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September 26, 2024

Town of Ledyard
Planning & Zoning Commission
741 Colonel Ledyard Highway
Ledyard, CT 06339-1511

Attn: Tony Capon, Chairman Planning and Zoning Commission

RE: Response to September 10, 2024, Correspondence from Trinkaus Engineering, LLC
Gales Ferry Intermodal
1761 and 1737 Route 12, Gales Ferry, Connecticut
Commission Number 45JC206

Dear Mr Capon,

On behalf of our client, Gales Ferry Intermodal, LLC, Loureiro Engineering Associates Inc. (LEA) has prepared this letter in response the correspondence from Trinkaus Engineering, LLC (Trinkaus), dated September 10, 2024. This document maintains the same numeric assignment as the Trinkaus correspondence and presents the comments in italic followed by LEA's response in vertical roman text. Revised plans and Stormwater Management Report are attached to this letter response.

Exhibit #1 – Application and Supporting Documentation

1. *No comments on this Exhibit.*

   Response: Noted

Exhibit #2 – Revised Site Plans

Sheet C-1

2. *Under Survey Notes, it is stated that wetlands were delineated by JMM Wetland Consulting and other wetlands were taken from mapping by CMA. Which wetlands were delineated by JMM versus those taken from CMA? When were the wetlands by CMA delineated? Were the CMA wetland boundaries inspected in the field? If not, how do we know the boundaries are valid?*

   Response: A description of the location of the wetlands as noted in Survey Note 7, on Sheet 2 of 17, has been added to the note to distinguish the wetlands marked by JMM Wetland

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Consulting Services and located by Loureiro Engineering Associate and those located from electronic data from CMA.

3. *The well depth groundwater data table only shows a singular reading in the three cited wells. To determine the steady state groundwater level, weekly monitoring must be done during the defined wet season of February 1 to May 31. This has not been done which means the groundwater levels could be significantly different than stated on this sheet.*

   Response: The monitoring wells shown on the Well Depth Groundwater Table are for the latex landfill area. The wetlands created by the latex landfill are to be mitigated in agreement with the Town per the Wetland mitigation Plan Sheets 11 and 12 of 17 and are therefore simply indicative. Additional dates have been added to the Well Depth Groundwater Data Table.

Class A-2 Survey Maps by CME Associates, Inc

4. *No wetland flags as set by a soil scientist are shown on these maps. All wetlands delineated by a soil scientist must be located by a licensed land surveyor and shown on the Class A-2 map of the site.*

   Response: The wetland flags do not have to be on an A-2 Survey. They are shown accurately on the civil plan drawings where needed.

5. *The soil scientists have not signed these map sheets confirming the accuracy of their delineation.*

Response: Wetland impacts are being fully mitigated and that mitigation has been approved by the town's Inland Wetlands and Watercourses Commission.

Sheet C-3: Site Preparation Plan

6. *A singular 18" mulch sock is shown at the base of the proposed work area. A single erosion control measure is inadequate for a project of this size.*

   Response: The processing area has down-gradient double row of 18" mulch socks coupled with forebay settling areas at the low-points to mitigate sediment. In response to this comment, we have added additional soil erosion and sediment control improvements to the active excavation areas as well, as presented for phase 1 and as applicable to the later phases of the project.

7. *No labeling is shown on the plan to define what the heavy dashed lines represent on the plan.*

   Response: The bold dashed lines represent limits for the five (5) phases of work. Labels have been added to identify the phases.

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Sheet C-4: Overall Site Plan

8. *Six post-development water quality basins are shown on this plan. None of the contours are labeled for the post-development basins, so it is not possible to determine the storage volumes of the basins.*

   Response: Detailed information for new stormwater features is intentionally not shown on the Overall Site Plan. See C-5 Grading and Drainage plan for detailed stormwater management information.

9. *It cannot be determined from the plans what type of stormwater basin is being proposed here and whether the basin design conforms to the CT DEP 2024 Storm Water Quality Manual.*

   Response: Information on type, elevations, and outlets of the water quality basins can be found in "Stormwater Management Report". A detail for water quality basins has been added to Drawing C-8.

10. *Outlet structures are shown for the six basins, but no elevation information has been provided for them.*

    Response: Detailed information for new stormwater features is intentionally not shown on the Overall Site Plan. Outlet control structure information is shown on Drawing C-5.

11. *There is no information on the structure and pipe system from the six basins.*

    Response: Detailed information for new stormwater features is intentionally not shown on the Overall Site Plan. As the Overall Site Plan shows only at or above-grade features for clarity, pipes are no longer shown on this drawing. Manhole and pipe information has been added on Drawing C-5.

12. *Only one of the water quality basins is labeled. All basins must be labeled.*

    Response: Only the layout and locations of the stormwater quality basins are intended to be shown on the Overall Site Plan. The callout labelling the water quality basin indicates it is typical of the six new water quality basins. This is the overall Site Plan, the basins are individually labeled on sheet C-5 Grading and Drainage. See sheet C-5 Grading and Drainage plan for detailed basin information.

13. *None of the proposed contours are labeled on this sheet.*

    Response: Contour labels have been added to the Overall Site Plan.

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Sheet C-5: Grading and Drainage Plan

14. *In Phase I, Water Quality Basin #6 is called out with a bottom of pond at elevation 14.0', however, the existing grade in this basin is 70' to 90'. As Basin #6 is to be used as a temporary sediment basin, how will this be constructed?*

    Response: New water quality basins are to be part of the final topography of the site, meaning their elevations that are called out are in relation to final contours.

    Temporary sediment basins will initially be constructed at the start of each phase activity. Temporary sediment basin elevations will be intermittently lowered over the course of work to correspond to working elevations of the phase. The temporary sediment basins will be converted to water quality basins upon stabilization of all contributing area.

15. *According to the plan the proposed 20' contour bisects Water Quality Basin #6 which is incorrect with the bottom of the basin at elevation 14'.*

    Response: In addition to the labels indicating the basin shape, the simple representations of the basins has been replaced and now shows the individual contours.

16. *A similar condition noted in #52 above exists for all other Water Quality Basins. If this information is in error, it begs the question what else is not correct.*

    Response: See comment responses 14 and 15 above.

17. *No emergency spillways are provided for all water quality basins. Emergency spillways are required for all types of stormwater management basins.*

    Response: Spillway information is included in the Sediment Basin Detail included on Drawing C-8 in the plan set. The emergency spillways are now shown in plain view.

18. *No contours are provided for the temporary sediment basins, so the required volumes cannot be verified.*

    Response: See comment response 15 above. Additionally, the stormwater report has additional design detail.

19. *Only permanent outlet control structures are called out for the proposed water quality basins and no information is provided for the outlet structure of the temporary sediment basins, including location of outlet structure and discharge piping.*

    Response: The temporary outlet design is shown in the Sediment Basin Detail included on Drawing C-8 in the plan set.

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20. *All the basins will have a ponded depth of 0.1' based upon the invert of the low flow outlet. A depth of 0.1' will not contain the required WQV for the contributing area as discussed above which must be "captured and treated."*

    Response: The low flow orifice restricts flow and ensures the basin has capacity for the next storm. The low flow orifice is above the storage required for the WQV.

21. *The low point outlets are either 1.5" or 2" orifices. Orifices this small are highly prone to clogging by organic debris and even sediments which will severely impact the functionality of the basin.*

    Response: A debris cage is indicated for any orifice of 3" diameter or less on the basin Outlet Control Structure detail on sheet 13 of 17.

22. *Additionally, as proposed the design of basins are not in compliance with the Town of Ledyard Ordinance 300-017, section 2.B.1 which states the following: "Basins which are designed to drain completely within 12 hours of the end of a rainfall event are preferred. Detention basin designs that result in the presence of permanent standing water, where none existed prior to development, shall not be permitted."*

    Response: The Town of Ledyard only "prefers" that basins drain completely within 12 hours. Connecticut Department of Energy & Environmental Protection (CT DEEP) requires the basins drain completely within 48 hours after the storm event, which our design meets.

23. *There is no information on the piping system and drainage structures shown on the plan.*

    Response: See C-5 Grading and Drainage plan for detailed stormwater management information.

24. *The stormwater management report discusses hydrodynamic separators, but none are shown on the plan. Are hydrodynamic separators being proposed on the site?*

    Response: A Contech CS-5 Cascade hydrodynamic separator is now specified on C-5 Grading and Drainage.

25. *Water Bars are shown which appear to direct runoff from active mining areas to the temporary sediment basins. These would be considered temporary diversion swales per the CT DEP 2024 Guidelines for Soil Erosion and Sediment Control. They must be designed as diversion swales. Water bars are commonly used across driveways to break up the flow length on a driveway.*

    Response: The water bars are to be vegetated, except where stabilized by gravel for the maintenance access drive, for long term stabilization and final closure of excavation in preparation for industrial development. The practice is consistent with the CT DEEP Guidelines for Soil Erosion and Sediment Control. Please keep in mind that these

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stormwater management practices are all temporary and will be removed upon development of this industrial site.

26. *No sizing computations have been provided for the proposed water bars (aka diversion swales).*

    Response: The design of the water bars was based upon the 2023 Connecticut Guidelines for Soil Erosion & Sediment Control figure 5-49, which is consistent with the 2002 version. 400-foot maximum spacing has been provided between features on the amended plan.

27. *None of the proposed contours for the area proposed for mining are labeled. All proposed contours need to be labeled.*

    Response: Major contours have been added to the proposed slope on the north side of the excavation area.

Sheet XS-1: Cross Sections

28. *No volume of the material to be removed is provided on this plan. The volume of the overburden soil as well as the bedrock need to be provided.*

    Response: The volume of product to be exported is estimated at 3.9 million cubic yards comprised of a mixture of processed stone and riprap for resiliency products.

29. *Based upon this plan, the maximum cut to the bottom of the proposed quarry is approximately 180'. A cut of this magnitude will cause groundwater within the bedrock which is the source of potable water for nearby homes with individual wells to be pulled toward the quarry as the hydraulic grade line will slope toward the quarry. This condition can be viewed along any road which has been cut in bedrock. Groundwater, which is in the rock, is constantly exiting the face of the rock. No information has been provided by the applicant about the potential and significant impact on nearby individual wells.*

    Response: As noted by Jeff Slade, who gave his expert opinion on rock excavation at the Town meeting on September 12th, groundwater seepage from the bedrock is expected to be negligible. Further, the drainage area that contributes groundwater to the proposed excavation area is limited to the high point that runs through this site, which generally follows the power line easement. Clearly, the area of contribution is extremely limited and as such, groundwater yield within the excavation is not a concern. Any adjacent bedrock wells would be considerably deeper that our proposed excavation. Further, public water is the primary source for drinking water in the area.

30. *It is noted that the bottom of the quarry will be over excavated so that it can be backfilled with "compacted structural fill material and topsoil overlay." What is the composition of the structural fill material? How thick will the layer of structural fill be? How thick will the topsoil layer be?*

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Response: The depth of fill varies throughout the excavation floor (refer to sheet XS-1). Topsoil and subsoil must be retained onsite for reuse per the town's regulations. Substratum material will also be stockpiled onsite for reuse in backfilling the excavation. Since this project does not include sand washing, screenings from the crushing operation may be used as well. The design of the structural fill will be done by a professional engineer and will be based on the materials available onsite.

Sheet C-6: Soil Erosion & Sediment Control and Phasing

31. *The 1" = 100' scale of the plan makes it impossible to see many of the erosion control features. It needs to be prepared at a larger scale.*

    Response: All the practices are indicated, and their locations can be seen as needed to construct them appropriately.

32. *A temporary frac. tank is proposed below the temporary sediment basin #1. It appears that the applicant does not believe the temporary sediment basin will function as intended and thus a backup system is needed. A frac tank is a large rectangular steel tank with an open top where flocculants are added to runoff to cause fine sediment to clump together and settle out of the water column. Frac tank can range in size from 20,000 gallons to 210,000 gallons. No information has been provided for the size of the proposed frac tank. Flocculants which are used to cause sediment to clump together and settle out are either Aluminum Sulfate, Alum, Ferric Chloride, or Ferric Sulfate.*

    Response: The temporary frac tank is to be used for any pumped water prior to discharge through an outlet hose filter bag. This is required during the initial overburden removal process in Phase 1 where the work area will be downgradient of the existing surrounding grades. Any accumulated runoff will be directed to temporary sedimentation basins and will be allowed to infiltrate into the receiving soil below. If accumulated water from a large storm event becomes inhibitive to the construction activities, dewatering will be conducted to allow for work to continue. Any dewatering will consist of pumping the water to an existing low point north of the work area, which is the natural pre-existing collection point of runoff generated across the project area.

33. *No elevations are provided for the system to convey water to the frac tank.*

    Response: See comment response 32 above.

34. *According to the detail on sheet C-7 mulch socks are to be installed at the top edge of each bedrock bench. These socks are not shown on the site plan.*

    Response: A call out can be found on C-6 and along with the detail is sufficient to indicate where it shall be installed.

35. *There are no provisions to handle runoff from the processing facility on the environmental cap from the crushing, stockpiling and movement of rock material. This operation will create a significant amount of turbid runoff which may overwhelm the perimeter barriers.*

    Response: As indicated, there is a double 18" mulch sock with checks and 12" mulch sock sediment forebays in addition to the double row of 12" mulch sock around any soil stockpiles. Excavation within this area is not possible due to underlying soil conditions. As such, the design provides for the treatment at the low points along the western portion of the processing area.

36. *No erosion control measure is called out around the stockpile shown on the plan. This is not in compliance with the 2024 Guidelines from the State of Connecticut DEEP.*

    Response: The soil stockpiles are indicated to have a double row of 12" mulch sock. The stone stockpiles would not have individual erosion control measures since the material is screened stone.

Sheets C-6A: There is no sheet C-6A comments seem to indicate C-7A Wetland Mitigation Plan – Location 1

37. *No erosion control measures are shown for the wetland mitigation areas.*

    Response: In addition to the plantings and wetland seed mix which act as long-term erosion and sediment control, below the wetland seed mix table, a light mulch of clean, weed free straw is recommended which acts as a temporary measure. It is also noted that hydroseeding is an allowable method of spreading the seed mix which includes tackifier. The wetland mitigation will be accomplished under the direction of a qualified and successful wetland scientist.

38. *The excavation for the mitigation area is 1.5' below the existing grade. This would cause groundwater to flow from the existing wetland into the mitigation area and reduce the natural hydroperiod of the natural wetland system by the potential lowering of the groundwater level.*

    Response: See comment responses 40 and 45 below.

39. *A pipe is shown under the railroad tracks, no information is provided for this pipe such as pipe size, slope, and inverts.*

    Response: This is an existing pipe that currently connects the wetlands hydraulically and is to remain. The stormwater study point here is upstream of this pipe.

40. *The monitoring well data shown on this plan has groundwater between 3.01' and 3.55.' The bottom of the wetland mitigation area is shown at elevation 5.0' which means that it is not at or below seasonal high groundwater and will not create adequate hydrologic conditions to support the wetland mitigation area.*

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Response: During the excavation of the wetland mitigation area, the wetlands professional will more accurately determine the seasonal high groundwater table. Should the groundwater table be more consistent with the groundwater monitoring well data, a "liner" will be implemented to provide for a perched water table wetland. The liner will consist of a minimum of 10 inches of low permeability soils (e.g., silty clay loam) with a maximum permeability rate of 0.2 inches per hour, based on either a double ring infiltrometer test, or a falling head permeability test. Additionally, a minimum of 12 to 14 inches of high-quality topsoil would be placed above the "liner" having a minimum organic matter content of 10 percent (i.e., loss at ignition test). The first 6-8 inches of the topsoil shall be tracked/compacted, while the second 6-8 inch layer shall be placed without compaction.

We note that REMA has successfully implemented a perched water table for created wetlands, including, most recently, in 2022 in Manchester, and 2023 in Enfield, Connecticut. Upon request we can provide several examples where proper wetland hydrology was achieved using this method.

41. *Based upon a study out of the State of Massachusetts, man-made wetland area were only successful approximately 50% of the time, so it is likely that this system will not turn into a wetland area as proposed.*

    Response: The Massachusetts study, while interesting, is irrelevant to this case. In our experience of more than 35 years of creating and restoring wetland habitats, we (REMA) have successfully created and/or restored dozens of productive wetland habitats. The only time when wetland mitigation was not deemed successful was when our clients failed to employ wetlands professionals in plan implementation or to properly monitor wetland mitigation projects for the duration of the monitoring period.

Sheet C-6B: There is no sheet C-6B comments seem to indicate C-7A Wetland Mitigation Plan – Location 2

42. *No erosion control measures are shown for the wetland mitigation areas.*

    Response: See comment response 37 above.

43. *The excavation for the mitigation area is 1.5' below the existing grade. This would cause groundwater to flow from the existing wetland into the mitigation area and reduce the natural hydroperiod of the natural wetland system.*

    Response: See comment response 40 above and 45 below.

44. *A pipe is shown under the railroad tracks, no information is provided for this pipe such as pipe size, slope, and inverts.*

    Response: : See comment response 39 above.

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45. *Based upon the "preparation" section of the Implementation Notes, a minimum of 10" of soil is to be placed within the wetland mitigation area which needs to increase the depth of excavation by 10" to approximately 2.5' below the existing grade, thus increasing the potential impacts of lower groundwater tables within the existing wetland system.*

    Response: Under existing conditions, the hydrology of wetland adjacent to the proposed wetland creation (expansion) is driven predominately by surface flows generated within its catchment area. This includes surface flows that are generated during precipitation events and conveyed via a "wetland" ditch that runs on the east side of the railroad tracks in that area, to a delineated wetland above and to the east of the subject wetland to be expanded. This wetland also receives surface flows from the hillside above it, as well as seasonal ground water flows at the toe of the steep slope to the east. All this water overflows via a pipe to the subject wetland. It is this overabundance of surface flows that has created the subject wetland, which is characterized by a layer of fine sandy materials over ablation till. Under proposed conditions, more than sufficient surface flows will continue to be conveyed in a similar fashion to this wetland, and its expansion of roughly 3,210 square feet. Per the plans, Phase 1's water quality basin will discharge to the same wetland at the toe of slope, which is then culverted to the subject wetland. In fact, it is anticipated that the volume of water will be somewhat greater to this wetland under proposed conditions. Therefore, we do not anticipate any lowering of the groundwater table within the existing wetland to be expanded. The wetland mitigation was evaluated by and approved by the town's Inland Wetlands and Watercourses Commission.

Sheet C-7A and C-7B:

46. *Plantings are not shown on the plans.*

    Response: Note 16 of the Mitigation Plan for Creation of Wetland Habitats indicates that a wetland professional or ecologist shall specify planting and seeding locations based on specific soil and hydraulic conditions encountered as a critical component of the mitigation protocol.

Sheet C-8: Details

47. *How will the mulch sock to be installed at the top of the excavation be anchored into the bedrock as wood/metal stakes cannot be used?*

    Response: A callout has been added to indicate the anchor is rebar installed in a drilled anchor hole.

48. *The detail for the Typical Sediment Barrier Details calls out either staked hay bales or siltation fence. As hay bales must be set in a trench 4" deep, how will they be installed on bedrock. How will the stakes and the fabric of the siltation fence be installed on bedrock? Where will these two erosion control measures be used on the site?*

Response: Details of these practices, standard in Connecticut and commonly used, are included as they are useful in miscellaneous situations that may arise for quick implementation in response to a condition the contractor may encounter. They would not be used in impervious locations such as directly on rock or even pavement.

49. *The detail for the Water Bar is not correct. The downhill berm of a water bar is not to be permeable. The berm must be designed to prevent runoff from moving down a slope. As noted above, water bars are not appropriate to direct runoff to temporary sediment basins. They must be designed as temporary diversion swales per the CT DEP 2002 Guidelines for Soil Erosion and Sediment Control.*

    Response: The water bar detail was amended to reflect the mound created from excavated material from the site. These diversion features will facilitate crossing by vehicular traffic, which is critical to the excavation operation, which is consistent with the 2023 Connecticut Guidelines for Soil Erosion & Sediment Control.

50. *The detail of the Basin Outlet Control Structure is generic and does not provide elevations for the various pipes in the structure as well as the overflow system.*

    Response: The invert information is provided on sheet C-5 Grading and Drainage plan. The riser pipe of a temporary sediment basin would be replaced by an outlet control structure when the basin is converted to a permanent water quality basin.

51. *There is no detail for emergency spillways for the water quality basins.*

    Response: The emergency spillways are now shown in plan view and indicated on sheet C-6 Grading and Drainage Plan.

Sheet C-9: Coastal Area Management Plan

52. *No comment on this plan.*

    Response: Noted.

Sheet C-10: Concept Future Industrial Development

53. *No comment on this plan.*

    Response: Noted.

Sheet C-11: Final Closure & Landscaping Plan

54. *This plan shows trees to be planted on the finished rock benches. How will trees be planted on bedrock? This plan is unworkable.*

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Response: As indicated, there is an 8' wide portion of the rock bench to be left bare and there is a 17' wide portion to be a planting area with 4" of topsoil and 30" of subsoil. A new detail, "Typical Cross Section Excerpt Excavation Floor and Wall" has been added to clarify this in a new view.

55. *A note on the plan states that topsoil will be placed on the rock steps. No information is provided about the specifications for the topsoil and how deep the topsoil layer will be.*

    Response: See comment response 54 above.

56. *A note states that the sediment basins will be converted to water quality basins. No process has been defined for how this conversion will be done.*

    Response: This process is well described in the Maintenance of Erosion Control Devises notes included on sheet C-1.

57. *This plan shows the processing equipment in the lower location. Where and how will it be placed in the actual site for phases beyond the first one.*

    Response: After the first phase, the equipment will stay where it is located except that the primary rock crusher may be relocated closer to the rock excavation.

Sheet C-12: Conceptual Processing Operations

58. *None of the proposed contours are shown on this plan.*

    Response: Within the area of the processing operations, the grades are to remain at existing or near where additional protection is specified to be installed. Major contours are labeled. Minor contours are now shown.

Zoning Compliance Manual:

Operational Narrative:

59. *No analysis has been provided which shows that the proposed interim cap can support the vehicles expected to track over it. It is stated that actual processing equipment will be placed on crane mats. No information has been provided as to the location and size of the crane mats.*

    Response: See comment responses 67 through 73 below regarding the Engineered Control Operation and Maintenance Plan.

60. *It is stated that the erosion control plan is in accordance with the CT DEEP 2023 Guidelines for Soil Erosion and Sediment Control. Based on the comments on Exhibit #2 above, the plans do not comply with the 2023 Guidelines. Additionally, the plans are not in compliance with the CT DEEP 2023 Storm Water Quality Manual. To be eligible for*

coverage under the CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, the plans must comply with all applicable aspects of the two DEEP documents.

Response: See comment responses above, specifically responses 14 through 27.

61. *It is stated under Phase 2, Phase 2, Phase 3, and Phase 4 descriptions that any runoff from the overburden removal process will be directed to a temporary sediment basin and allowed to infiltrate in the receiving soils. If the overburden at the bottom of the slope is removed, then the temporary sediment basin will be located on bedrock where no infiltration will occur. Even if the temporary sediment basin is in soil, no infiltration testing has been done to demonstrate that infiltration will occur.*

    Response: Bedrock would be a minimum of 9-feet below the bottom of the lowest basin. It is not constructed in bedrock. See comment responses above, specifically responses 14 through 27 and 31 through 36.

62. *Phase 1 is stated to be 9.2 acres, Phase 2 is 9.9 acres. Phase 3 is 9.2 acres. Phase 4 is 9.6 acres which all exceed the limit of 5 acres of disturbance at one time under the CT DEEP General Permit.*

    Response: See comment response 68 below.

63. *It is proposed to use water to keep the dust from the mining and excavation operations. However, no estimated volume of water and frequency of application has been provided by the applicant. The proposed temporary sediment basins are not sized to handle the runoff from the dust control applications and thus discharges of this water will occur and run into the downgradient inland wetland areas.*

    Response: A maximum of up to 23,000 gallons is estimated to be used daily for dust control, during dry conditions only. The design of the dust control for this site includes misting with select nozzles at the covered processing equipment specifically to eliminate any runoff. Similarly, a water truck with spray nozzles shall be used to disperse water for dust control on the vehicular travel paths and in the loading areas. No runoff will be generated from these approaches and as such, there is no need to account for it in the design of the sediment basins. Further, we would not be applying dust controls during a rain event, so the activities would never coincide.

Verdantas Report:

64. *It is stated on page 3 of the Verdantas report that "unpaved road were assumed to be maintained with emissions control (i.e. wetting) and/or periodic applications of calcium chloride", yet there is absolutely no mention as to how much water and how frequently the water must be applicated to areas to control the dust. Excess water from the dust control operations must be treated by one or more of the temporary sediment basins, yet no*

evidence is provided that this runoff was accounted for in the design of the temporary sediment basins.

Response: Utilizing a water tuck with a rear-end spray bar, 3-4 times a shift, for 8 hours. Typically the volume (4, 4000-gallon truck loads per day). There is no runoff generated from the dust control as it will evaporate or infiltrate. Also see comment response 63 above.

65. *The use of calcium chloride as a dust control system will have major environmental impacts as stated below.*

    Response: It will not be used on any regular basis (only special conditions during time of freezing – applied by a contractor). If necessary, it will be applied in accordance with CTDOT state guidance included in Form 818. This would coincide with the same general timeframe that the town and state use the same product on our roadways to combat snow and ice.

    a. *Drinking water: Large amounts of calcium chloride can contaminate drinking water, making it taste, and unhealthy.*

       Response: See comment response 65 above.

    b. *Aquatic life: CaCl can be toxic to fish, amphibians, and other aquatic organisms. It can also harm the productivity and diversity of aquatic life, and change the plant community structure in lakes, streams, and wetlands. For example, one study found that low to moderate concentrations of CaCl promoted the growth of invasive and native mollusks, while high concentrations reduced zooplankton and Asian clams.*

       Response: See comment response 65 above.

    c. *Infrastructure: CaCl can corrode infrastructure, such as aluminum, steel, and concrete. For example, when used as a dust suppressant, CaCl can pit concrete, which can increase maintenance costs.*

       Response: See comment response 65 above.

    d. *Vegetation: CaCl can harm trees and other vegetation, causing leaf scorch and other injuries. Long-term accumulation of chloride in soil can also reduce soil fertility and permeability, and increase its density and alkalinity. This can negatively impact the soil's chemical properties and its ability to retain water, which are important for plant growth and erosion control.*

       Response: See comment response 65 above.

66. *Section 4.0 Soil and Dust Management of the Verdantas report discusses the various wetting measures which can be used to control dust, but again no information is provided*

as to volumes of water and amounts of calcium chloride which could be used on a daily basis.

Response: Other dust control operations will be used on the equipment. Spray nozzles on conveyor equipment will be used. Assuming a worst case of 100 nozzles, the volume would be estimated at 7,000 gallons per 8-hour shift (this site will only operate one shift). Since the gravel and sand is not going to be washed on-site, this will keep water usage to a minimum. Water will either evaporate or be absorbed into the product. For the top of screen decks, they can be covered to control emissions.

Engineered Control Operation and Maintenance Plan:

67. *Page 2-1: It is stated that the crane map system will be designed by a professional engineer, however this design information has not been provided as part of this application. This is an omission of data which the commission needs to review as part of the land use process.*

    Response: The design of the crane mat system is well beyond the scope of local permitting. This design would be part of a Contract Document package, which is developed after local permits are secured.

68. *Page 2-1: It is stated that this site will be under the CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. As noted above, the General Permit limits site disturbance at one time to five acres and the proposed project will disturb up to 10 acres at a time so the General Permit is not applicable, and an Individual Permit must be obtained from CT DEEP for the entire site.*

    Response: The position stated is inaccurate. There is provision within the DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities for disturbance of greater than 5-acres under section 5.(b)(1)(B)(iii). 5-acre phasing is not practicable when blasting is involved, as such the town's limit of 10-acres was selected as the top limit for disturbance. This position was presented to DEEP and they concur with our plan.

69. *Section 3.2: The qualifications of the personnel to perform the inspections are not provided. What qualifications must the inspection personnel have?*

    Response: An addendum to the report has been prepared and the qualifications are cited; Professional Engineer.

70. *Section 3-3: It is stated that all documentation will be kept on site for review by DEEP and the Town of Ledyard. Visits by DEEP to the site are not likely to happen. All inspection reports must be sent to the DEEP and the Town of Ledyard when they are done.*

    Response: The addendum referenced in item 69 also addresses submission of the reports: Reports shall be submitted to the town within 7-calendar days and will be submitted to DEEP in accordance with RCSA Section 22a-133k-2(f)(2)(C)(ii)(III).

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71. *Section 3.4: The whole idea of using a capped hazardous waste site as a construction staging area is concerning from an environmental perspective. The best laid plans are often not realistic in the real world. Plans are not always followed by the many contractors on the site, and this should concern the planning and zoning commission. What happens if the cap is disturbed, and hazardous material is exposed? If rainfall infiltrates through cracks in the cap, pollutants under the cap can become migratory in the shallow groundwater.*

    Response: It is important to note that there is no hazardous waste site on this property. The engineered controls are installed to mitigate infiltration of rainwater through soil contamination that exceeds certain pollutant mobility criteria and/or to control direct exposure to the underlying soils. The provisions presented in the Engineered Control Operation and Maintenance Plan have been designed by a Professional Engineer/Licensed Environmental Professional and they have been determined to be suitable means of protection.

72. *Section 4: There very well may be disturbances of the cap based upon the language in this section. It is my professional opinion that the environmentally capped area should not be used for any material processing or storage because of potential disturbances to the cap.*

    Response: It is noteworthy that every Engineered Control has this provision in the application package, which gets sent to DEEP for review and approval. This provision was extracted from the approved Engineered Control Variance Request that DEEP approved for this site. Engineered controls are commonly located throughout industrial, commercial and residential sites throughout Connecticut and repairs are made as needed. Refer to item 71 above for the design requirements of the applicant.

73. *It is proposed to use "Dustboss DB-ring" to control dust from the crushing equipment. Based upon the manufacturer's information, there are many different sizes of the DBrings which can be used and how much water they use in gallons per minute (gpm). Over an eight (8) hour period, here are potential volumes of water which will be used for a 48" ring (7,613 gallons), a 72" ring (9,643 gallons), and a 100" ring (20,808 gallons) from a single crushing machine. If more than one crushing machine is used, the volumes will be larger. There will always be runoff generated by these operations and the plans do not incorporate any provisions for how the runoff will be handled.*

    Response: There is no reference to a "Dustless DB-ring" in the Engineered Control Operation and Maintenance Plan.

Stormwater Management Report:

74. *Section 3.2 states that the finished area will consist of either grass or graded rock areas and according to the applicant will not have any impervious area. This is not correct, both surfaces are being placed on top of bedrock. Bedrock does not infiltrate rainfall, so the entire finished area needs to be considered as impervious from a stormwater perspective.*

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Response: Land coverage in the finished areas will consist of planted rock benches or grassed areas. Following rock grading, a minimum of 12-18" of stockpiled subsoil will be reused with 4" of topsoil above the substratum backfill to create the landscaped final conditions. At the lowest point in the excavation area, the bedrock will be 13-feet below the surface. This layer of soil will provide plenty of infiltration capacity, similar to the existing conditions with the overburden.

75. *Section 3-3 states that the stormwater basins will hold the full water quality volume (WQV). Simply providing a storage volume for the WQV does not comply with the CT DEEP 2023 Storm Water Quality Manual as the full WQV must be "captured and treated". This requirement is not being met by the applicant.*

    Response: All infiltration basin outlets have been designed to be above the WQV storage elevation of their respective basins, meaning the WQV for each subcatchment will be fully retained and infiltrated on-site.

76. *Section 4.1.2 provides a list of Runoff Curve Numbers (RCN) for various site conditions.*

    a. *Dirt and gravel roads which are compacted to permit the movement of construction vehicles will have an RCN of 98 regardless of the soil class.*

       Response: The gravel access drive has a CN value of 96 as nearly impervious. The access road is only intended to be used periodically for maintenance of the infiltration basins and landscaped areas. Soil restoration is now also specified on sheet C-13 Details and is indicated to be used on the vegetated bottom area on the Final Closure & Landscape Plan.

    b. *Newly grassed areas need to be considered as a Fair Condition, not a good condition as it takes three to five years to become a fully established vegetative cover. If the grass is to be placed on a typical 4" layer of topsoil over the bedrock, the soil class must be Class D as there is no infiltration occurring.*

       Response: Seeding and topsoiling for final stabilization will provide a strong vegetative cover after one full growing season. The CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities allows termination of the Permit after one full growing season, indicating the acceptance of an established vegetative cover following this timeframe.

       See response to comment #74. Topsoil will not be placed directly over bedrock.

    c. *For either Brush or Woods to be considered a Good Condition, there must be a dense herbaceous layer and shrub layer under the tree canopy. This will not be found in a well-established forest area as the tree crown is preventing sunlight from reaching the forest floor which is necessary for the herbaceous and shrub layers to be present.*

Typical mixed hardwood forests in Connecticut are considered as Forest in Fair Condition because of the lack of ground level vegetation.

Response: For hydraulic calculations, considering the existing woods as "Fair Condition" would reduce the difference between existing and new conditions curve numbers. Considering the existing woods to be in "Good Condition" is a more conservative approach, as it increases the amount of runoff that needs to be retained under final conditions to match existing peak flows.

d. *Based upon my forty years of experience and my Bachelor of Science in Forest Management using brush and woods in Fair condition will significantly change the rates of runoff and runoff volumes for both current and future conditions and provide a more accurate determination for the design of the stormwater management systems.*

Response: See above comment response.

77. *Section 4.2 discusses the reductions in the peak rate of runoff for the project. However, this information does not discuss the following important point. At the present time, runoff from the existing conditions is occurring as overland sheet flow through a wooded environment which allows for a significant amount of infiltration to occur into the upper soil layers for all rainfall events. However, future runoff will be occurring as concentrated flow due to the proposed stormwater basins and there will be no infiltration because the solid bedrock is an impermeable surface. Thus, there will be significant increases of runoff volume because of the lack of infiltration.*

Response: The existing woods exist on a slope that is as steep as 20% in areas. Consequently, sheet flow is extremely limited. The new landscaped area is proposed at a constant 1.5% slope, which allows infiltration into the soil before discharging into infiltration basins, which provide further infiltration.

Additionally, sheet flow under existing conditions does not extend more than 100', as recommended by the Natural Resources Conservation Service (NRCS), meaning that runoff will not occur as sheet flow over much of the 900' long wooded slope where the flow transitions into shallow concentrated and/or concentrated flow. These factors for both existing and new conditions are considered when performing hydrologic calculations in HydroCAD.

78. *The CT DEEP 2023 Storm Water Quality Manual requires that 1.3" of rainfall be used to determine the Water Quality Volume, not 1". Section 4.3 states that the WQV for the 42.90 acre site is 7,786 cubic feet as there is no impervious coverage. As noted in comment #3 above, because there is no soil underneath the compacted blasted rock or grassed area, there is no infiltration, thus the entire 42.9 acres of excavated area must be considered impervious for the purpose of determining the WQV. This would result in a WQV of 4.415 acre-feet or 192,323 cubic feet (1.3)(42.90)(0.95)/12) which is more than the value calculated by the applicant. The full WQV must be held below the invert of the lowest outlet*

pipe in a basin to be considered "captured and treated" per the 2023 Manual. The full WQV must be treated, not simply stored in a basin so the type of basin is critical for treating the WQV.

Response: The water quality storm was increased from 1.0" to 1.3" in the 2023 Connecticut Stormwater Quality Manual. This application was submitted prior to the September 30, 2024 effective date of the Connecticut Stormwater Quality Manual for new projects. As the application is currently still under review, WQV calculations have been updated for the 1.3" design storm. All infiltration basin outlets have been designed to be above the WQV storage elevation of their respective basins, meaning the WQV for each subcatchment will be fully retained and infiltrated on-site.

79. *The statement at the end of this section which states "The basins will also allow suspended sediment to be settled and captured before stormwater is discharged" is not supported by factual analysis demonstrating the removal of sediment.*

    Response: Infiltration basins are defined as having high sediment removal capacity by the Connecticut Stormwater Quality Manual.

80. *It is stated that the drainage system leads to two hydrodynamic separators and an infiltration basin, but these systems are not found on the submitted site plans.*

    Response: Only one hydrodynamic separator is proposed under new conditions. The Stormwater Management Report has been edited to reflect this.

81. *There is no information for the sizing of the stormwater management conveyance system which demonstrates compliance with the Town of Ledyard requirements.*

    Response: Manning's equation calculations are built into HydroCAD, meaning all outlet pipes are automatically checked to ensure that outflow can be passed through the pipe. A calculation was also completed ensuring that the combined outflow of the basins can be conveyed with the new 30" HDPE pipe.

82. *Current Watershed Map: There are no flow paths shown which define the Time of Concentration (Tc) for each watershed under current conditions. This is a serious omission as the Tc defines the shape of the hydrograph.*

    Response: Time of concentration (Tc) values were included in Appendix D of the previously submitted Stormwater Management Report. Tc paths have been added to the Existing Drainage Areas drawing.

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83. *Future Watershed Map: There are no flow paths shown which define the Time of Concentration (Tc) for each watershed under future conditions. This is a serious omission as the Tc defines the shape of the hydrograph.*

    Response: See comment response 82 above. Tc paths have been added to the New Drainage Areas drawing.

84. *Appendix D: The Runoff Curve Numbers (RCN) for current and future conditions need to be adjusted as discussed above to accurately reflect the hydrologic conditions on the site. When the RCN values are adjusted to account for the fact that the entire quarried site is impervious, there will be significant increases of runoff volume.*

    Response: See comment response 74 above.

85. *It is well documented in professional literature that increased runoff volumes cause adverse impacts to watercourses and flow through wetlands such as erosion of channel banks and deposition of the eroded material in wetlands.*

    Response: The hydrologic calculations demonstrate a reduction in peak flows from existing to new conditions. The new flared end section and plunge pool outlet will mitigate erosive flow to the wetlands. As such, this application is improving these conditions.

86. *Appendix D: There are no routing analyses for the proposed six "Water Quality Basins" which are required to be part of a stormwater analysis as they define the storage volumes provided in the basin by elevation, the sizes and elevations of the outlet control structures. Without this information the conclusions in the stormwater management report are not supported by fact.*

    Response: The HydroCAD report in Appendix D has been revised to include pond summaries showing volumes, elevations, outlets, and stage data for each new infiltration basin. Hydrographs have also been included to demonstrate compliance with maximum drain time.

87. *Appendix E: The WQV computations as well as the Water Quality Flow (WQF) computations are invalid as the applicant is claiming the proposed finish site will not have any impervious area which is incorrect as discussed in comment #73 above.*

    Response: See comment response 74 above.

88. *Appendix E: Additionally, both WQV and WQF need to be calculated for each separate post-development drainage area which has not been done. Each basin must provide the required treatment for the WQV.*

    Response: WQV calculations have been revised in Appendix E to show WQV for each developed subcatchment. The results of these calculations were used in designing infiltration basin outlet elevations.

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89. *Appendix F: The design of Temporary Sediment Basins requires providing a 10-hour residence time for the 10-year rainfall event and it is noted in the calculations that this was taken from a hydrograph. The applicant has not provided the hydrographs for all storm events so this residence time and volume cannot be verified.*

    Response: Hydrographs are now included as part of Appendix D.

Sincerely,
LOUREIRO ENGINEERING ASSOCIATES, INC.

George F. Andrews, P.E.
Principal Engineer, Civil Engineering

Cc: Alan Perrault, Gales Ferry Intermodal, LLC
Harry Heller, Heller, Heller & McCoy

Attachments:
Plan Set, Revised September 25, 2024
Stormwater Management Report, Revised September 24, 2024
Engineered Control Operation and Maintenance Plan, Addendum September 26, 2024