

**From:** [Sara Redding](#)  
**To:** [EP, SERO ECB; Armstrong, Dustin](#)  
**Cc:** [Greg Martin; Tom Patterson](#)  
**Subject:** [External] Bishop Tube - Public Comments  
**Date:** Monday, January 31, 2022 5:19:15 PM  
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Please find attached the Bishop Tube Project Team's comments on DEP's August 17, 2021 Analysis of Alternatives and Proposed Response for the Former Bishop Tube Property.

Thank you,  
Sara

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Pronouns I use: She, her, hers



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January 31, 2022

Also submitted via e-mail to: [RA-EP-SEROECB@pa.gov](mailto:RA-EP-SEROECB@pa.gov)

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Environmental Cleanup Program  
PA Department of Environmental Protection  
2 East Main Street  
Norristown, Pennsylvania 19401

Re: Bishop Tube Public Comments  
BT Team's Comments on DEP's August 17, 2021  
*Analysis of Alternatives and Proposed Response*

Dear Mr. Armstrong:

This letter is submitted by Roux Associates, Inc. ("Roux") on behalf of Johnson Matthey Inc. and Whittaker Corporation (collectively, the "BT Team"), the two parties that conducted the Remedial Investigation ("RI") and the Feasibility Study ("FS") for the former Bishop Tube property located at 1 South Malin Road in Malvern, Pennsylvania ("Property"). The RI and FS addressed an area inclusive of and beyond the Property (i.e., "Site<sup>1</sup>").

Below we provide comments on the Pennsylvania Department of Environmental Protection's ("DEP's") proposed remedial approach as described in its August 17, 2021 *Analysis of Alternatives and Proposed Response* ("AOA") for the former Bishop Tube property. Attachment A provides a list of documents recommended for inclusion in the Administrative Record that DEP has prepared for the Site<sup>2</sup>.

#### **Overall Comment on DEP's Proposed Remedial Approach**

As expressed in the AOA and summarized in DEP's *Remedial Alternatives Presentation 2021*, DEP's proposed remedial approach is as follows: "In Situ Chemical Oxidation and/or In Situ Chemical Reduction ("ISCO/ISCR"), coupled with soil mixing to address unsaturated and saturated soils impacted by Site constituents of concern ("COCs"); in situ injection of ISCO, ISCR or bioremediation amendments in the two primary chlorinated solvent source areas to address contaminated groundwater (with engineering, and/or institutional controls, and long-term monitoring); and connection of the residence with an impacted domestic well to the existing public water line."

Except as described below, the BT Team agrees with, and supports, DEP's proposed remedy for OU1 – AOA Alternative 5 (for the remediation of chlorinated volatile organic compounds ["CVOCs"] in soils), and also for OU3 – AOA Alternative 3 (for connection of the water supply system at 54 Conestoga Road to public water). The BT Team also agrees that the appropriate choice for the remedy for OU2 (groundwater) should be either AOA Alternative 2 or AOA Alternative 3. Both include Best Management Practices ("BMPs") for potential diffuse discharges to a tributary of Little Valley Creek ("LVC"), and, as noted in the FS Report, both would be similarly protective of human health and the environment. The

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<sup>1</sup> The term "Site" as used in this letter is in accordance with Chapter 250, Section 1.

<sup>2</sup> The DEP has provided the following link to access the proposed Administrative Record electronically: [https://files.dep.state.pa.us/RegionalResources/SERO/SEROPortalFiles/Community%20Info/Bishop%20Tube/2021%20Administrative%20Record/Bishop\\_Tube\\_Remedial\\_Response\\_AR-DOCKET.pdf](https://files.dep.state.pa.us/RegionalResources/SERO/SEROPortalFiles/Community%20Info/Bishop%20Tube/2021%20Administrative%20Record/Bishop_Tube_Remedial_Response_AR-DOCKET.pdf)

primary difference between these two alternatives for OU2 is that AOA Alternative 2 relies on monitored natural attenuation (“MNA”) after remediation of source soils (OU1, AOA Alternative 5) is completed in the two CVOC hot spot areas (Building 8 VDA and DSA#3), while AOA Alternative 3 would include injections into the same two areas within shallow (overburden) groundwater and contingent injections into the bedrock aquifer.

DEP’s assessment in the AOA suggests that its preferred alternative for OU2 groundwater (i.e., AOA Alternative 3 – In Situ Injection [ISCO/ISCR/Bioremediation], page 31 of 66 of AOA) was favored by DEP because it would further hasten remediation of groundwater when compared to AOA Alternative 2 for OU2.<sup>3</sup> The BT Team believes the perceived benefit of an unquantifiable “hastening of the remediation of groundwater” (i.e., the “Short-Term COC Mass Reduction” supplemental criteria from the FS Report) is overvalued by DEP when the potential challenges posed by active injection(s) are considered (e.g., potential impacts on the currently stable and decreasing CVOC groundwater plume, and diffusive effects of groundwater on the LVC tributary). The reasons for this are described in detail in the FS and are discussed in the following comments. It should be noted that the BT Team also agrees with DEP that AOA Alternatives 4 and 5 for OU2 similarly would not hasten the retraction of the plume and would present similar or more significant potential implementation challenges for this Site.

The tables below summarize the results of the Comparative Analysis of Remedial Alternatives for FS RA #2 (MNA) and FS RA #8 (In-Situ Injection, i.e., AOA RA #3) described in detail in the FS Report for groundwater and the December 18, 2020 Remedial Alternative #8 - Basis of Design Memorandum (“RA #8 BOD Memo”), respectively<sup>4</sup>. These tables assess the two alternatives against each of the Threshold, Balancing, and Supplemental Evaluation Criteria.

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<sup>3</sup> As described in the FS Report, achievement of remedial goals is anticipated to take 30 years or more for all remedial approaches, including the two alternatives being discussed here. Thus, the “hastening of remediation”, as contemplated by DEP, is an increase in short-term mass reduction, not a quantifiable shortening of the overall time anticipated to achieve remedial goals.

<sup>4</sup> FS Alternative #1 - No Action is included as a baseline but is not recommended by the BT Team.

Assembled Integrated Remedial Alternatives - The remedial alternatives (RAs) represent a range of actions evaluated to achieve compliance with the groundwater beneficial use Remedial Action Objective (RAO).		Alternative # 1 - No Action	Alternative # 2 - Monitored Natural Attenuation	Alternative # 8 - Building 8 and DSA #3 ISCR with MNA
Threshold Criteria	Overall Protection of Public Health and the Environment - <i>Ability to protect human health &amp; the environment</i>	LOW	HIGH	HIGH
	Compliance with Applicable or Relevant and Appropriate Requirements - <i>Ability to comply with regulatory drivers &amp; achieve regulatory acceptance</i>	LOW	HIGH	HIGH
Balancing Criteria	Long-Term Effectiveness and Permanence - <i>Ability to limit long-term risk / Use of Institutional/Engineering Controls also considered</i>	N/A	HIGH	HIGH
	Reduction in Mobility, Toxicity or Volume through Treatment - <i>Ability to reduce and limit impact to make treatment irreversible &amp; minimize the type and quantity of residual impacts</i>	N/A	HIGH	HIGH
	Short-Term Effectiveness - <i>Protectiveness of public &amp; workers during implementation, sustainability of remedy</i>	N/A	HIGH	MEDIUM
	Implementability - <i>Feasibility to construct, treat, &amp; monitor the remedy and its reliability in providing desired treatment</i>	N/A	HIGH	HIGH
	Cost - <i>Capital, O&amp;M, Net Present Worth (HIGH = most attractive cost, LOW = least attractive cost)</i>	N/A	HIGH	HIGH
<b>Summary Score</b>		--	21	20

Assembled Integrated Remedial Alternatives - The remedial alternatives (RAs) represent a range of actions evaluated to achieve compliance with the groundwater beneficial use Remedial Action Objective (RAO).		Alternative # 1 - No Action	Alternative # 2 - Monitored Natural Attenuation	Alternative # 8 - Building 8 and DSA #3 ISCR with MNA
Supplemental Criteria	Short-Term COC Mass Reduction - Ability to demonstrate measurable COC mass reduction within the first 5 years of RA implementation	N/A	LOW	MEDIUM
	Sustainability of RA - Ability to minimize carbon footprint, natural resource use, & consequential detriment to the environment	N/A	HIGH	MEDIUM
<b>Summary Score</b>		--	<b>4</b>	<b>4</b>

Source: Comparative Analysis of Remedial Alternatives from the December 18, 2020 Remedial Alternative #8 - Basis of Design Memorandum (RA #8 BOD Memo), Tables 8 and 9. These two tables are excerpted from larger tables included in the RA #8 BOD Memo and directly relate to AOA Alternative #2 (MNA) and AOA Alternative #3 (In-Situ Injection) for groundwater.

Notes:

1. Low rankings represent RAs that are less desirable due to significant limitations and/or are unlikely to satisfy an evaluation criterion, medium rankings represent the RAs that are likely to satisfy the evaluation criteria but with some limitations, and high rankings represent RAs that are desirable and/or likely to satisfy an evaluation criterion.
2. Low rankings are given a numerical score of 1, medium rankings are given a numerical score of 2, and high rankings are given a numerical score of 3.
3. N/A = Did not meet threshold criteria, therefore no evaluation of balancing criteria was completed.
4. All RAs are assumed to be completed over a 30-year period.

While the above analysis shows that both remedial alternatives for groundwater (i.e., OU2 AOA Alternatives #2 & #3, which correlate with RA #2 in the FS Report and RA #8 in the RA #8 BOD Memo, respectively) would be protective of human health and the environment, it is equally clear that the OU2: AOA Alternative #2 (MNA) is more sustainable and cost-effective, and does not have the implementability challenges associated with OU2 AOA Alternative #3. The BT Team therefore requests that DEP reconsider its proposed remedial alternative for groundwater and select OU2: AOA Alternative #2 – MNA for groundwater.

**Comments on DEP’s Selected Remedial Alternative and the AOA**

In the event DEP retains its proposed remedial alternative, the BT Team offers the following General Comments (“GC”). It is the BT Team’s opinion that addressing these GCs as part of this public comment period will help clarify the purpose, scope, and practical limitations of DEP’s proposed remedial approach.

- **GC1 – The AOA Did Not Consider Important Supplemental Data.** The AOA includes a description of purpose, scope, and select assumptions for the proposed remedial alternative. However, DEP has not considered data that clearly rebuts certain of its conclusions. DEP should utilize these supplemental data to refine (in most instances reduce) the scope of the proposed remedial approach. A summary of pertinent supplemental data, the findings, and the implications is presented below.

- Chromium in Soil - An August 24, 2021 technical memorandum previously submitted to the DEP (and in the Administrative Record) assessed whether certain inorganic constituents (most significantly total chromium and hexavalent chromium) are present in soil at relevant locations where historical samples previously indicated concentrations exceeding or potentially exceeding<sup>5</sup> DEP's Residential Used Aquifer ("RUA") Soil-to-Groundwater ("SGW") Medium-Specific Concentrations ("MSCs"). The supplemental data demonstrated that there are no total or hexavalent chromium soil areas of concern ("AOCs") that require remediation for chromium. Soils AOCs 2, 3, 7, 8, and 10 described in the AOA should be eliminated as AOCs requiring soil remediation for chromium, since no remedial action is necessary.<sup>6</sup> The cost to implement remedial actions for these AOCs should be subtracted from the total cost estimate.<sup>7</sup>
- Inorganics in Groundwater -In the 2021 Remedial Investigation Report ("2021 RIR"), chromium (total and hexavalent), manganese, nickel, and fluoride were retained as COCs in groundwater based on monitoring well results on the Property, but monitoring wells located immediately to the north of the Property (i.e., off-site) did not have exceedances of these three metals or fluoride<sup>8</sup>. Since the inorganic groundwater results documented in the 2021 RIR were not from a contemporaneous sampling event, supplemental inorganic groundwater data were collected. As described in an August 24, 2021 technical memorandum previously submitted to the DEP (and in the Administrative Record), a supplemental groundwater sampling event was completed for certain inorganic constituents (i.e., total chromium, hexavalent chromium, manganese, nickel, and fluoride), and the post-RIR results are consistent with the findings reported in the 2021 RIR: on-Property inorganic groundwater conditions, without further remediation, are not impacting off-Property groundwater for those substances. No active remediation is required on the Property, for inorganics in groundwater.<sup>9</sup>
- CVOCs in Building 5 - A December 16, 2020 technical memorandum previously submitted to the DEP (and in the Administrative Record) assessed the horizontal and vertical extent of CVOCs in DEP's AOC-6 (i.e., the Plant 5 "Large Degreaser Area"). The supplemental soil data demonstrated that a) both the horizontal and vertical extent of CVOCs in AOC-6 in Building 5 have been refined (reduced) based on the supplemental data, b) the extent of the remedial area designated AOC-6 in the AOA is overly conservative and not supported by the supplemental data, and c) vertical delineation of CVOCs in soil in the vicinity of AOC-6 was achieved entirely within the unsaturated zone, i.e., the deepest samples did not exceed the RUA/Non-Residential Used Aquifer ("NRUA") SGW MSCs, indicating that soil impact in this area is not reaching the water table. DEP acknowledges in the AOA that the saturated soil and bedrock in AOC-6 do not significantly contribute to the dissolved CVOC plume. These findings support a determination that MNA is sufficient for CVOCs in groundwater in the vicinity of Building 5. To the extent that remediation of soils is contemplated in AOC-6, the scope of soil remediation should be reduced (or potentially, eliminated) in light of the supplemental data.

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<sup>5</sup> Since historical soil samples were not speciated for hexavalent chromium, prior soil assessments conservatively compared the total chromium analytical results for soil to the hexavalent chromium soil MSCs, assuming all chromium present to be hexavalent chromium.

<sup>6</sup> As discussed in a General Comment below, supplemental measures are required of the developer to safely allow a residential use (or open space) scenario for this Property.

<sup>7</sup> Further, the existing soil conditions are not causing off-Property groundwater exceedances of MSCs and, therefore, remediation of soil for inorganics is not required to protect off-Property groundwater.

<sup>8</sup> With the exception of one well which contained manganese exceedances.

<sup>9</sup> As discussed in a General Comment below, supplemental measures may be required of the developer with respect to inorganics in soils to safely allow a residential use or open space scenario for this Property.

- CVOCs in Groundwater - An August 24, 2021 technical memorandum previously submitted to the DEP (and in the Administrative Record) reported on supplemental groundwater sampling of 54 monitoring wells to confirm temporal trends for CVOCs across the Site. The updated trend charts in the technical memorandum bolster the 2021 RIR conclusion that parent CVOCs (trichloroethene ["TCE"] and 1,1,1-trichloroethane ["TCA"]) are decreasing and so-called daughter products (e.g., cis-1,2-dichloroethene ["cDCE"], vinyl chloride ["VC"] and 1,1-dichloroethane ["1,1-DCA"]) are being reduced over time via natural attenuation processes. Updated Mann-Kendall statistical tests bolster the 2021 RIR (and earlier) conclusions that CVOC concentrations in groundwater are stable or decreasing. These supplemental CVOC groundwater data support a determination that MNA is effectively reducing CVOC contaminant concentrations at this Site, even in the absence of active remediation.

Some in the community have expressed concern about the generation of daughter products, including VC. The generation of daughter products is to be expected as part of the MNA remedial process. In fact, it is desirable to observe the generation and then subsequent degradation of these daughter products; observing and detecting the sequential dechlorination of the original parent products helps demonstrate that MNA is effective and occurring at the Site. The presence, concentrations and trends of the daughter products will be monitored over time, just like the parent products, to ensure the daughter products are not producing unacceptable conditions. Extensive VC monitoring in groundwater has been completed for this Site as described in the 2021 RIR, and the previous and supplemental CVOC data, inclusive of VC, is provided in Attachment D of the technical memorandum.

DEP should clarify in its response to public comments that a) the generation of daughter products, inclusive of VC, is occurring now and is known and expected to occur at the Site in the future, b) a complete suite of parent and daughter CVOCs have been assessed at the Site (i.e., VC has not been ignored) and these CVOCs will continue to be monitored throughout implementation of the remedial approach, and c) the in-situ injection amendment (i.e., the actual material to be injected) is not identified in the AOA because that would have been premature, in that the predesign investigation ("PDI") will be used to assess several amendments and identify the optimal choice for this Site. One of the criteria for selection of an amendment will be a demonstrated ability to produce complete dechlorination (i.e., mineralization) of the parent CVOCs.<sup>10</sup>

In addition, some in the community seem to think that DEP has focused only on TCE and has ignored other CVOCs including VC. DEP may wish to explain that a) TCE is not the only focus for remedial action for CVOCs at the Site, b) the proposed remedial approach addresses all CVOCs associated with releases at the Property (including byproducts such as VC), and c) in the AOA and in the 2021 RIR, TCE appears in many figures because it is the most prevalent contaminant at the Site, and provides an easy and accurate means of depicting the combined extent of all CVOCs since the other Site-related CVOCs fall within the area defined by TCE.

- Emerging Contaminants – Some community members have expressed concern that one emerging contaminant, 1,4-dioxane, has not been assessed for this Site. In fact, it was addressed in the initial implementation of the RI. The compound was detected, but at very low levels that would not influence selection of a remedial approach for the Site. However, 1,4-dioxane is being subject to increasing scrutiny by DEP, and DEP later requested a supplemental

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<sup>10</sup> The complete dechlorination (i.e., mineralization) of parent products via MNA is evident under natural conditions (i.e., without supplemental in-situ injection) based on the empirical data for the Site. For example, of the 54 monitoring wells recently tested for VOCs, 15 had VC detections in the concentration range of 3 micrograms per liter ("ug/L") to 233 ug/l. Twelve of these 15 monitoring wells are on the Property or immediately adjacent (i.e., on the railroad property to the north) and all detections of VC are within the boundary of the Site as defined by the extent of TCE.

assessment. That assessment used analytical methodologies with low (i.e., sensitive) detection limits, and its results are reflected in the August 24, 2021 technical memorandum noted above. The results confirm the conclusions in the 2021 RIR and in past correspondence with DEP, that 1,4-dioxane concentrations in groundwater are *de minimis*. The compound was not detected above the default RUA GW MSC (6.4 ug/L) in 21 of 22 monitoring wells; only one on-Property monitoring well exceeded the MSC.<sup>11</sup> Notably, 1,4-dioxane was not found in groundwater exceeding its MSC off-Property.

PFAS compounds are another class of emerging contaminants for which sampling is sometimes warranted depending upon a particular site's operational history. In November 2021, DEP published Chapter 250 revisions that introduced, for the first time, soil and groundwater standards (i.e., MSCs) for three PFAS compounds: perfluorooctanoic acid ("PFOA"), perfluorooctane sulfonate ("PFOS") and perfluorobutane sulfonate ("PFB"). Some in the community have suggested that groundwater at this Site should be sampled for these compounds, alleging that prior operations – specifically, the vapor degreasing or pickling - were a likely source of PFAS contamination. However, review of the available literature<sup>12</sup> does not support those claims. Furthermore, there is no evidence that aqueous film-forming foam ("AFFF") fire suppression systems were ever used at the Site (and that would not be expected given the nature of the operations conducted there), and no fires that might have warranted the use of AFFF<sup>13</sup> are reported in the historical documentation. In sum, PFAS use has not been documented and would not be expected at this Site.

DEP should explain in its response to public comments that a) it required sampling for 1,4-dioxane because it was determined to be a COC potentially associated with historical operations at the Property (i.e., potential use as an additive in TCA), b) 1,4-dioxane was considered and did not affect the selection of the proposed remedial approach for the Site, and c) PFAS compounds are not expected to be present at the Site given its historical operations.

- Potable Well Sampling Results – In November 2021 potable water samples were collected from the only private supply well impacted by the Site (i.e., 54 Conestoga Road). The results were reported to the owner, and the letters communicating the results have been recommended for addition to the Administrative Record (see Attachment A).<sup>14</sup> They show that VOCs and 1,4-dioxane were not present in the untreated water at levels above DEP's RUA MSCs<sup>15</sup>. The results also demonstrate continuing improvement in off-Property groundwater quality over time. Notwithstanding these favorable results, the BT Team supports DEP's proposed remedial alternative for this property (i.e., OU3: Alternative 3 – Connection to Public Waterline). One community member has suggested that the private supply well (planned for abandonment/closure under the AOA) should be preserved for future sampling to assess groundwater trends, and the BT Team supports this suggestion.

In sum, substantial supplemental data has been collected since completion of the 2021 RIR and FS Report. DEP should use these datasets to refine (and in most instances, reduce) the scope of the remedial approach for soils and groundwater proposed in the AOA. In addition, the data support the

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<sup>11</sup> 1,4-Dioxane was detected in MW-72, located within the Building 8 VDA as defined in the 2021 RIR, at a concentration of 66.5 B ug/L (DEP's split sample result was 133 ug/L). In addition, the DEP's split sample result for 1,4-dioxane in MW-77, which is proximate to MW-72 within the Building 8 VDA, was 13.8 ug/L (Roux's sample result was 5.03 B ug/L assessed via analytical method SW846 8270 SIM). The "B" flag indicates that the analyte was detected in the laboratory blank.

<sup>12</sup> See, e.g., Interstate Technology and Regulatory Council (2020) PFAS Uses. <https://pfas-1.itrcweb.org/2-5-pfas-uses/>

<sup>13</sup> AFFF is a fire suppressant, often containing PFAS, that is used to control flammable liquid fires by forming a "foam blanket" that minimizes the release of ignitable vapors from the flammable liquid.

<sup>14</sup> At present, the house on this property is undergoing extensive renovations and is not occupied. The property owner has been advised by DEP that the private supply well should not be used without appropriate engineering controls (e.g., a POET system), and the owner has confirmed that the well is not being used for potable supply at this time.

<sup>15</sup> RUA MSCs are statewide health-based standards for groundwater as established by the DEP in November 2021.



BT Team's request that DEP reconsider its proposed remedial alternative and select OU2 AOA Alternative #2 – MNA for groundwater, along with the source soil remedy for OU1.

- **GC2 – The RI Is Complete for this Site.** The DEP's repeated reference to RI "data gaps" in the AOA and in its video presentation has created doubt and uncertainty regarding whether the RI is complete, and has led some community members to suggest that the Site hasn't been studied sufficiently to allow selection of a remedy. That simply isn't true. The BT Team alone has studied it for more than 12 years, submitting four RI reports over time (each time to perform additional investigations that were requested by DEP). Delaying the selection and implementation of a remedy, in order to conduct even more studies, would be pointless and unwise. The DEP should make clear that the "data gaps" it referred to are normal at the conclusion of an extensive investigation, are minor in nature, do not influence selection of the overall remedial approach for the Site, and will be resolved in the pre-design data collection phase (discussed in GC3, below).<sup>16</sup> The overall remedial approach can be selected at this time, based on existing data. DEP should explain in its response to public comments that the RI is complete, and that any supplemental data needs are minor and do not affect remedy selection.
- **GC3 – The PDI Is a Normal Next Step After the Remedial Approach Has Been Selected and Does Not Imply a "Data Gap" in the FS.** Once the overall remedial approach is selected (following the AOA and public comment process), the next step in the remedial process for the Site is the PDI. The PDI is performed to confirm the safety and efficacy of the preferred remedial approach and produce the data needed to refine the remedial technology to be employed. The principal objective of the PDI is to facilitate the effective design and implementation of the preferred remedies for the Site.

Certain "data gaps" mentioned in the AOA refer to data commonly developed after the FS and during the PDI. As explained above, the PDI is a normal sequential step in the remediation of a site, that takes place after the overall remedial approach has been determined. The PDI data a) are not expected to be available now, b) are not needed to select an overall remedial approach for the Site, c) will be collected after the overall remedial action approach has been selected, and d) are not "data gaps", per se, but simply future data needs to refine remedy application. DEP should explain this in its response to public comments.

- **GC4 – ISCR, Possibly Supplemented with Enhanced Bioremediation, Would Be the Preferred Remedial Approach for this Site; ISCO Should Be Eliminated.** Proposing the injection of ISCR, ISCO, and/or bioremediation amendments as the overall remedial approach as outlined in the AOA signals indecision as well as uncertainty as to the viability of the proposed remedial approach. As described in the FS Report, a) an ISCR remedial approach is preferred over ISCO for groundwater conditions observed at this Site, and b) the chemistry of the remedial approaches selected for both soil and groundwater OUs must be compatible. The BT Team recommends strongly that DEP eliminate ISCO as a treatment alternative for soil and groundwater. ISCR would be consistent with the ongoing degradation of CVOCs.

As described in GC3 above, the principal objective of the PDI is to provide additional data to focus the design and implementation of the preferred remedies. For this Site, the safety and efficacy of various ISCR amendments and ISCR subsurface delivery methods and rates, for example, would be assessed during the PDI to allow for the design of the full-scale implementation of the most viable amendment. The PDI would assess and address implementability concerns regarding potential deleterious impacts on LVC. In addition, the PDI should address safety considerations for a)

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<sup>16</sup> An RI typically concludes when site contaminants' vertical and horizontal extent and concentrations are understood in sufficient detail to allow remedy selection. To continue investigations past that point would be a waste of time and money and would not alter the remedy selection.

construction workers, b) occupants of nearby residential and commercial properties both during and after remedy construction, and c) future occupants of the Property. ISCO should be eliminated from the proposed remedial technology alternatives considered for the selected in-situ remedial approach due to its potentially deleterious impact on intrinsic biodegradation and existing groundwater chemistry.

- **GC5 – The Overall Remedial Approach Is Compatible with a Residential Use, But Supplemental Measures by the Developer Would Be Necessary.** Some in the community have suggested because the RIR and FS Reports contemplated a non-residential use for the Property (which was rezoned to residential use by East Whiteland Township [“EWT”] at the request of the owner/developer in 2014), the DEP’s proposed remedial approach is not protective of future land use. By extension it is suggested by some that the Site hasn’t been studied sufficiently to support DEP’s selection of a remedy. In response to these public comments, DEP should explain that its proposed remedial approach, subject to the suggested revisions described herein is compatible with both existing residential and commercial land uses off the Property, as well as with a potential future residential (or open space) use, subject to certain conditions. Those conditions are generally described in the FS Report (for residential use) and are also described in some detail by EWT in the conditions it has required the developer meet before any residential redevelopment can occur.

In the event the current owner continues to pursue a residential development of the Property, DEP should clearly communicate to EWT the specific actions that it deems necessary to ensure that conditions are protective of residential exposure pathways. This would amount to vetting the previously established EWT redevelopment conditions and providing guidance to EWT as to any supplemental measures DEP believes are required. EWT should impose institutional controls (e.g., an ordinance prohibiting the installation of private drinking water wells). DEP’s proposed remedial approach would remain appropriate if supplemented by properly designed engineering controls (e.g., capping and vapor mitigation measures) and institutional controls, specific to protect future users of the Property. In particular, DEP should clearly communicate those supplemental measures (investigative or remedial in nature) that would be required in the event of any residential use (e.g., building demolition, capping, vapor mitigation, public water supply, stormwater controls, and institutional controls).

- **GC6 – The DEP’s Proposed Remedial Approach Includes BMPs to Protect the Environment.** The FS Report includes a complete discussion of BMPs proposed to protect the environment, in particular the LVC tributary (in addition to soil source remediation measures). These BMPs were developed, in part at the direction of DEP, as an approach to address the anti-degradation Applicable or Relevant and Appropriate Requirement (“ARAR”) for the LVC tributary and hasten remediation by minimizing offsite transport of COCs. These BMPs were included in all remedial alternatives in the FS Report, despite the absence of any current risk to human health or ecologic receptors in LVC as described in the 2021 RIR and recognizing the presumed future reduction of COCs discharged to surface water based on a combination of source reduction measures and MNA for groundwater.

The proposed BMPs include stormwater controls to reduce sediment loading and promote clean water infiltration proximate to LVC, bioretention areas to serve similar functions related to stormwater discharge to LVC, phytotechnology to reduce diffuse groundwater loading to LVC, and impervious surfaces/stormwater controls to minimize new/future infiltration in residual source areas. These BMPs complement the in-situ source control measures. DEP’s response to public comments should make clear that these BMPs a) are included in DEP’s proposed remedial approach, b) are an important component of the overall remediation for the Site, and c) address the LVC anti-degradation ARAR.

- **GC7 – DEP Should Acknowledge that Certain Remedial Approaches Are Infeasible (i.e., Deep Bedrock Remediation) for Groundwater.** The FS completed for this Site included a thorough assessment of remedial approaches for groundwater, including a forthright discussion of the strengths and limitations of certain remedial technologies. As described in the FS Report, for example, remediation of deep bedrock (both dense non-aqueous phase liquid [“DNAPL”] and related deep groundwater) is not technically feasible. This should be acknowledged by DEP and explained to the EWT Community in response to their comments. As explained in the 2021 RIR and FS Report, due to a specific gravity higher than water, DNAPL has migrated down the near vertical structural fabric of the bedrock. Further downward movement of DNAPL and migration of contaminants in deep bedrock fractures are restricted by: a) the reduced frequency and connectivity of water-bearing fractures with increasing depth; b) decreasing fracture transmissivity with increasing depth in the bedrock; and c) matrix diffusion in the bedrock. The current absence of any measurable DNAPL in Site monitoring wells is attributed to the limited volume of DNAPL in the subsurface and its presence predominantly in a state of residual saturation. Since the suspected DNAPL present in bedrock is a) below the water table, b) contained in rock, and c) at depth, there is no direct exposure pathway from DNAPL in bedrock. DEP’s response to public comments should acknowledge the constraints presented by the conditions in deep bedrock. DEP should not suggest that more data is needed on deep bedrock conditions, since additional data will not change the conclusion that remediation of deep bedrock is not feasible.
- **GC8 – DEP Should Acknowledge that In-Situ Injections Present Significant Challenges.** The FS thoroughly assessed the potential challenges associated with the remedial approaches for groundwater, including the strengths and limitations of certain remedial technologies<sup>17</sup>. Injecting amendments in fractured bedrock is a complex process and injecting amendments in immediate proximity to the LVC tributary (and its related wetlands) would pose implementability challenges (including in regard to the potential creation of risks that do not currently exist). These challenges would need to be managed using data collected during the PDI, through pre-design testing, bench-scale testing, and/or pilot testing prior to full implementation. Even then, an injection program should be scaled up carefully to monitor for and mitigate against any problematic effects that may arise and should only be implemented if it can be done safely and effectively.
- **GC9 – Certain COCs Have Been Found Infrequently and/or at Low Concentrations and Do Not Affect Remedy Selection for the Site.** As described in detail in the 2021 RIR, there are certain constituents detected at the Site (soil and groundwater) that have been found infrequently and/or at low concentrations and do not affect remedy selection for the Site. These data have caused some to suggest that the Site hasn’t been studied sufficiently to allow the selection of a remedy. This is not correct. The most obvious example to illustrate this situation is VOCs in groundwater, as discussed in the RIR and summarized below.

In all groundwater data for the Site, 77 individual VOCs were tested for and 59 had no exceedances of the most stringent residential groundwater MSCs. These 59 VOCs are not COCs for the Site. Of the 18 remaining VOCs with at least one current exceedance of the most stringent RUA MSCs in groundwater<sup>18</sup>, 11 VOCs a) have two or fewer monitoring wells with exceedances, b) are thought to be related to background conditions (i.e., methyl tertiary butyl ether [“MTBE”] from upgradient bulk petroleum storage facility), or c) are thought to be related to common laboratory contamination (i.e.,

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<sup>17</sup> As noted in the FS Report, implementation challenges may include a) dissolution of adsorbed-phase COCs and a consequent increase in the rate of discharge or migration of these COCs, b) discharge of the amendments themselves into the adjacent stream, c) modification of groundwater flow and COC transport conditions, d) incompatibility with observed natural attenuation mechanisms, e) discharge of COCs or the amendments themselves at land surface (i.e., “daylighting”), f) ineffective delivery of the amendment to the desired treatment zones, g) loss of amendment to less-impacted but more transmissive bedrock fractures, h) loss of amendment to subsurface infrastructure (e.g., the abandoned AS/SVE piping network), or i) rebound effects after treatment, including matrix back diffusion.

<sup>18</sup> Defined as an exceedance in one or both of the two most recent sampling events for each individual well.

methylene chloride).<sup>19</sup> These constituents are low in concentration, localized in area, and co-located with CVOCs that are the primary COCs for the Site. The table below provides a summary of the statistics for these 11 VOCs in groundwater.

VOCs	RUA MSC	NRUA MSC	Wells Sampled	Never Exceeded	Historically Exceeded	Currently Exceed
1,1,2-Trichloroethane	5	5	129	121	8	1
1,2,4-Trimethylbenzene	15	62	57	56	1	1
1,2-Dichloroethane	5	5	129	119	10	1
1,4-Dioxane	6.4	32	124	120	4	1
Benzene	5	5	128	122	6	2
Bromomethane	10	10	128	124	4	0
Carbon tetrachloride	5	5	128	127	1	0
Chloromethane	30	30	128	127	1	0
Methyl Tert Butyl Ether	20	20	128	104	24	9
Methylene chloride	5	5	128	96	32	6
trans-1,2-Dichloroethene	100	100	132	129	3	2

The DEP should make clear that these *de minimis* COCs, whether in soil or groundwater, are minor in nature, are readily addressed under the proposed remedial approaches, and do not affect remedy selection for this Site. DEP should also make clear that many of these “data gaps” involve soil data that would be addressed by the developer via supplemental measures (investigative or remedial in nature) that would be required by DEP, EWT, and/or other governmental entities, if the Property is developed for residential use (see GC5, above).

- GC10 – The Primary COCs at the Site Are CVOCs, Not Inorganics.** The CVOCs at the Site are primarily sourced from the former Building 8 Vapor Degreaser Area (“VDA”)<sup>20</sup> and the former Drum Storage Area 3 (“DSA 3”). In the FS Report, the areas of Building 8 VDA and DSA 3 were expected to require soil source mitigation to reduce the residual source mass of CVOCs in the soil column. As discussed in GC1, the available soil and groundwater data supports a determination that soil source mitigation for CVOCs in the vicinity of Building 5 is not necessary to sustain MNA in groundwater on this portion of the Property.<sup>21</sup> In sum, CVOCs a) are sourced, in part, from the Property, b) are found in groundwater beneath the Property and off-Property, and c) are the primary COCs at the Site. By contrast, *inorganic* COCs a) are not present in soil to an extent requiring proposed remedial action (see GC1, above)<sup>22</sup>, b) are found in groundwater beneath the Property

<sup>19</sup> Consistent with prior discussions with DEP, the BT Team agreed that demonstration that these 11 VOCs are not COCs for the Site may take more work and time than simply including them as Site-related COCs and seeking an Act 2 release of liability for them. Because the BT Team shared DEP’s desire to complete the RI/FS process in a timely manner, it agreed to handle these 11 VOCs as Site-related COCs. As agreed with DEP, should this approach result in any remedial obligations that would not otherwise have been required (e.g., background MTBE found in groundwater), then the BT Team reserved its right to demonstrate why one or more COC is not Site-related.

<sup>20</sup> As described in the FS Report the term “Building 8 VDA” refers to a general area within and adjacent to the north side of Building 8 including the following features: a vapor degreaser and solvent distillery indoors, subsurface piping, and a solvent AST outside.

<sup>21</sup> Supplemental measures may be required of the developer with respect to unsaturated soils to safely allow a residential use (or open space) scenario for this Property.

<sup>22</sup> The soils source areas for inorganics proposed by GES and incorporated into the proposed remedial approach for inorganics in soil are not defensible or necessary, as previously described in GC1. This is based on the data, findings, and conclusions presented in the RIR and the FS Report as well as the supplemental inorganics data collected to address “data gaps”.

but not off-Property,<sup>23</sup> and c) are not impacting off-Property groundwater. Inorganics are not primary COCs at the Site, and no active remediation is required on the Property to address inorganics in groundwater off the Property. DEP's response to public comments should clarify that the primary COCs at the Site are CVOCs.

- **GC11 – Other “Sources” of COCs Have Been Identified at This Site.** In the AOA DEP uses the term “Source Property” without providing an adequate definition of its meaning. There have been releases on the Property, and there have been other documented, contributory sources of COCs within or immediately proximate to the “Site.” The term “Source Property”, if it refers solely to COCs released on the Property, should be clearly defined to exclude other known and unknown sources of COCs. It should also exclude natural background conditions (such as the presence of certain metals in soils) and upgradient conditions (such as MTBE in groundwater), as discussed in the RIR.

More importantly from a long-term remediation standpoint, the RIR identified additional off-Property source(s), unrelated to prior manufacturing operations on the Property, that are contributing CVOCs to the conditions identified at the Site.<sup>24</sup> The nature and extent of the additional source(s) are neither characterized nor the subject of any active DEP investigation. While they may not initially appear significant in terms of concentrations relative to other areas of the Site, it is important to note that a) more substantial concentrations not identified by this investigation as well as ongoing source(s) may be present, and b) the CVOCs from additional source(s) that are present in the downgradient portions of the Site may hinder a future demonstration of MNA in this area of the Site.

DEP's response to public comments should clearly define (or eliminate) the term “Source Property.” In addition, DEP should acknowledge that other known and unknown sources of COCs exist at and in the vicinity of the Site.

- **GC12 – The Agency for Toxic Substances and Disease Registry (“ATSDR”) Has Reached Important Conclusions that Should Be Communicated to the EWT Community.** In the risk evaluation portion of the AOA, DEP briefly summarized select findings from a Final July 16, 2008 Health Consultation for the Bishop Tube Site (“Health Consultation” or “Report”) prepared by ATSDR. The Health Consultation presented a number of findings and conclusions of potential interest to the EWT community. DEP's response to public comments should describe several of these important findings and conclusions as summarized below<sup>25</sup>.
  - No Current Public Health Hazard - ATSDR concludes that there is No Apparent Public Health Hazard for any current, completed exposure pathways associated with the Site. In addition, ATSDR concludes that, “based on the levels detected and the exposure pathways identified, we do not expect adverse health effects to result from children's exposure to TCE and other VOCs”. Further, Section 5.0 notes that “Off-site exposures to high concentrations of these contaminants [contrasting off-Property with on-Property conditions] are not expected at this

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<sup>23</sup> As described in the 2021 RIR, chromium (total and hexavalent), manganese, nickel, and fluoride were retained as COCs in groundwater based on monitoring well results on the Property, but monitoring wells located immediately to the north of the Property (i.e., off-site) did not have exceedances of these three metals or fluoride (with the exception of one well with manganese).

<sup>24</sup> Evidence of unrelated source(s) of CVOCs within and in the vicinity of the Site is presented in the RIR and summarized as follows: a) the tetrachloroethene (“PCE”) distribution observed in a soil gas survey completed on undeveloped parcels to the north of Lancaster Avenue; b) the PCE results for MW-58A reveal a marked increase in PCE concentrations as compared to numerous off-Property monitoring wells located between the Property and MW-58A; c) the PCE findings in a spring at a residential property on Winding Way; d) the findings of CVOCs in soil at a former dry cleaner in the shopping center east of Conestoga Road (no groundwater investigation was done); e) the finding of PCE only in piezometers PZ-8 and PZ-9 located north of LVC; and f) the PCE findings in a spring north of the former Worthington Steel property.

<sup>25</sup> The summary is derived from Roux's December 17, 2008 Comments on ATSDR's July 16, 2008 Health Consultation. The ATSDR's Health Consultation is listed in the DEP's proposed Administrative Record. The December 17, 2008 comment letter is listed in the proposed additions to the Administrative Record provided in Attachment A.

time. ATSDR does not expect adverse effects due to current or past exposures to these chemicals.”

- No Evidence of a “Cancer Cluster” - While some community members voiced concern to ATSDR about cancer in the neighborhood, ATSDR found no evidence of a cancer cluster in the vicinity of the Site. ATSDR includes an assessment of cancer outcomes within the proximate neighborhood of the Site from Pennsylvania Department of Health records, and reports that “state epidemiologists did not find increased cancer rates in areas surrounding the Site as compared to overall statewide cancer rates”. In addition, there is no known link between TCE exposure and brain cancer.<sup>26</sup> This important conclusion should be clearly communicated to the community.
- No Current Drinking Water Well Exposure - The Report correctly documents that the area in the vicinity of the Site is serviced by a public water supply, and that only one property uses a private well for its drinking water. That well, as reported by ATSDR (and proposed by DEP to be connected to public water as part of OU3), historically had a whole-house carbon treatment system that was sampled and maintained by DEP. As a result, the Site poses no drinking water risk.
- No Current Drinking Water Exposure via Surface Water or Springs - The Report notes that LVC and several natural springs are present in the general vicinity of the Site. PADEP had investigated the area and found no evidence that LVC or any of the identified springs are used as a drinking water source. ATSDR found no contrary information. In fact, the Report states “[t]he residential community within AOC 1 is served by public water and ATSDR is not aware of any residents using LVC or any of the natural springs in the area as a primary drinking water source”. DEP should communicate this important information to the EWT Community in its response to public comments.
- **GC13 – DEP Correctly Dismissed Hydraulic Control (“HC”) as a Viable Remedial Approach for the Site.** Some community members have suggested that DEP should consider the use of HC, possibly supplemental to other remedial approaches. For example, it has been suggested that HC should be employed as an anti-degradation measure for the tributary of LVC. This suggestion was made despite a recognition that it could significantly reduce base flow to the LVC tributary; it was then suggested that treated water could be discharged into the creek to replenish the base flow. In fact, the handling of treated groundwater would be difficult and costly, because neither discharge to a publicly owned treatment works (“POTW”) nor discharge to the LVC tributary is likely to be approved, and reinjection could also cause further dispersion of COCs. Additionally, treated water discharge to LVC could upset the natural ecosystem of LVC (e.g., due to changes in water temperature, pH, treatment byproducts).<sup>27</sup> The only other option would be transport of groundwater for offsite disposal via approximately 58 tanker trucks every day, for the next 30+ years.<sup>28</sup> As described more fully in the FS Report, the extraction, treatment, and discharge of recovered groundwater would be complex, energy-intensive and costly, and provide limited additional benefit (see potential limitations in footnote below)<sup>29</sup>.

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<sup>26</sup> Though potential effects on the brain have been extensively investigated (ATSDR, 2019), there has been no evidence that exposure to TCE is associated with the development of brain cancer. ATSDR, 2019. Toxicological Profile for Trichloroethylene. June, 2019. Accessed at: <https://www.atsdr.cdc.gov/toxprofiles/tp19.pdf>

<sup>27</sup> According to DEP, obtaining a permit to discharge to LVC may not be feasible or even possible. Similarly, EWT stated to DEP that they do not allow for any treated groundwater to be discharged into their sewer system.

<sup>28</sup> Based on, for example, on-Property pumping of 10 recovery wells at 20 gallons per minute each.

<sup>29</sup> Other implementation concerns include these: a) HC may alter the groundwater geochemistry in a manner that could reduce MNA at the Site, b) groundwater extraction and infiltration would modify groundwater flow and COC transport conditions, and may create undesirable conditions, including VI exposure routes, that do not currently exist, c) HC system construction could be a

In addition, and as described in GC6 above, BMPs were developed for this Site (with soil source control measures), in part at the direction of DEP, as an approach to address the anti-degradation ARAR for the LVC tributary and hasten remediation by minimizing offsite transport of COCs. These BMPs were included in all remedial alternatives in the FS Report. In its response to public comments, the DEP should explain to the EWT community that HC is not an appropriate or necessary remedy, either by itself or as a supplement to another remedial approach.

- **GC14 – There Are Revisions and Clarifications Necessary in “Section B. Site History” of the AOA to Correct Errors and Avoid Inaccuracies.** DEP provides a summary of the Site history in Section B of the AOA. As part of its response to public comments, the BT Team requests that DEP modify the Site history section of the AOA to correct those errors and inaccuracies, as noted below.
  - When the J. Bishop Company began manufacturing operations in the newly constructed Plant 5, it was solely for the production of stainless steel tubing. Precious metals processing was moved into a portion of Plant 5 in 1959, upon completion of Plant 8 construction. Transfer of some Plant 5 operations into Plant 8 made equipment and space available there for precious metals processing.
  - The two production wells on the Property met Safe Drinking Water Act standards in the early 1980s when sampled by the USGS. The East Well/CH2432 was tested in 1981, the West Well/CH2749 in 1984. Results are documented in a 2010 USGS report<sup>30</sup> (see Attachment A). The report documents that “samples near... industries were analyzed for selected metals; one or more types of anthropogenic organic compounds, including VOCs such as trichloroethylene (TCE)...” and the tabular and mapped results show that the two production wells on the Property had no detections of VOCs or other anthropogenic contaminants of concern. A few metals were detected at very low or background concentrations and fluoride was detected at 1.0 parts per million (“ppm”), below the USEPA 4.0 ppm drinking water standard.

It is worth noting that a DER inspection report in 1974 stated the two wells were pumped at 80 gpm / 18 hours per day<sup>31</sup>. Under those conditions, if there were detectable concentrations of VOCs or any other metals in the groundwater, they would have been identified.
  - The AOA states that according to former Bishop Tube employees, solvent waste was disposed “outside of the two buildings”. If solvent waste was disposed on the Property, employees reported no such occurrence when questioned in 1981. In 1981, Johnson Matthey interviewed some Christiana Metals employees who had worked at the Property since the 1960s to enable completion of a “Notification of Hazardous Waste Sites” report<sup>32</sup>. Employees recalled acid waste and non-EP toxic metals from stainless steel pickling as the only hazardous wastes discharged onsite. The report was submitted to US EPA in June 1981 by Johnson Matthey as past owner/operator of the Site, in compliance with CERCLA.
  - The AOA states that the Drum Storage Area (DSA or Armco building) was used to store raw (unused) and waste materials from 1963 until the mid-1990s, but DEP does not have any

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significant disruption to owners of the properties where the work would be completed, d) regulatory issues may arise related to the Resource Conservation and Recovery Act (“RCRA”) “contained-in” rules for potential F-listed groundwater to be reinjected, and e) anticipated matrix back diffusion effects.

<sup>30</sup> Groundwater-Quality Monitoring Program in Chester County, Pennsylvania, 1980–2008; Scientific Investigations Report 2010–5087; U.S. Department of the Interior, U.S. Geological Survey; Lisa A. Senior and Ronald A. Sloto. <https://pubs.usgs.gov/sir/2010/5087/pdf/sir2010-5087.pdf>. Pages 17, 22, 63, 66.

<sup>31</sup> Commonwealth of Pennsylvania, Department of Environmental Protection; ADMINISTRATIVE RECORD DOCKET, Bishop Tube, East Whiteland Township, Chester County, Remedial Response Action. 1974 DEP Microfiche files. Page 17.

<sup>32</sup> Ibid. June 25, 1985 Site Inspection of Bishop Tube Company prepared by NUS Corporation on behalf of the Environmental Protection Agency (“EPA”). Pages 153 and 155.

documentation to support the 1963 date. Documents in the Administrative Record establish that the Armco building was converted from equipment storage to a drum storage area near the end of 1982, sometime after a September 1, 1982 Pennsylvania Department of Environmental Resources (“PADER”) Site inspection. Before that, drums were stored inside the manufacturing facility and at an outside storage location that was *not* associated with the Armco building.

- The AOA states that a 40-foot long vapor degreaser (approximately 40' L x 4' W x 10'H) was located in an unlined, concrete subfloor pit in the western portion of Plant 8. Construction of the Plant 8 vapor degreaser is documented in the “Results of Soil Vapor Survey in the Degreaser Area At the Bishop Tube Facility, Frazer, Pennsylvania” (BCM, August 1990); Figure 2 shows the plan view and cross-section of the degreaser, installed on a 6-inch concrete foundation subfloor, 6 feet below grade, with concrete walls serving as secondary containment for the tank. The piping from the aboveground TCE tank is shown entering the concrete lined enclosure from its eastern side, 1.5 feet below grade and 4.5 feet above the subfloor of the bottom of the concrete lined enclosure. DEP’s statement that the degreaser was present in an “unlined” pit incorrectly implies that the degreaser was in a pit open to the environment.
- The AOA states that according to former Bishop Tube Employees and PADER inspection reports, acid rinse waters were discharged from a transfer pit immediately east of Plant 8 across the ground surface into LVC. The August 18, 1972 Waste Discharge Inspection Report documents that this situation occurred when a pump was broken; such discharges were not a routine or continuous practice. The inspection report also documents that a temporary sump pump was installed until the original pump could be repaired, and DEP records confirm that the pump was fixed and in operation on August 23, 1972.
- The AOA states that a PADER inspection report, performed under the RCRA on June 15, 1988, indicated that RCRA closure actions had been completed. This report documents that the inspection included the DSA and that Christiana Metals implemented a Closure Plan. There is no documentation in the Administrative Record of: 1) the closure actions taken by Christiana Metals, 2) the results of the soil sampling requested by PADER to document closure (or support soil removal), or 3) DSA Clean Closure approval by PADER prior to the June 15, 1988 inspection. This information should be placed in the Administrative Record, if it exists.
- The AOA states that starting in 1975, Christiana Metals supplied TCE and 1,1,1 TCA to the degreaser from a 5000-gallon AST through subfloor piping. The AOA further notes that according to Bishop Tube employees, solvent spills and leaks occurred in and near the Plant 8 vapor degreaser pit and at the AST, and that waste solvents and materials were disposed outside of the two buildings. The administrative record confirms that the volume of the solvent AST was 4000 gallons, not 5000 gallons. Despite being required by law, DEP records document that secondary containment was not installed for this AST until in or after 1986. Also, Christiana Metals employees have stated that the piping from the AST to the degreaser leaked, and the highest concentration of TCE in soil at the Site was from a sample designated to investigate this piping.
- **GC15 – Documents Should Be Added for a Complete Administrative Record for this Site.** DEP has provided a select set of documents in its Administrative Record for this Site<sup>33</sup>. This list of documents should be supplemented in order for the administrative record for this Site to be complete. Supplemental documents to be added to the Administrative Record are described below.

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<sup>33</sup> The DEP has provided the following link to access the proposed Administrative Record electronically: [https://files.dep.state.pa.us/RegionalResources/SERO/SEROPortalFiles/Community%20Info/Bishop%20Tube/2021%20Administrative%20Record/Bishop\\_Tube\\_Remedial\\_Response\\_AR-DOCKET.pdf](https://files.dep.state.pa.us/RegionalResources/SERO/SEROPortalFiles/Community%20Info/Bishop%20Tube/2021%20Administrative%20Record/Bishop_Tube_Remedial_Response_AR-DOCKET.pdf)



- All documents included in DEP's Administrative Record related to its Notice of Listing, PA Bulletin September 11, 2010 should be included in the current Administrative Record.
- All documents previously identified by Roux in a letter dated October 12, 2010 entitled Comments on Notice of Listing, PA Bulletin September 11, 2010 should be included in the current Administrative Record. While the October 12, 2010 letter itself is listed in the current Administrative Record, the index attached to this letter identified documents necessary to supplement the 2010 Administrative Record. These indexed documents should be included in the current Administrative Record. These documents were previously provided as a CD attachment to the letter.
- In addition to the above, other relevant current and historical documents need to be added to the Administrative Record. Attachment A includes an index of documents (Tables 1 and 2) for inclusion in the Administrative Record. These documents were previously obtained from or submitted to DEP. Should DEP identify any documents that the BT Team has proposed for addition to the Administrative Record that DEP does not have or cannot readily locate, please feel free to notify the undersigned and the BT Team will coordinate with DEP to provide electronic copies.
- Likewise, we request that DEP add to the Administrative Record any documents it may have regarding the closure of the Drum Storage Area, as referred to in the AOA.

The BT Team appreciates the opportunity to provide comments to DEP regarding the proposed remedial approach as described in the AOA and to request additions to the Administrative Record. Should you have any questions regarding these comments or need documents for the Administrative Record, we can be reached at 856-423-8800.

Sincerely,

**ROUX ASSOCIATES, INC.**



Gregory Martin, P.G.  
Principal Hydrogeologist



Thomas Patterson, P.E.  
Principal Engineer

cc: Richard Staron, PADEP  
Bonnie McClennen, PADEP  
Adam N. Bram, PADEP  
John Nagel, East Whiteland Township, Manager  
East Whiteland Township, EAC  
Bishop Tube Project Team

Table 1 – Administrative Record - Document Index

**Table 1. Administrative Index - Former Bishop Tube Site. East Whiteland Township, Pennsylvania.**

<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
<i>Progress Reports</i>			
12/05/2008	Progress Report 1	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
01/05/2009	Progress Report 2	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/17/2009	Progress Report 3	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/13/2009	Progress Report 4	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
04/15/2009	Progress Report 5	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
05/15/2009	Progress Report 6	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
06/15/2009	Progress Report 7	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
07/15/2009	Progress Report 8	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
08/13/2009*	Progress Report 9	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
09/15/2009	Progress Report 10	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/15/2009	Progress Report 11	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
11/16/2009	Progress Report 12	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
12/15/2009	Progress Report 13	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
01/15/2010	Progress Report 14	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/16/2010	Progress Report 15	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/15/2010	Progress Report 16	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
04/15/2010	Progress Report 17	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
05/17/2010	Progress Report 18	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
06/15/2010	Progress Report 19	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
07/15/2010	Progress Report 20	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
08/16/2010	Progress Report 21	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
09/16/2010	Progress Report 22	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/15/2010	Progress Report 23	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
11/15/2010	Progress Report 24	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
12/15/2010	Progress Report 25	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
01/17/2011	Progress Report 26	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/15/2011	Progress Report 27	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/15/2011	Progress Report 28	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
04/15/2011	Progress Report 29	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
05/16/2011	Progress Report 30	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
06/15/2011	Progress Report 31	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
07/15/2011	Progress Report 32	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
08/15/2011	Progress Report 33	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
9/15/2011**	Progress Report 34	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/17/2011	Progress Report 35	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
11/15/2011	Progress Report 36	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
12/15/2011	Progress Report 37	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
01/16/2012	Progress Report 38	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/15/2012	Progress Report 39	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/15/2012	Progress Report 40	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
04/16/2012	Progress Report 41	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
05/15/2012	Progress Report 42	G. Martin & R. Fisler - Roux	D. Armstrong - DEP

**Table 1. Administrative Index - Former Bishop Tube Site. East Whiteland Township, Pennsylvania.**

<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
06/15/2012	Progress Report 43	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
07/16/2012	Progress Report 44	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
08/16/2012	Progress Report 45	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
09/17/2012	Progress Report 46	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/15/2012	Progress Report 47	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
11/15/2012	Progress Report 48	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
12/17/2012	Progress Report 49	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
01/15/2013	Progress Report 50	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/15/2013	Progress Report 51	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/15/2013	Progress Report 52	G. Martin	D. Armstrong - DEP
04/15/2013	Progress Report 53	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
05/15/2013	Progress Report 54	G. Martin	D. Armstrong - DEP
06/17/2013	Progress Report 55	G. Martin	D. Armstrong - DEP
07/15/2013	Progress Report 56	G. Martin	D. Armstrong - DEP
08/15/2013	Progress Report 57	G. Martin	D. Armstrong - DEP
09/16/2013	Progress Report 58	G. Martin	D. Armstrong - DEP
10/15/2013	Progress Report 59	G. Martin	D. Armstrong - DEP
11/15/2013	Progress Report 60	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/13/2013	Progress Report 61	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2014	Progress Report 62	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/18/2014	Progress Report 63	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/17/2014	Progress Report 64	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/15/2014	Progress Report 65	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/15/2014	Progress Report 66	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/16/2014	Progress Report 67	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/15/2014	Progress Report 68	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/15/2014	Progress Report 69	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/15/2014	Progress Report 70	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/15/2014	Progress Report 71	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/17/2014	Progress Report 72	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/15/2014	Progress Report 73	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2015	Progress Report 74	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/17/2015	Progress Report 75	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/13/2015	Progress Report 76	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/15/2015	Progress Report 77	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/13/2015	Progress Report 78	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/15/2015	Progress Report 79	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/15/2015	Progress Report 80	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/14/2015	Progress Report 81	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/15/2015	Progress Report 82	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/15/2015	Progress Report 83	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/13/2015	Progress Report 84	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/15/2015	Progress Report 85	G. Martin & J. Kowalkoski	D. Armstrong - DEP

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<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
01/15/2016	Progress Report 86	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/15/2016	Progress Report 87	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/15/2016	Progress Report 88	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/15/2016	Progress Report 89	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/16/2016	Progress Report 90	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/15/2016	Progress Report 91	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/15/2016	Progress Report 92	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/15/2016	Progress Report 93	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/15/2016	Progress Report 94	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/17/2016	Progress Report 95	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/15/2016	Progress Report 96	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/15/2016	Progress Report 97	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/16/2017	Progress Report 98	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/15/2017	Progress Report 99	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/15/2017	Progress Report 100	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/17/2017	Progress Report 101	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/15/2017	Progress Report 102	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/15/2017	Progress Report 103	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/17/2017	Progress Report 104	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/15/2017	Progress Report 105	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/15/2017	Progress Report 106	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/16/2017	Progress Report 107	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/15/2017	Progress Report 108	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/15/2017	Progress Report 109	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2018	Progress Report 110	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/15/2018	Progress Report 111	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/15/2018	Progress Report 112	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/16/2018	Progress Report 113	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/15/2018	Progress Report 114	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/15/2018	Progress Report 115	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/16/2018	Progress Report 116	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/15/2018	Progress Report 117	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/17/2018	Progress Report 118	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/15/2018	Progress Report 119	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/15/2018	Progress Report 120	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/17/2018	Progress Report 121	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2019	Progress Report 122	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/15/2019	Progress Report 123	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/15/2019	Progress Report 124	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/15/2019	Progress Report 125	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/15/2019	Progress Report 126	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/17/2019	Progress Report 127	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/15/2019	Progress Report 128	G. Martin & J. Kowalkoski	D. Armstrong - DEP

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Date	Title/Subject	Author	Recipient
08/15/2019	Progress Report 129	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/16/2019	Progress Report 130	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/15/2019	Progress Report 131	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/15/2019	Progress Report 132	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/16/2019	Progress Report 133	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2020	Progress Report 134	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/17/2020	Progress Report 135	G. Martin & J. Kowalkoski	D. Armstrong - DEP
03/16/2020	Progress Report 136	G. Martin & J. Kowalkoski	D. Armstrong - DEP
04/15/2020	Progress Report 137	G. Martin & J. Kowalkoski	D. Armstrong - DEP
05/15/2020	Progress Report 138	G. Martin & J. Kowalkoski	D. Armstrong - DEP
06/15/2020	Progress Report 139	G. Martin & J. Kowalkoski	D. Armstrong - DEP
07/15/2020	Progress Report 140	G. Martin & J. Kowalkoski	D. Armstrong - DEP
08/17/2020	Progress Report 141	G. Martin & J. Kowalkoski	D. Armstrong - DEP
09/15/2020	Progress Report 142	G. Martin & J. Kowalkoski	D. Armstrong - DEP
10/15/2020	Progress Report 143	G. Martin & J. Kowalkoski	D. Armstrong - DEP
11/16/2020	Progress Report 144	G. Martin & J. Kowalkoski	D. Armstrong - DEP
12/15/2020	Progress Report 145	G. Martin & J. Kowalkoski	D. Armstrong - DEP
01/15/2021	Progress Report 146	G. Martin & J. Kowalkoski	D. Armstrong - DEP
02/15/2021	Progress Report 147	G. Martin & S. Redding	D. Armstrong - DEP
03/15/2021	Progress Report 148	G. Martin & S. Redding	D. Armstrong - DEP
04/15/2021	Progress Report 149	G. Martin & S. Redding	D. Armstrong - DEP

\* = Progress Report 9 was incorrectly dated as July 13, 2009. Correct date is August 13,2009.

\*\* = Progress Report 34 was incorrectly dated as October 17, 2011. Correct date is September 15, 2011.

ATSDR Associated Information

07/16/2008	ATSDR's Health Consultation, Bishop Tube Site, East Whiteland Township, Chester County, Pennsylvania	R. Helverson - ATSDR	--
12/17/2008	Comments on ATSDR's July 16, 2008 Health Consultation, Bishop Tube Site, East Whiteland Township, Chester County, Pennsylvania	G. Martin & D. Kmetzo - Roux	R. Helverson - ATSDR
04/06/2016	ATSDR's Letter to Est Whiteland Township, Frazer, Pennsylvania	R. Helverson - ATSDR	J. Nagel - Township Manager

IAQ Letters

04/30/2009	Indoor Air Sampling Results - 92 Village Way	G. Martin & R. Fisler - Roux	L. Hitchcock
04/30/2009	Indoor Air Sampling Results - 95 Village Way	G. Martin & R. Fisler - Roux	S. Connor
04/30/2009	Indoor Air Sampling Results - 97 Village Way	G. Martin & R. Fisler - Roux	J. Jones
04/30/2009	Indoor Air Sampling Results - 10 Winding Way	G. Martin & R. Fisler - Roux	A. Juliano
08/31/2009	Indoor Air and Sump Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
09/30/2009	Follow-Up Indoor Air Quality Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
11/04/2009	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
12/14/2009	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
01/12/2010	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
02/16/2010	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren

**Table 1. Administrative Index - Former Bishop Tube Site. East Whiteland Township, Pennsylvania.**

<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
02/16/2010	Indoor Air Sampling Results - 10 Winding Way	G. Martin & R. Fisler - Roux	A. Juliano
06/28/2010	Indoor Air Sampling Results - 39 Conestoga Road	G. Martin & R. Fisler - Roux	G. Grillet - Peoples Light
06/28/2010	Indoor Air Sampling Results - 172 Lancaster Avenue	G. Martin & R. Fisler - Roux	C. Rokke - Taylor Rental
06/28/2010	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
06/28/2010	Radon Test Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
10/15/2010	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
02/14/2011	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
05/16/2011	Follow-Up Indoor Air Sampling Results - 172 Lancaster Avenue	G. Martin & R. Fisler - Roux	C. Rokke - Taylor Rental
05/13/2013	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
05/13/2013	Indoor Air Sampling Results - 154 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	V. Pellegrini
05/13/2013	Indoor Air Sampling Results - 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
06/17/2013	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
06/17/2013	Indoor Air Sampling Results - 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
06/17/2013	Radon Test Results - 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
06/17/2013	Indoor Air Sampling Results - 154 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	V. Pellegrini
05/04/2015	Indoor Air, Radon and Sump Sampling Results - 97 Village Way	G. Martin - Roux	J. Jones
06/29/2015	Indoor Air and Sump Sampling Results - 97 Village Way	G. Martin - Roux	J. Jones
10/12/2015	Follow-Up to Indoor Air and Sump Sampling Activities - 97 Village Way	G. Martin - Roux	J. Jones
02/16/2017	Indoor Air Sampling Results - 97 Village Way	G. Martin - Roux	J. Jones
02/16/2017	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin - Roux	B. Warren
02/16/2017	Indoor Air Sampling Results - 154 Lancaster Avenue	G. Martin - Roux	V. Pellegrini
04/11/2017	Indoor Air Sampling Results - 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow
04/11/2017	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
04/11/2017	Indoor Air Sampling Results - 154 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	V. Pellegrini
04/11/2017	Indoor Air Sampling Results - 160 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	R. Funk - Uhler's Seed & Feed
02/23/2018	Indoor Air Sampling Results - 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
02/23/2018	Indoor Air Sampling Results - 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow
02/23/2018	Indoor Air Sampling Results - 160 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	R. Funk - Uhler's Seed & Feed
04/26/2018	Indoor Air Sampling Results - 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow
<b><u>Groundwater Sampling Letters</u></b>			
01/14/2010	Groundwater Sampling Results - 184 Lancaster Avenue	G. Martin & R. Fisler - Roux	C. Diorio - Univ. Plumbing
01/14/2010	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & R. Fisler - Roux	R. Gerlach
02/03/2010	Groundwater Sampling Results - 39 Conestoga Road	G. Martin & R. Fisler - Roux	G. Grillet - Peoples Light
02/03/2010	Groundwater Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
02/03/2010	Groundwater Sampling Results - 134 Lancaster Avenue	G. Martin & R. Fisler - Roux	E. Kalemjian - Kalemjian, Inc
02/03/2010	Groundwater Sampling Results - 140 Lancaster Avenue	G. Martin & R. Fisler - Roux	J. Fooskas - NBM
02/03/2010	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & R. Fisler - Roux	C. Rokke - Taylor Rental
02/03/2010	Groundwater Sampling Results - 209 Lancaster Avenue	G. Martin & R. Fisler - Roux	Phanlam LLC
01/13/2011	Former Production Wells- Groundwater Sampling Results	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/09/2012	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & R. Fisler - Roux	R. Gerlach
10/15/2012	Groundwater Sampling Results - 54 Conestoga Road	G. Martin & R. Fisler - Roux	B. Warren
10/15/2012	Groundwater Sampling Results - 140 Lancaster Avenue	G. Martin & R. Fisler - Roux	J. Fooskas - NBM

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<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
10/15/2012	Groundwater Sampling Results – 152 Lancaster Avenue	G. Martin & R. Fisler - Roux	D. Kuranuruk
10/15/2012	Groundwater Sampling Results – 83 Village Way	G. Martin & R. Fisler - Roux	N. Rodkey
12/19/2014	Groundwater Sampling Results – 30 Conestoga Road	G. Martin & J. Kowalkoski - Roux	R. Gerlach
12/19/2014	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	G. Grillet - Peoples Light
12/19/2014	Groundwater Sampling Results – 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
12/19/2014	Groundwater Sampling Results – 75 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	T. Morelli - Morelli Rental
12/19/2014	Groundwater Sampling Results - 140 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	J. Fooskas - NBM
12/19/2014	Groundwater Sampling Results – 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
12/19/2014	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	C. Rokke - Taylor Rental
12/19/2014	Groundwater Sampling Results – 191 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	J. Cavalati
12/19/2014	Groundwater Sampling Results – 83 Village Way	G. Martin & J. Kowalkoski - Roux	N. Rodkey
01/16/2015	Basement Sump Sampling Results - 97 Village Way	G. Martin - Roux	J. Jones
05/04/2015	Potable Well Sampling Information – 54 Conestoga Road	G. Martin - Roux	B. Warren
04/11/2017	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & J. Kowalkoski - Roux	R. Gerlach
04/11/2017	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow - People's Light
04/11/2017	Groundwater Sampling Results- 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
04/11/2017	Groundwater Sampling Results – 75 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	T. Morelli - Morelli Rental
04/11/2017	Groundwater Sampling Results – 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
04/11/2017	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	C. Rokke - Taylor Rental
05/11/2017	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & J. Kowalkoski - Roux	R. Gerlach
05/11/2017	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow - People's Light
05/11/2017	Groundwater Sampling Results – 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
05/11/2017	Groundwater Sampling Results – 75 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	T. Morelli - Morelli Rental
05/11/2017	Groundwater Sampling Results – 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
05/11/2017	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	C. Rokke - Taylor Rental
04/26/2018	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow - People's Light
04/26/2018	Groundwater Sampling Results - 49 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	S. Forsey - Real Estate Counsel
04/26/2018	Groundwater Sampling Results - 50 Morehall Road	G. Martin & J. Kowalkoski - Roux	S. Newman - Liberty Property
10/22/2018	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & J. Kowalkoski - Roux	R. Gerlach
10/22/2018	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & J. Kowalkoski - Roux	C. Brastow - People's Light
10/22/2018	Groundwater Sampling Results – 54 Conestoga Road	G. Martin & J. Kowalkoski - Roux	B. Warren
10/22/2018	Groundwater Sampling Results - 49 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	S. Forsey - Real Estate Counsel
10/22/2018	Groundwater Sampling Results – 75 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	T. Morelli - Morelli Rental
10/22/2018	Groundwater Sampling Results - 152 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	D. Kuranuruk
10/22/2018	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & J. Kowalkoski - Roux	C. Rokke - Taylor Rental
10/22/2018	Groundwater Sampling Results - 50 Morehall Road	G. Martin & J. Kowalkoski - Roux	S. Newman - Liberty Property
08/24/2021	Groundwater Sampling Results - 30 Conestoga Road	G. Martin & S. Redding - Roux	D. Boucher - Gervasi LLC
08/24/2021	Groundwater Sampling Results- 39 Conestoga Road	G. Martin & S. Redding - Roux	C. Brastow - People's Light
08/24/2021	Groundwater Sampling Results – 54 Conestoga Road	G. Martin & S. Redding - Roux	C. Leon
08/24/2021	Groundwater Sampling Results - 49 Lancaster Avenue	G. Martin & S. Redding - Roux	G. Zee - Real Estate Counsel
08/24/2021	Groundwater Sampling Results – 75 Lancaster Avenue	G. Martin & S. Redding - Roux	T. Morelli - Morelli Rental
08/24/2021	Groundwater Sampling Results - 140 Lancaster Avenue	G. Martin & S. Redding - Roux	J. Fooskas - NBM
08/24/2021	Groundwater Sampling Results - 152 Lancaster Avenue	G. Martin & S. Redding - Roux	D. Kuranuruk



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<b>Date</b>	<b>Title/Subject</b>	<b>Author</b>	<b>Recipient</b>
08/24/2021	Groundwater Sampling Results - 172 Lancaster Avenue	G. Martin & S. Redding - Roux	C. Rokke - Taylor Rental
08/24/2021	Groundwater Sampling Results - 50 Morehall Road	G. Martin & S. Redding - Roux	C. Collins - Capital Advisors
12/10/2021	Potable Well Sampling Information – 54 Conestoga Road November 9, 2021	G. Martin & S. Redding - Roux	D. Armstrong - DEP
01/07/2022	Potable Well Sampling Information – 54 Conestoga Road November 9, 2021	G. Martin & S. Redding - Roux	C. Leon
<i>Reports and Related Correspondence</i>			
02/17/2009	Remedial Investigation Work Plan - Former Bishop Tube Property	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
02/25/2009	DEP's Expedited Comments on February 2009 RIWP	D. Armstrong - DEP	R. Fisler - Roux
03/09/2009	DEP's Comments on Remaining Portions of the February 2009 RIWP	D. Armstrong - DEP	R. Fisler - Roux
03/11/2009	Response to DEP's Expedited Review Letter dated February 25,2009	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
03/16/2009	DEP Approval to Proceed with Stream Study and Indoor Air Sampling Activities	D. Armstrong - DEP	R. Fisler - Roux
04/09/2009	Response to DEP Comment on Remaining Portions of February 2009 RIWP	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
04/19/2009	DEP Final Approval of February 2009 RIWP	D. Armstrong - DEP	R. Fisler - Roux
12/30/2009	Shallow Groundwater Investigation - Interim Letter Report	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
10/12/2010	Comments on Notice of Listing	G. Martin - Roux	D. Armstrong - DEP
12/09/2010	Remedial Investigation Report (Period of March 2009 to November 2010)	G. Martin - Roux	D. Armstrong - DEP
06/29/2011	Supplemental Remedial Investigation Work Plan	G. Martin & M. Gonshor & R. Fisler - Roux	D. Armstrong - DEP
02/17/2012	Preliminary Results of Ongoing Microcosm Study	G. Martin & A. Cutting & R. Fisler - Roux	D. Armstrong - DEP
12/07/2012	Remedial Investigation Conceptual Work Plan	G. Martin & R. Fisler - Roux	D. Armstrong - DEP
12/07/2012	Treatability Study Conceptual Work Plan	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
03/08/2013	2013 Remedial Investigation Work Plan Addendum	G. Martin - Roux	D. Armstrong - DEP
08/15/2014	Treatability Study Work Plan	R. Chimchirian & T. Patterson - Roux	D. Armstrong - DEP
08/31/2015	Remedial Investigation Report	G. Martin - Roux	D. Armstrong - DEP
10/09/2015	Treatability Study Completion Report	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
07/29/2016	Feasibility Study Work Plan dated July 29, 2016	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
12/16/2016	FSWP Addendum and Revised Schedule	G. Martin - Roux	D. Armstrong - DEP
03/31/2017	Preliminary Feasibility Study Screening Memorandum	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
05/31/2017	Supplemental Remedial Investigation Work Plan	G. Martin & J. Kowalkoski - Roux	D. Armstrong - DEP
03/01/2019	Modeling Work Plan	G. Martin & J. Kowalkoski - Roux	D. Armstrong - DEP
06/10/2019	Remedial Investigation Report	G. Martin & J. Kowalkoski - Roux	D. Armstrong - DEP
06/17/2019	Feasibility Study Report	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
12/16/2020	Additional Soil Investigation – Building 5 Area Memorandum	G. Martin & J. Kowalkoski & S. Redding - Roux	D. Armstrong - DEP
12/18/2020	Feasibility Study Addendum, Remedial Alternative #8 – Basis of Design Memorandum	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
01/13/2021	Remedial Investigation Report	G. Martin & J. Kowalkoski - Roux	D. Armstrong - DEP
01/13/2021	Feasibility Study Report	G. Martin & T. Patterson - Roux	D. Armstrong - DEP
08/24/2021	Soil Investigation for Certain Inorganic Constituents, Groundwater Investigation for VOCs and Certain Inorganic Constituents Memorandum	G. Martin & S. Redding - Roux	D. Armstrong - DEP
01/28/2022	Recent Regulatory Updates and Laboratory Data Package Correction	G. Martin & S. Redding - Roux	D. Armstrong - DEP
<i>Additional Historical Documents</i>			
June-August 1978	Chemclene receipts for purchase and disposal of chemicals	Chemclene Corporation	–
12/15/1983	Drawing B-4080 Proposed TCE Storage Tank Containment	Unknown	–
05/15/1986	DER Comments on TCE storage tank secondary containment design	Lawrence H. Lusk - DER	Miers C. Johnson - Bishop Tube Company

**Table 1. Administrative Index - Former Bishop Tube Site. East Whiteland Township, Pennsylvania.**

Date	Title/Subject	Author	Recipient
07/01/1986	Closure Plan (For Change of Status from Storage Facility to Generator) prepared by Bishop Tube Company July 1, 1986 with 7/3/86 transmittal letter and preceding communications on subject Plan Including: 1/24/1986 DER internal review of Module 9 and 10 of Hazardous Waste Part B Application; 2/7/1986 DER comments to Bishop Tube Co., re: Hazardous Waste Part B Application; 3/23/1986 Hazardous Waste Manifest (Waste Corrosive Liquid); 4/4/1986 Bishop Tube Co., letter to DER Re: Withdrawal of Part "B" Application, PAD 081868309; 4/10/1986 Certificate of Insurance for Christiana Metals Corp., from Liberty Mutual; 4/11/1986 transmittal of revised Cleanup Plan to DER (and revised plan dated 4/11/1986); 4/15/1986 DER Internal comms re: design drawings for secondary containment system TCE tank; 4/23/1986 Hazardous Waste Manifest (waste TCE); 4/29/1986 DER Letters to Bishop Tube Co., East Whiteland Township, Re: Receipt of Closure Plan; 5/2/1986 Public Notice of Receipt of a Hazardous Waste Facility Closure Plan; 5/9/1986 DER hazardous waste violation letter to Bishop Tube Co.; 5/15/1986 DER review of Proposed Secondary Containment System for TCE Tank; 5/27/1986 Bishop Tube Co., response to DER Comments on RCE Tank Secondary Containment; 5/30/1986 DER review of Closure Plan; 6/5/1986 DER Comments on Closure Plan; 6/7/86 hazardous waste manifest (Waste Pickle Liquid & Rinsewater)	Miers C. Johnson - Bishop Tube Company	Lawrence H. Lusk - DEP
02/01/1988	Groundwater Quality Investigation for Bishop Tube Company	BCM	-
05/01/1988	Groundwater Quality Investigation for Bishop Tube Company	BCM	-
05/15/1989	Results of Soil Vapor Survey Bishop Tube Corporation	BCM	Craig Fuller - Christiana Metals Corp.
06/01/1989	Groundwater Remediation Work Plan w/ 6/26/89 transmittal letter	BCM	Craig Fuller - Christiana Metals Corp.
10/06/1989	DER Internal Memo re: review of BCM 5/15 and 6/26 1989 reports entitled, "Results of Soil Vapor Survey" and "Groundwater Remediation Work Plan" respectively	Robert E. Day-Lewis - DEP	Steve O'Neil - DEP
1990	Geohydrology and Simulation of Ground-Water Flow in the Carbonate Rocks of the Valley Creek Basin, Eastern Chester County, Pennsylvania (WRIR 89-4169)	Ronald A. Sloto - USGS	-
08/01/1990	Results of Soil Vapor Survey in the Degreaser Area	BCM	-
12/04/1991	Summary of Quarterly Groundwater Monitoring Results Christiana Metals Corporation	BCM	Robert Day-Lewis - DEP
01/13/1993	Storage System Report Form	Stephen Brown - DEP	-
03/31/1994	Semi Annual Inspection Verification Report for Major Facilities	DEP	-
06/01/1994	Preparedness, Prevention, and Contingency Plan for Damascus-Bishop Tube Company, Inc	BCM	JoAnn Dolchak - DEP on 9/7/1994
08/21/1995	Phase I Environmental Assessment of Damascus-Bishop Tube Company, Inc. -DRAFT	Smith Environmental Technologies Corporation	-
12/21/1995	Recommendations to Plug Back Depp Wells- Christiana Metals Corporation/Bishop Tube Facility	Smith Environmental Technologies Corporation	John MacAleese, Esq. - Morgan, Lewis & Bockius
01/29/1996	Status Report Christiana Metals Corporation/Bishop Tube Facility	Smith Environmental Technologies Corporation	Jami Wintz McKeon, Esq. - Morgan, Lewis & Bockius
02/20/1996	Data Requested During February 8, 1996 Meeting Christiana Metals Corporation/Bishop Tube Facility	Smith Environmental Technologies Corporation	John MacAleese, Esq. - Morgan, Lewis & Bockius
09/01/1998	Site Characterization and Interim Remedial Action Plan and 9/1/98 transmittal letter to PADEP	O'Brien & Gere Engineers, Inc.	Dustin Armstrong - DEP
2010	Groundwater Quality Monitoring Program in Chester County, Pennsylvania, 1980-2010 (SIR 2010-5087)	Lisa A. Senior and Ronald A. Sloto - USGS	-
<u>Additional Documents Related to No. 525 MD 2017</u>			
01/04/2022	Miscellaneous Docket Sheet, Docket Number 525 MD 2017	Commonwealth Court of Pennsylvania, Electronic Access	-
11/08/2017	Delaware Riverkeeper Network Petition for Review (525 MD 2017)	Deanna K. Tanner, Esq. - Delaware Riverkeeper Network	Commonwealth Court of Pennsylvania
10/01/2020	Delaware Riverkeeper Memorandum of Law for Partial Summary Relief (525 MD 2017)	Deanna K. Tanner, Esq. - Delaware Riverkeeper Network	Commonwealth Court of Pennsylvania
11/23/2020	PADEP Brief in Support of Answer to Petitioners' Motion for Partial Summary Relief (525 MD 2017)	Adam N. Bram, Esq. - DEP	Commonwealth Court of Pennsylvania

Table 2 – Administrative Record - Aerial Index

**Table 2. Administrative Index - Aerial Photographs Former Bishop Tube Site.  
East Whiteland Township, Pennsylvania.**

Aerial Year	Aerial Date	Aerial Source
1937	9/18/1937	Penn Pilot
1937	9/18/1937	Penn Pilot/USDA
1937	11/4/1937	Penn Pilot/USDA
1946	11/5/1946	USDA
1951	4/21/1951	EarthExplorer
1951	4/21/1951	EarthExplorer
1951	4/21/1951	EarthExplorer
1951	4/21/1951	EarthExplorer
1951	4/21/1951	EarthExplorer
1958	6/7/1958	USDA
1958	6/7/1958	USDA
1959	-	DVRPC
1959	10/19/1959	EarthExplorer
1959	10/19/1959	EarthExplorer
1964	5/21/1964	USDA
1965	-	DVRPC
1965	3/31/1965	EarthExplorer
1965	3/31/1965	EarthExplorer
1968	5/7/1968	EarthExplorer
1968	5/7/1968	EarthExplorer
1968	5/7/1968	EarthExplorer
1968	5/7/1968	EarthExplorer
1968	5/7/1968	EarthExplorer
1968	5/7/1968	EarthExplorer
1969	9/14/1969	EarthExplorer
1969	9/14/1969	EarthExplorer
1970	-	DVRPC
1970	9/23/1970	EarthExplorer
1970	9/23/1970	EarthExplorer
1970	9/23/1970	EarthExplorer
1971	7/5/1971	pennpilot/USDA
1971	7/5/1971	pennpilot/USDA
1973	2/13/1973	Keystone
1973	2/13/1973	Keystone
1975	-	DVRPC
1980	4/23/1980	USDA
1980	-	DVRPC
1981	4/10/1981	EarthExplorer-NHAP
1981	4/10/1981	EarthExplorer-NHAP
1981	5/8/1981	EarthExplorer-NHAP
1981	5/8/1981	EarthExplorer-NHAP
1981	5/8/1981	EarthExplorer-NHAP
1982	3/28/1982	EarthExplorer-NHAP
1985	-	DVRPC
1987	9/4/1987	EarthExplorer-NAPP
1987	9/4/1987	EarthExplorer-NAPP
1987	9/4/1987	EarthExplorer-NAPP
1988	3/6/1988	Keystone

**Table 2. Administrative Index - Aerial Photographs Former Bishop Tube Site.  
East Whiteland Township, Pennsylvania.**

Aerial Year	Aerial Date	Aerial Source
1988	10/31/1988	Keystone
1990	–	DVRPC
1990	9/7/1990	Keystone
1992	3/29/1992	EarthExplorer-DOQ
1992	3/29/1992	EarthExplorer-NAPP
1992	3/29/1992	EarthExplorer-NAPP
1992	3/29/1992	EarthExplorer-NAPP
1995	1/31/2022	Keystone
1995	3/18/1995	EarthExplorer
1995	3/18/1995	EarthExplorer
1995	3/18/1995	EarthExplorer
1995	3/18/1995	EarthExplorer
1995	–	DVRPC
1999	4/14/1999	EarthExplorer-DOQ
1999	4/14/1999	EarthExplorer-NAPP
1999	4/14/1999	EarthExplorer-NAPP
1999	4/14/1999	EarthExplorer-NAPP
2000	–	DVRPC
2001	3/28/2001	Keystone
2002	5/1/2002	EarthExplorer-USGS
2003	4/21/2003	Keystone
2004	8/9/2004	EarthExplorer-NAIP/USDA
2005	4/4/2005 to 4/10/2005	PASDA, DVRPC
2008	8/5/2008	EarthExplorer-NAIP/USDA
2008	3/17/2008	EarthExplorer-DCNR
2008	4/1/2008	EarthExplorer-DCNR
2010	4/10/2010	EarthExploroer-Hi Res
2010	7/2/2010	EarthExplorer-NAIP/USDA
2010	3/27/2010 to 4/23/2010	PASDA, DVRPC
2013	6/5/2013	EarthExplorer-NAIP/USDA
2015	8/15/2015	EarthExplorer-NAIP/USDA
2015	4/2/2015 or 4/18/2015	PASDA, DVRPC
2017	6/9/2017	EarthExplorer-NAIP/USDA
Various	8/24/2018	EDR

**Notes:**

– = Not applicable or not known.