEL VERIFICATION SAMPLING



NOTE:

FOR EVERY 100 FEET OF DRAINAGE CHANNEL EXCAVATION, ONE SET OF FIVE VERIFICATION SAMPLES WILL BE COLLECTED. A MINIMUM OF ONE SET OF FIVE VERIFICATION SAMPLES WILL BE COLLECTED FROM EACH DRAINAGE CHANNEL SEGMENT. AS AN EXCEPTION, IF DRAINAGE PIPES ARE ENCOUNTERED (EXPOSED) DURING EXCAVATION WITHIN THE DRAINAGE CHANNELS THE SAMPLING FREQUENCY WILL BE INCREASED TO ONE SET OF FIVE FOR EVERY 25 FEET OF DRAINAGE CHANNEL FROM THE DRAINAGE PIPE DISCHARGE LOCATION TO A DISTANCE OF 100 FEET DOWN STREAM OF THE DISCHARGE LOCATION.

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DRAINAGE CHANNEL
VERIFICATION SAMPLING
SWMU 13 - MINE FILL B
INTERIM MEASURES WORK PLAN
NSWC CRANE
CRANE, INDIANA

CONTRACT NO. 0352	
OWNER NO. 0020	
APPROVED BY	DATE
DRAWING NO. FIGURE 5-1	REV. 0

**RESPONSE TO COMMENTS (RTCs) DATED APRIL 10, 2008
FROM UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
(E-MAIL FROM PETER RAMANAUSKAS)
ON THE INTERIM MEASURES WORK PLAN (IMWP) RTCs DATED DECEMBER 20, 2007
FOR SWMU 13 – MINE FILL B
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA**

Comments provided by the United State Environmental Protection Agency (USEPA) are shown in bold font. Responses following each EPA comment are shown in regular font. Changes to the IMWP are italicized and enclosed in quotation marks.

EPA-1 (4-10-08) regarding Response to EPA-1b & 1c:

Response 1c does not address the comment. Overall, the text remains confusing with respect to which buildings were known to have PCB use and which buildings are having PCB contaminated soil removed. For example, Section 3 describes work around B-169 and B-171 but does not talk about B-166 while Figure 3-1 shows work proposed around B-166. Some places in the text discuss B-166/171 and others B-169/171. Please describe work taking place at all three buildings and what the sources of PCB were at each building. If a building did not have a source of PCB, describe how PCB came to be located near the building.

Response to EPA-1 (4-10-08): Figures 3-1, 3-2, and 3-3 indicate a fenced area northeast of Building 169 with "0166." This area is a fenced in area where the former Building 166 Therminol Boilers were located. The Therminol Boilers for Building 166 and Building 171 are believed to be the sources of polychlorinated biphenyl (PCB) contamination at SWMU 13 (Mind Fill B). PCB activities did not occur at Building 169. The purpose of referencing Building 169 is as a landmark for the remediation Environmental Multi Award Contractor (EMAC). The Navy believes that it is appropriate to use Building 169 as a landmark because of its location relative to the proposed remediation areas.

For clarification, Figures 3-1, 3-2, and 3-3 (See Attachment 1) have been modified to include a legend for the former foundation pad of the Therminol Boilers rather than fenced areas. Additionally, these figures have been modified to show Building 166.

For further clarification, Section 1.3.2 has been modified to provide additional information on the types of activities that occurred at MFB including activities in Building 169 as follows:

"SWMU 13 is located in the central portion of NSWC Crane as shown on Figure 1-1. Figure 1-2 is an aerial photograph of SWMU 13 and Figure 1-3 is a map showing the facility locations at MFB. MFB has been in use since 1941 when NSWC Crane was commissioned, and explosive ordnance was produced at MFB from 1941 until 1973. Since 1973, the facilities at MFB have been used to renovate ordnance and equipment. This IMWP focuses on the PCB-contaminated soils and sediments in the area of Buildings 166, 169, and 171. The therminol boilers located near Buildings 166 and 171 were used to heat oil-containing PCBs. The heated oil was then transported to Buildings 166 and 171 (i.e., the melt buildings), where the oil was used as a heat-transfer medium in the melting of explosive mixtures (Halliburton NUS, 1992).

"Building 169 housed inert operations (Halliburton NUS, 1992). The therminol boilers operations were not associated with activities in Building 169 (i.e., no PCB containing materials were associated with activities conducted at Building 169).

"The major source of PCB contamination at MFB resulted from the therminol boilers activities associated with Buildings 166 and 171 where oils containing PCBs leaked. The

therminol boilers, associated equipment, and piping were removed in the mid- to late-1980s and disposed off-site in accordance with TSCA regulations."

EPA-2 (4-10-08): The response does not address the comment. Why was this text removed if it is a valid part of the previous investigations at this SWMU? Please present the requested 1990 TCLP action levels and sampling results of 1985.

Response to EPA-2 (4-10-08): This text was part of the draft Resource Conservation and Recovery Act (RCRA) Facilities Investigation (RFI) Report for MFB. Information regarding the 1990 TCLP action levels could not be located during a review of the historical documentation associated with the 1985 single sample activity (i.e., review of the Initial Assessment Survey). The scope of this interim measure is PCB contamination. Because PCBs are not a RCRA hazardous waste, TCLP for PCBs would not have been run; thus, the 1990 TCLP action levels are not relevant to this interim measure. Therefore, to eliminate confusion, the second paragraph of Section 2.2, Subsection, Initial Assessment Survey, has been deleted from the IMWP.

Additionally, the 1985 data cannot be located. However, review of historical documents indicates that sampling during this time period would have been for explosives and metals, which are not addressed in this interim measure. For these reasons, the 1985 data cannot be provided.

No additional changes have been made to the IMWP in response to this comment.

**EPA-3 (4-10-08) regarding Response to EPA-9a/b/c:
Any further updates on your plans here? What is the status of the building demolitions?**

Response to EPA-3 (4-10-08): Building demolition is not within the scope of this interim measure. However, the planning documents for the demolition of the Mine Fill buildings have been approved. The next step will be to remove and dispose of the asbestos containing materials (e.g., transite panels) and to request an air variance from IDEM for the thermal treatment of the explosives contaminated building materials.

Additionally, the Navy is in the process of procuring the required investigation activities to determine the source of PCBs into the Building 171 sump / catch basin. This activity is anticipated to occur in May 2008 prior to EMAC procurement.

No change has been made to the IMWP in response to this comment.

**EPA-4 (4-10-08) regarding Response to EPA-9d:
The second bullet in the response discusses off-site disposal of waters containing PCB > 0.5 ug/L. To which off-site facility would this water be sent?**

Response to EPA-4 (4-10-08): The off-site disposal facility(ies) are not identified in the IMWP but are provided by the EMAC upon contract award. After contract award, the EMAC will provide information for the disposal facility(ies), which will be incorporated into the Quality Assurance Project Plan.

**EPA-5 (4-10-08) regarding Response to EPA-10:
EPA-5a (4-10-08): Referring to the floor drains mentioned in the response, these are floor drains within the tunnel containing the sediment pile? If so, they should be checked to see whether they contain PCB impacted sediments. Are these drains connected to the impacted sump discussed in comment 9?**

Response to EPA-5a (4-10-08): Yes, there are "floor drains" within the tunnel that contains the PCB-contaminated sediment pile. As part of the planned investigation discussed in the Response to EPA-3 (4-10-08), the potential connection (physical and environmental) of the Building 171 floor drains to the Building 171 sump / catch basin will be investigated.

EPA-5b (4-10-08): All contact water contained during the sediment removal must be checked for PCB concentration prior to disposal or release regardless of it being filtered.

Response to EPA-5b (4-10-08): As discussed in the Response to EPA-9d of May 16, 2007; it is agreed that the water used to clean the sump and culverts needs to be collected and characterized for proper disposition. Waters that are discharged to surface waters must have PCB concentrations less than 0.5 µg/L. Waters that are disposed off-site must meet the criteria of the disposal facility. As noted in the Comment EPA-9d, all waters used throughout the removal of SWMU 13 contaminated soils will be containerized and characterized for proper disposition. The text has been reviewed and changes have been made as appropriate to detail this requirement.

The IMWP has been updated for the requirement that water collected from the sumps and culverts must be characterized prior to discharge. The total PCB concentration of the characterized water action level is 0.5 micrograms per liter (µg/L). The updated text includes the following two provisions:

- Waters with the total PCB concentration less than 0.5 µg/L can be discharged to a local stabilized drainage channel or storm drain.
- Waters with the total PCB concentration greater than or equal to 0.5 µg/L must be transported off-site for disposal.

EPA-5c (4-10-08): Sediments must be tested for PCB concentration for disposal characterization prior to any consolidation. > 50 ppm and < 50 ppm materials should be kept segregated.

Response to EPA-5b (4-10-08): All initial characterization of soil and sediments is based on the in situ characterization. The segregation and off-site disposal of excavated material will be based on in-place soil and sediment concentrations. Soil and sediments containing total-PCB concentrations greater than 50 mg/kg will be stockpiled separately and transported and disposed at a TSCA regulated landfill. No in-place sediments have been identified at concentrations greater than 50 mg/kg.

Based on the available analytical data, 6 sample locations contain total-PCBs at concentrations that exceed 50 mg/kg. Figures 3-1, 3-2, and 3-3 have been revised to indicate the locations of the soils that must be stockpiled separately for disposal at a TSCA regulated landfill. Additionally, the text and volume tables have been updated to indicate the inclusion of material to be disposed at a TSCA regulated landfill. Additional sampling for disposal will be performed based upon requirements of the selected landfill.

Numerous revisions to the IMWP text have been made in response to this comment for the primary work and Options 1 and 2. Language revisions will be similar to the following:

- Off-Site Disposal of Soils – Excavated soil containing PCBs will be disposed at an appropriate off-site facility based on the in-place (in-situ) concentration of PCBs. Soils with in-situ PCB concentrations greater than or equal to 50 ppm (50 milligrams per kilogram (mg/kg)) will be surgically removed and segregated from soils with in-situ PCB concentrations less than 50 ppm. Soils with PCB concentrations greater than or equal to 50 ppm will be disposed in a TSCA-approved or RCRA landfill. Soils with PCB concentrations less than 50 ppm will be disposed at an NSWC Crane-approved solid waste landfill.

EPA-6 (4-10-08) regarding Response to EPA-16:

The Navy must take confirmation floor samples. The configuration of the drainage channel or excavation does not eliminate the requirement for confirmation sampling. Please propose a confirmation floor sampling plan.

Response to EPA-6(4-10-08): The excavation shape related to the drainage channel excavation is an irregular shape (see Figure 3-4 in Attachment 2). As a result of the irregular shape, verification samples will be collected from the exposed exaction floor of the channel overflow areas located on each side of the "V / U" shaped channel. Within the "V / U" shaped channel one verification sample will be collected from each of the exposed surface defining the sides of this "V / U" shaped excavation. To illustrate the locations of verification sample collection, a new figure (Figure 5-1 see Attachment 3) has been added to the text and is provide as part of this response to comment document.

As stated in Section 3.5.5 of the QAPP, "The goal of confirmation sampling is to obtain samples that are representative of residual soils at the boundaries of the excavation." The QAPP sampling frequency is 1 composite sample for every 30 foot by 30 foot (or 1 composite sample for every 900 square feet).

Due to contamination concerns, the Navy is proposing for the SWMU 13 IMWP the following sampling frequency for collection of composite confirmation samples:

- For the soil excavation areas, every 25 foot by 25 foot (e.g., 1 composite sample for every 625 square feet).
- For the channel excavation area of the drainage trenches, every 100 foot of excavation length. These excavations are approximately 6 foot by 100 foot (see Figure 3-4) (e.g., 1 composite sampler per 600 square foot).
- For the channel-overflow excavation area of the drainage trenches, every 100 foot of excavation length. These excavations are approximately 5 foot by 100 foot (see Figure 3-4) (e.g., 1 composite sampler per 500 square foot).

The Navy believes that these sampling frequencies are appropriate to this remedial activity. However, this sampling frequency is based on the specifics of this remediation event and may not be appropriate for future remediation activities at SWMU 13. Therefore, the language associated with these increased sampling frequencies has been incorporated into the IMWP and the QAPP has not been modified.

In addition, the 2nd bullet, subtitled "Drainage Channel Excavation Areas," has been added to Section 5.2 as follows.

- *"Drainage Channel Excavation Areas - Verification samples will be collected from the excavation sidewalls and floors. Due to the irregular shape of the drainage channel excavation (see Figure 3-4), two verification samples will be collected from the exposed overflow floor areas located on each side of the channel (i.e., from the channel overflow areas) and two verification samples will be collected from the exposed surfaces of the drainage channel (Figure 5-1). Verification samples will be composite samples as described in the QAPP (TiNUS, 2006). These four composite samples make up one set of verification samples. At a minimum, one set of verification samples will be collected from each drainage channel segment and for every 100 linear feet of drainage channel excavation. In the event that a drainage pipe is encountered during the drainage channel excavation process, the frequency of verification sample collection will be increased to one set of verification samples for every 25 linear feet of drainage channel excavation. Therefore, based on the proposed length of drainage channel excavation within 100 feet downstream of the piping outlet areas, if drainage pipes are not encountered, seven sets*

of samples, consisting of four verification samples per set, will be collected from the proposed SWMU 13 drainage channel excavation areas. The verification samples will be analyzed for PCBs. The results of these verification samples will be evaluated to determine whether PCB contamination remains in the exposed surface soil at concentrations greater than 1 mg/kg. In the event that a verification sample result exceeds 1 mg/kg (from floor samples or sidewall samples), the Navy may direct that the excavation be extended in the appropriate direction(s) to remove this soil. The extent of additional excavation will depend on the location and concentration of the exceedances. Additional verification samples will be collected following any additional excavation. Excavation expansion may continue until verification samples indicate that PCB concentrations are less than 1 mg/kg. The length of drainage channel excavation is based on the results of the RFI and 2006 sediment-sampling events. The results of the verification sample will not increase the length of drainage channel excavation areas."

This revised text indicates a change in the sampling frequency that was presented in the March 2007 version of the Interim Measures Work Plan. The text in the March 2007 version indicated the collection of 1 set of verification samples for every 25 feet of drainage channel excavation. Because the PCB contamination within the drainage channel excavation areas is well defined, the Navy is proposing revising the sampling intervals for the drainage channel excavation to every 100 feet of drainage channel excavation, with the exceptions identified in the proposed replacement text.

Additionally, the following reference has been added to the IMWP:

"TINUS, 2006. Quality Assurance Project Plan for SWMUs 8, 15, 18, 19, 20 and The Old Gun Tub Storage Lot for Interim Measures at SWMU 7 (Old Rifle Range), SWMU 8 (Building 106 Pond), SWMU 13 (Mine Fill B) and SWMU 17 (PCB Burial/Pole Yard) Addendum No. 1, Naval Surface Warfare Center Crane Division, Crane, Indiana. November."

EPA-7 (4-10-08) New Comment:

Section 5.3 mentions a QAPP Addendum which will support this work. Has that been submitted to us?

Response to EPA-7 (4-10-08): Yes, the QAPP associated with this project is Addendum No. 1 to the QAPP for SWMUs 8, 15, 18, 19, 20 and The Old Gun Tub Storage Lot for Interim Measures at SWMU 7 (Old Rifle Range), SWMU 8 (Building 106 Pond), SWMU 13 (Mine Fill B) and SWMU 17 (PCB Burial/Pole Yard) dated November 2006. This QAPP addendum was approved by EPA on November 17, 2006.

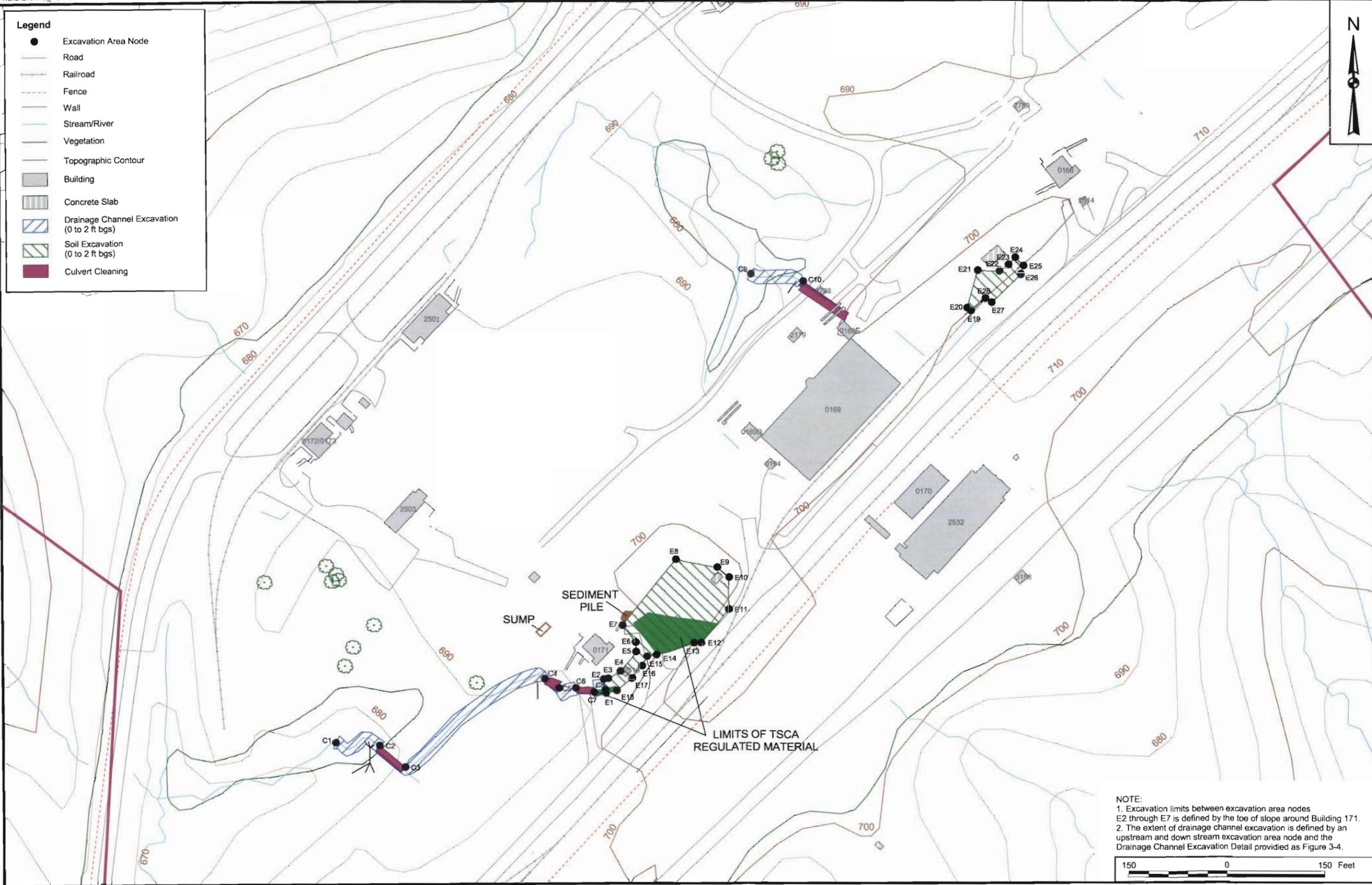
EPA-8 (4-10-08) New Comment:

Finally, don't worry about the need to submit as self-implementing under TSCA. That wouldn't apply in this case anyway as you are doing sediment removal. I'll continue to coordinate this with TSCA on my end.

Response to EPA-3 (4-10-08): EPA comment is noted.

Legend

- Excavation Area Node
- Road
- Railroad
- - - Fence
- Wall
- Stream/River
- Vegetation
- Topographic Contour
- Building
- Concrete Slab
- ▨ Drainage Channel Excavation (0 to 2 ft bgs)
- ▩ Soil Excavation (0 to 2 ft bgs)
- Culvert Cleaning



CONTRACT NO. 112G00352
APPROVED BY _____ DATE _____
APPROVED BY _____ DATE _____
DRAWING NO. FIGURE 3 - 1
REV 0

IMWP EXCAVATION AREAS
SWMU 13 - MINE FILL B
INTERIM MEASURES WORK PLAN
NSWC CRANE
CRANE, INDIANA



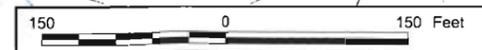
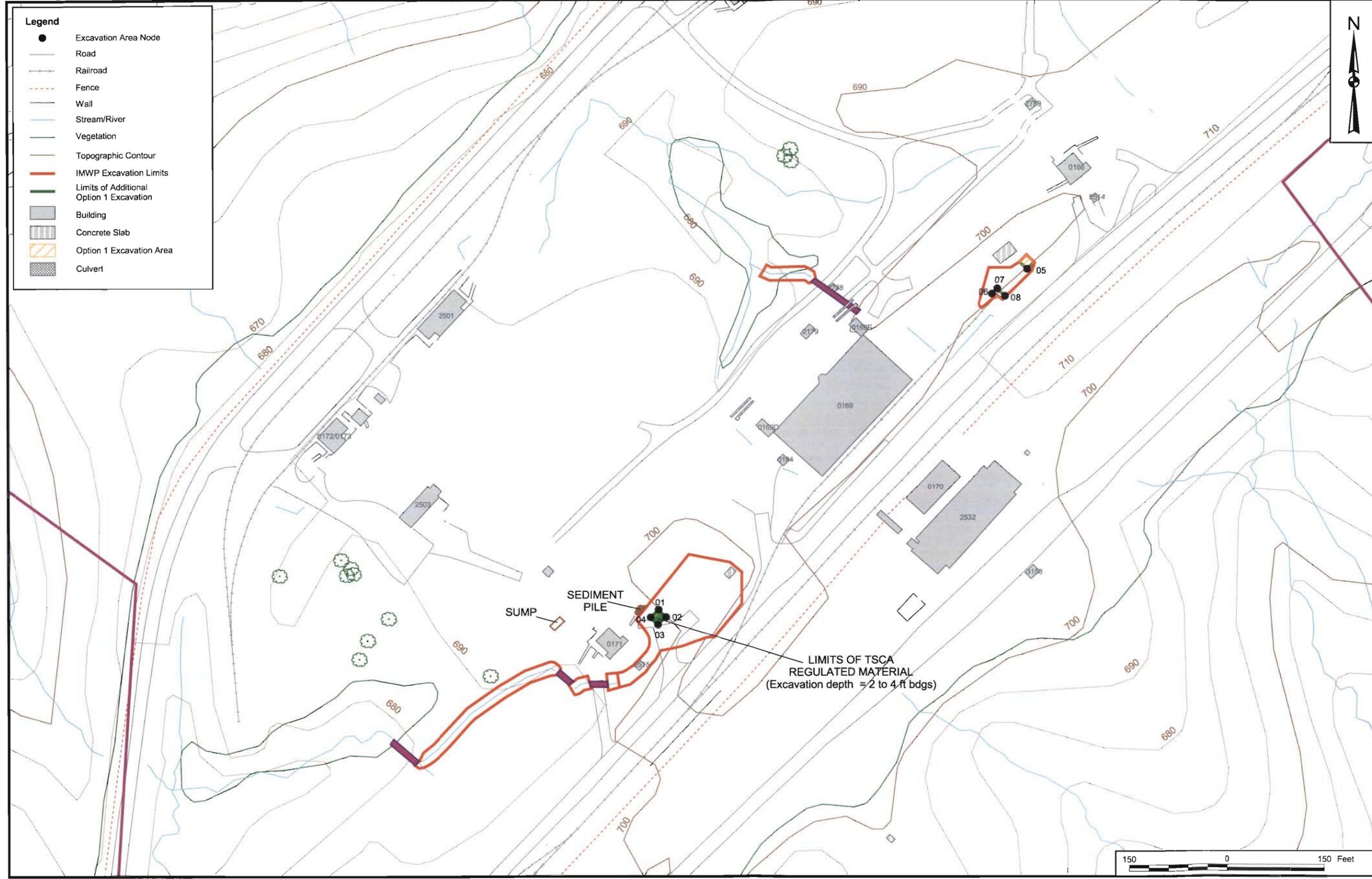
DRAWN BY S. PAXTON	DATE 2/16/07
CHECKED BY T. SMITH	DATE 5/05/08
COST/SCHEMED-AREA	SCALE AS NOTED

NOTE:
 1. Excavation limits between excavation area nodes E2 through E7 is defined by the toe of slope around Building 171.
 2. The extent of drainage channel excavation is defined by an upstream and down stream excavation area node and the Drainage Channel Excavation Detail provided as Figure 3-4.

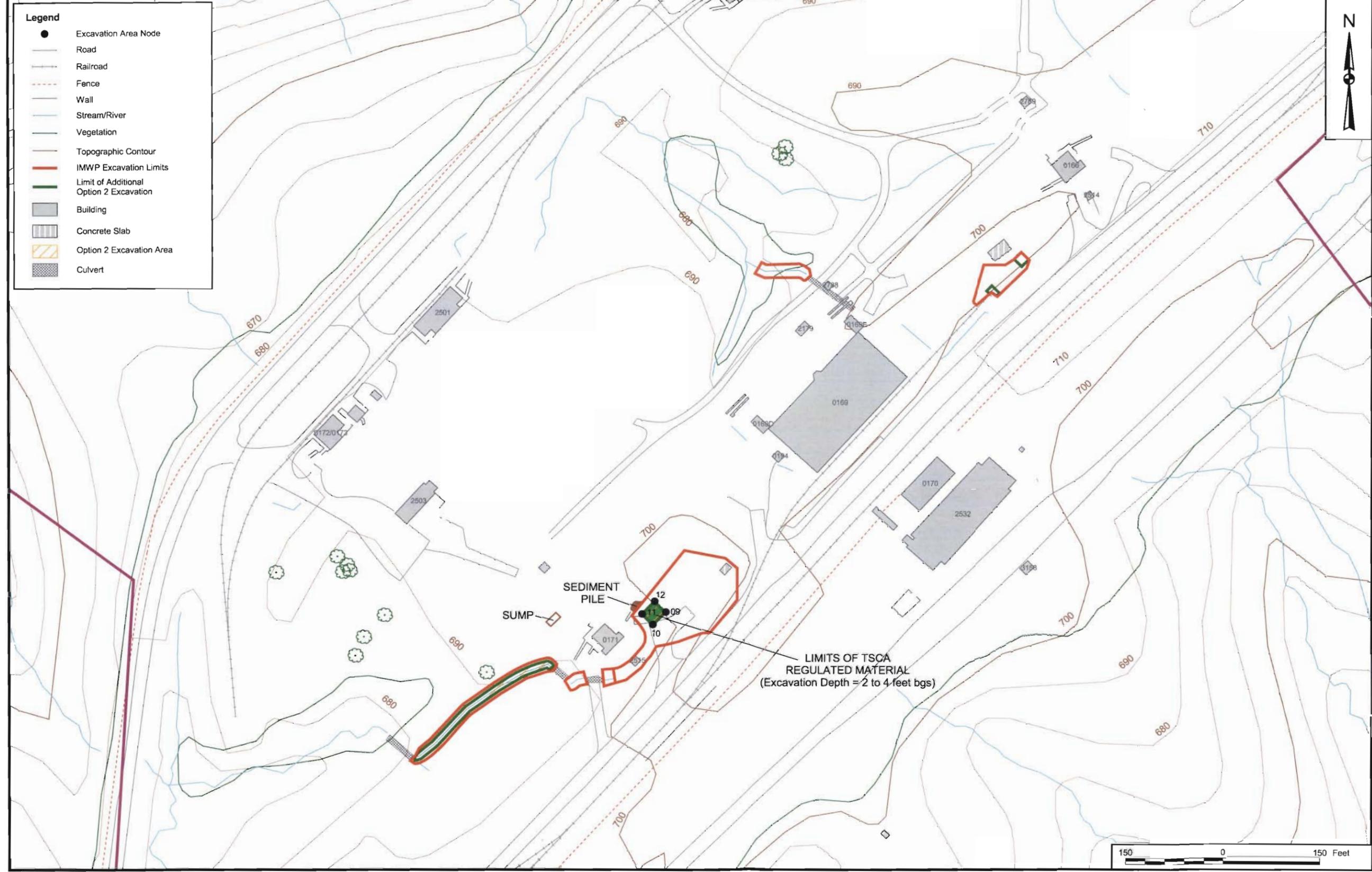


Legend

- Excavation Area Node
- Road
- +— Railroad
- - - Fence
- Wall
- Stream/River
- Vegetation
- Topographic Contour
- IMWP Excavation Limits
- Limits of Additional Option 1 Excavation
- Building
- Concrete Slab
- Option 1 Excavation Area
- Culvert



CONTRACT NO. 112G00352		DATE	
APPROVED BY	DATE		DATE
DRAWING NO. FIGURE 3 - 2		REV 0	
OPTION 1 - EXCAVATION AREA SWMU 13 - MINE FILL B INTERIM MEASURES WORK PLAN NSWC CRANE CRANE, INDIANA			
		SCALE AS NOTED	
DRAWN BY S. PAXTON	DATE 2/16/07	CHECKED BY T. SMITH	DATE 5/05/08
COST/SCHED-AREA		SCALE	

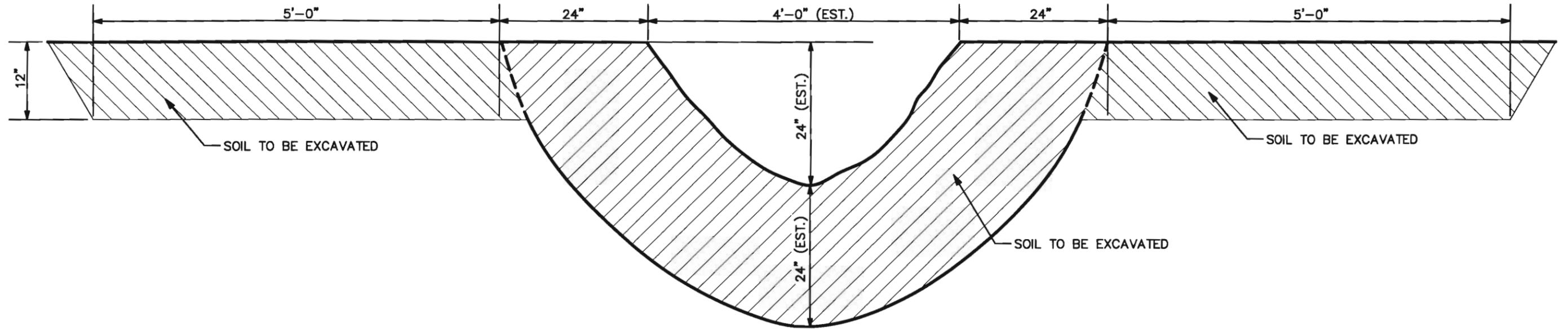


CONTRACT NO. 112G00352	DATE	REV 0
APPROVED BY	DATE	
APPROVED BY	DATE	
DRAWING NO. FIGURE 3 - 3		

OPTION 2 - EXCAVATION AREA
 SWMU 13 - MINE FILL B
 INTERIM MEASURES WORK PLAN
 NSWC CRANE
 CRANE, INDIANA



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CHECKED BY T. SMITH	DATE 5/05/08	
COST/SCHED-AREA		



DRAINAGE CHANNEL EXCAVATION

LEGEND:

- CHANNEL EXCAVATION
- CHANNEL OVERFLOW EXCAVATION

NOTES:

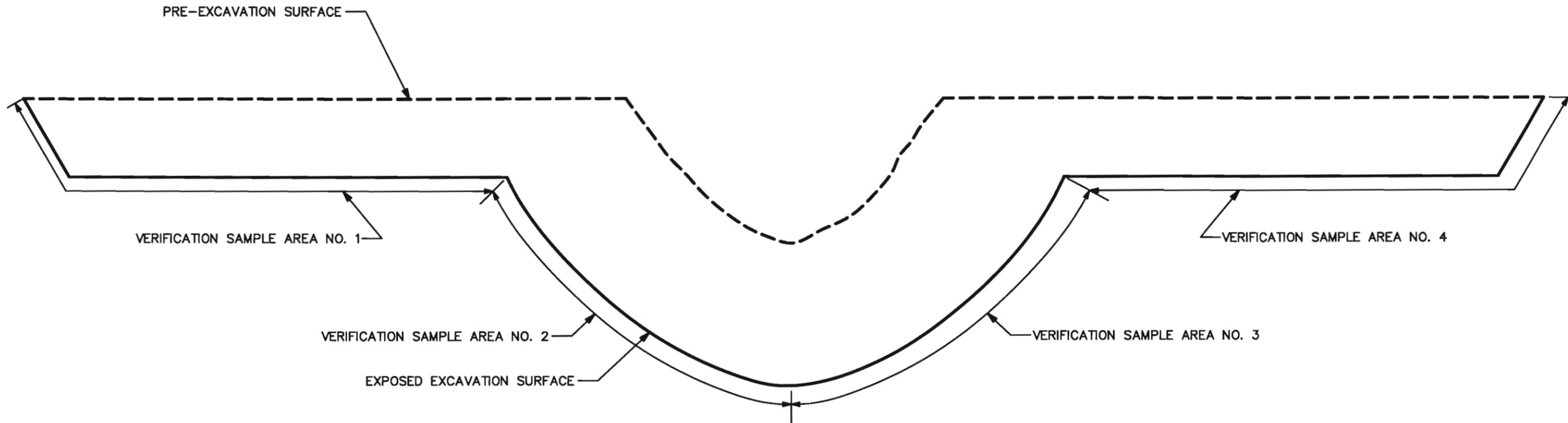
1. BRUSH HOG EXCAVATION AREA TO EXPOSE TOP OF DRAINAGE CHANNEL BANKS.
2. DRAINAGE CHANNEL DIMENSIONS INDICATE AVERAGE OF DRAINAGE CHANNEL FIELD MEASUREMENTS.
3. FOR PORTION OF CHANNEL WITHOUT WELL DEFINED LIMITS, THE NAVY REPRESENTATIVE WILL INDICATE THE REQUIRED INITIAL EXCAVATION LIMITS.
4. ASIDE FROM THE ESTIMATED DRAINAGE CHANNEL DIMENSIONS, PROVIDED DIMENSIONS DELINEATE THE EXTENT OF EXCAVATION.

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DRAINAGE CHANNEL EXCAVATION DETAIL
SWMU 13 - MINE FILL B
INTERIM MEASURES WORK PLAN
NSWC CRANE
CRANE, INDIANA

CONTRACT NO. 0352	
OWNER NO. 0020	
APPROVED BY	DATE
DRAWING NO. FIGURE 3-4	REV. 0



DRAINAGE CHANNEL EXCAVATION

NOTE:

FOR EVERY 100 FEET OF DRAINAGE CHANNEL EXCAVATION, ONE SET OF FOUR VERIFICATION SAMPLES WILL BE COLLECTED. A MINIMUM OF ONE SET OF FOUR VERIFICATION SAMPLES WILL BE COLLECTED FROM EACH DRAINAGE CHANNEL SEGMENT. AS AN EXCEPTION, IF DRAINAGE PIPES ARE ENCOUNTERED (EXPOSED) DURING EXCAVATION WITHIN THE DRAINAGE CHANNELS THE SAMPLING FREQUENCY WILL BE INCREASED TO ONE SET OF FOUR FOR EVERY 25 FEET OF DRAINAGE CHANNEL FROM THE DRAINAGE PIPE DISCHARGE LOCATION TO A DISTANCE OF 100 FEET DOWN STREAM OF THE DISCHARGE LOCATION.

DRAWN BY MF	DATE 4/7/08
CHECKED BY	DATE
REVISED BY	DATE
SCALE NOT TO SCALE	



**DRAINAGE CHANNEL VERIFICATION SAMPLING
SWMU 13 - MINE FILL B
INTERIM MEASURES WORK PLAN
NSWC CRANE
CRANE, INDIANA**

CONTRACT NO. 0352	
OWNER NO. 0020	
APPROVED BY	DATE
DRAWING NO. FIGURE 5-1	REV. 0