

MENDOCINO RAILWAY

Foot of Laurel Street
Fort Bragg, California 95437

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30 August 2024

Morgan Bigelow
Department of Toxic Substances Control
700 Heinz Avenue, Suite 100
Berkeley, California 94710

Subject: Draft Alternatives List, OU-E Feasibility Study Addendum
Former Georgia-Pacific Wood Products Facility (Site Code: 202276)
KJ 1965021*21

Dear Ms. Bigelow:

In response to the Department of Toxic Substances Control's (DTSC) March 28, 2024 letter (DTSC 2024a), we have prepared a draft list of project alternatives¹. These alternatives expand on the work presented in the Final Operable Unit E (OU-E) Feasibility Study² (FS; Kennedy Jenks 2019) and Draft OU-E Remedial Action Plan (RAP; Kennedy Jenks 2020a, DTSC 2020a). The alternatives also consider feedback from lead and responsible agencies under the California Environmental Quality Act (CEQA), including, but not limited to, DTSC (with input from the Regional Water Quality Control Board [RWQCB]), the California Coastal Commission (CCC), and the City of Fort Bragg (City) that was shared in the April 9, 2024 and April 26, 2024 meetings³.

Mendocino Railway and its representatives met with the CCC on April 9, 2024 to discuss its feedback on the proposed project (as submitted in a Coastal Development Permit [CDP] application to the City [CDP 9-22]). The proposed project in CDP 9-22 is the preferred alternative presented in the 2019 Final OU-E FS and in the Draft OU-E RAP. CCC and Mendocino Railway discussed several potential alternatives to address sediment in Pond 8. Although the City is still reviewing the CDP 9-22 application and that CDP application is not presently within the CCC's jurisdiction, Mendocino Railway has agreed to evaluate some of the alternatives discussed with the CCC in a good faith effort to address the CCC staff's views and concerns. Mendocino Railway and its representatives met with the DTSC, CCC, the City, and Division of Safety of Dams (DSOD) on April 26, 2024 and agreed to consider additional alternatives that address sediment in Pond 8. With regard to Pond 8, in the past and presently, the City has discharged, and continues to discharge, untreated stormwater containing dioxins/furans to Pond 8. These historical and ongoing discharges by the City have been documented as a significant source historically and the primary source of continued contributions of dioxins/furans in Pond 8 sediment.

Along with this draft expanded list of alternatives, Mendocino Railway has prepared a comprehensive summary of Applicable or Relevant and Appropriate Requirements (ARARs). All alternatives need to balance a range of sometimes conflicting agency requirements. The comprehensive list of ARARs is

¹ On May 16, 2024, DTSC approved the extension deadline to August 30, 2024 (DTSC 2024b).

² DTSC has approved the Final OU-E FS (DTSC 2019).

³ DTSC is the lead agency for activities associated with the OU-E FS, whereas the City is the lead agency for CEQA.

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needed in order to engage in an informed discussion of these additional potential alternatives and to actively involve lead, responsible or other relevant agencies (as requested by DTSC). In this spirit, Mendocino Railway has provided a table with a comprehensive list of ARARs for agency review to facilitate input from applicable or relevant agencies. Mendocino Railway submitted this ARAR table to DTSC, as the lead agency, on July 18, 2024; DTSC began issuing solicitation letters to other agencies on July 24, 2024. In a meeting on July 19, 2024, DTSC advised Mendocino Railway to not wait for responses from the various agencies regarding their ARARs, and to proceed to provide the list of alternatives to DTSC by DTSC's August 30, 2024 deadline. Accordingly, the list of alternatives provided herein may need to be revised based on the forthcoming feedback on ARARs to be provided by the agencies.

Project Background

Areas of Concern

There are five areas of concern (AOCs) that were evaluated in the OU-E FS and discussed in the Draft OU-E RAP: the Southern Ponds (Ponds 1-4), Pond 7, the North Pond and Pond 6, Pond 8, and OU-E groundwater. The media of concern and constituents of concern (COCs) for these AOCs are:

- Southern Ponds (Ponds 1-4) AOC: Aquatic sediment (dioxins, arsenic)
- Pond 7 AOC: Aquatic sediment (dioxins, arsenic, barium)
- North Pond and Pond 6 AOC: Aquatic sediment (dioxins, arsenic)
- Pond 8 AOC: Aquatic sediment (dioxins, arsenic)
- OU-E Groundwater AOC
 - IRM and West of IRM areas of interest (AOIs): Groundwater [total petroleum hydrocarbon as diesel (TPHd), total petroleum hydrocarbon as gasoline (TPHg)]
 - OU-E Lowlands AOI: Groundwater (barium).

Institutional Controls (including containment, land use controls, sediment management, and long-term operations and management) was selected as the preferred alternative for each of the sediment AOCs (Kennedy Jenks 2019, 2020a)⁴. Monitored natural attenuation (MNA) with institutional controls was selected as the preferred alternative for the OU-E groundwater AOC. The evaluation of previous alternatives presented in the Final OU-E FS and Draft OU-E RAP was undertaken and completed in collaboration with DTSC and the RWQCB.

⁴ Other alternatives were evaluated, including the following: no action; in-situ soil mixing and institutional controls, excavation and disposal (Mill Pond Dam and Pond 8 retained), vegetative sediment cover and institutional controls, vegetative soil cover and institutional controls, mycoremediation, biological oxidation, chemical oxidation, landfarming/biopiling, and hot spot excavation.

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Risk Assessment

The primary risk driver for human health risk is the potential that an occasional recreator⁵ might inadvertently be exposed to dioxins/furans in pond sediment, although this risk is extremely low since the ponds are on private property with restricted access and fenced. As presented in the Baseline Human Health and Ecological Risk Assessment (BHHERA; Arcadis 2015), potential exposures to arsenic and dioxin toxic equivalent (TEQ) from sediment ingestion in the aquatic sediment AOCs (Southern Ponds, Pond 7, the North Pond and Pond 6, Pond 8) are primary contributors to the excess lifetime cancer risks (ELCRs), but this result is mitigated by the following factors.

From a practical standpoint, exposure to the sediments in the aquatic sediment AOCs for any duration is unlikely due to site-specific limitations that prevent or impede access such as fencing, dense vegetation, steep banks, and cold surface water and air temperatures for much of the year. Pond 6, Pond 7, Pond 8, North Pond, and the Southern Ponds (Ponds 1-4) are on private property with restricted access, and fenced, and public recreation is not allowed.

From a risk analysis standpoint, arsenic concentrations in aquatic sediment are generally close to background, and therefore, arsenic ELCRs are not associated with site conditions for the aquatic sediment AOCs. For example, the arsenic exposure point concentrations (EPC) for Pond 6, Pond 7, and North Pond were calculated to be 25 mg/kg (Kennedy Jenks 2020b, DTSC 2020b), which is within the range of concentrations used to calculate the background value (0.6 mg/kg to 31 mg/kg; Arcadis BBL 2007). The arsenic EPC for Pond 8 was calculated to be 9.7 mg/kg, which is less than the draft remedial goal for arsenic in sediment presented in the Draft OU-E RAP (10 mg/kg⁶). Considered from another perspective, when Pond 8 is evaluated for a highly unlikely occasional recreator without considering background arsenic exposures, which are comparable to background concentrations, the resulting cumulative ELCR in Pond 8 is 1×10^{-6} . As such, since arsenic concentrations in aquatic sediment already meet or are close to the draft remedial goals, the presence of arsenic in aquatic sediment does not warrant additional action.

The recreational goal for dioxin TEQ in sediment is 53 picograms per gram (pg/g; Kennedy Jenks 2020b). Dioxin TEQ concentrations in the aquatic sediment AOCs is generally greater than the recreational goal. However, it is noted that for Pond 8, the dioxin TEQ EPC is lower when calculated using the dataset for the west portion of Pond 8, near the ocean and in the vicinity of historical industrial discharges (58 pg/g), and higher when calculated using the dataset for the east portion of Pond 8, near the City's storm drain outfalls and ongoing City discharge of untreated stormwater into the pond (142 pg/g). The dioxin TEQ EPC for Pond 8 west (58 pg/g) is comparable to the recreational goal for dioxin TEQ in sediment (53 pg/g) and residential goal for dioxin TEQ in sediment (50 pg/g). Untreated stormwater discharged to Pond 8 by the City have contributed and continue to contribute dioxins to Pond 8; stormwater evaluations found that 80 to 95 percent of the dioxins/furans entering Pond 8 via

⁵ The occasional recreator was identified in the conceptual site model as the primary receptor during the remedial investigation and risk assessment phases of the project.

⁶ 10 mg/kg has been established as the background concentration for arsenic for the Former Georgia-Pacific Mill Site.

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stormwater are contributed by untreated municipal stormwater discharge from the City of Fort Bragg, which discharges to the east portion of Pond 8 (Mendocino Railway 2023). Overall, dioxin TEQ EPCs for aquatic sediment AOCs are less than or comparable to the DTSC commercial/industrial remedial goal range of 220 to 700 pg/g (DTSC 2017). In summary, dioxin TEQ EPCs in aquatic sediment are between the recreational goal and the commercial/industrial remedial goal and require action. However, in Pond 8, the dioxin TEQ EPC is close to the recreational goal and residential goal when only considering the area far from the influence of the City's untreated stormwater discharge, which is known to contain dioxins/furans. Dioxin TEQ values for sediment near the City's stormwater outfalls, which are influenced by the City's discharge, drive the need for additional action in Pond 8.

Results of the environmental risk assessment (ERA) for aquatic exposure areas indicate that unacceptable risk is not likely for populations of plants, benthic organisms, birds, mammals and amphibians exposed to site sediment and surface water (ARCADIS 2015).

As described in the OU-D/E Groundwater Operation and Maintenance Plan (GW O&M Plan; Kennedy Jenks 2020c, DTSC 2020c), groundwater COCs are defined by AOI within the overall OU-E groundwater AOC. As presented in the most recent groundwater monitoring report (GMR; Kennedy Jenks 2023a), barium in the Lowland AOI has consistently been below the remedial goal for the last four monitoring events⁷. In recent events, arsenic and petroleum hydrocarbon (TPHd and TPHg) concentrations in OU-E groundwater have generally been below or close to the applicable remedial goal and/or below the applicable maximum contaminant level (MCL). Groundwater in OU-E will be evaluated in more detail in the Five-Year Review Report.

Mill Pond Dam

The Mill Pond Dam is an existing structure that was lawfully constructed prior to the effective date of the Coastal Act. DSOD has required geotechnical stabilization of the dam. Therefore, in addition to consideration of protection of human health and the environment, modifications are needed at the Mill Pond Dam to comply with DSOD requirements for dam safety or to address DSOD's jurisdiction. In most cases, remedial alternatives will also require dam modifications. Mendocino Railway, as the property owner, owns the Mill Pond Dam and needs to protect this existing structure for a number of reasons including maintaining the safe operation of the dam.

The City has approved development projects in the past in order to protect the Mill Pond Dam. For example, a maintenance project was conducted in 2011 at the Mill Pond Dam. Maintenance tasks included filling crevices and voids in the dam wall beneath the spillway and overflow structures with shotcrete, filling voids within the timber crib wall with flowable concrete fill, and installation of articulating block concrete mats (AB Mats) and rip rap at the toe of the dam to minimize erosion and scour. Permitting for this project included an Emergency CDP issued by the City's Community Development

⁷ Four consecutive monitoring events is defined as "consistent attainment" in the OU-D/E Groundwater Operation and Maintenance Plan (GW O&M Plan; Kennedy Jenks 2020c, DTSC 2020c).

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Department on September 14, 2010 in coordination with the CCC (File Number Emergency Permit 3-10).

Project Objectives

The project will address two agency requirements related to long-existing ponds: 1) manage human health and environmental risk due to arsenic and dioxins/furans in Pond 6, Pond 7, Pond 8, Southern Ponds (Ponds 1-4), and North Pond sediment and petroleum hydrocarbons, arsenic, and barium in OU-E groundwater (DTSC), and 2) maintain safe operation of the Mill Pond Dam such that sediment and water are retained in the impoundment during and following a seismic event (DSOD). Separately, a project is needed to manage human health and environmental risk due to petroleum hydrocarbons, arsenic, and barium in OU-E groundwater (DTSC).

The Mill Pond Dam, Pond 6, Pond 7, Pond 8, the Southern Ponds (Ponds 1-4), North Pond, and groundwater are on private property with restricted access. The project objectives, therefore, include the following:

- Control the public's exposure, including trespassers or occasional recreators, to incidental ingestion of dioxins/furans in pond sediments. Pond 6, Pond 7, Pond 8, North Pond, and the Southern Ponds (Ponds 1-4) are on private property with restricted access and fenced; public recreation is not allowed.
 - Control the public's exposure, including trespassers or occasional recreators, to incidental ingestion of petroleum hydrocarbons, arsenic, and barium in groundwater. Due to City restrictions on groundwater use and concerns for saltwater intrusion, groundwater use from OU-E is not anticipated and therefore exposure to OU-E groundwater is not anticipated.
 - Control migration of arsenic and dioxins/furans in pond sediment.
 - Retention/management of Pond 8 to provide continued stormwater management for the City, if feasible. In the past and presently, the City has discharged, and continues to discharge, untreated stormwater containing dioxins/furans to Pond 8. These historical and ongoing discharges by the City have been documented as a significant source historically and the primary source of continued contributions of dioxins/furans in Pond 8 sediment.
 - Control risk to public safety due to loss of containment of water and sediment at the existing Mill Pond Dam, a structural component of Pond 8, due to seismic activity, sea level rise, tsunami, and/or episodic, short-term or long-term erosion events.
 - Improve safety and reduce risk of dam failure and associated environmental or economic losses by modifying the existing Mill Pond Dam so that it no longer falls within DSOD jurisdictional risk thresholds.
 - Meet, if feasible, and balance conflicting laws, regulations and policies, and agency requirements, to identify a feasible project that meets the above project objectives.
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Additional Alternatives

As described above, alternatives have been evaluated to address the identified ARARs and meet the above objectives. However, in response to agency requests for consideration of additional alternatives, Mendocino Railway has also identified the following draft list of alternatives:

- On-site terrestrial treatment and consolidation of sediment in Pond 8 and modification to the Mill Pond Dam.
- Excavation and filling of western portion of Pond 8, disposal of excavated sediments, and modification to the Mill Pond Dam.
- Institutional controls with modification to the Mill Pond Dam, including construction of drilled secant pile wall at cribwall (alternative to current proposed rock slope protection design).
- Institutional controls with modification to the Mill Pond Dam, including construction of rock slope protection on interior of Pond 8 at cribwall (alternative to current proposed rock slope protection design).
- Institutional controls with modification to the Mill Pond Dam, including jet grouting at cribwall (alternative to current proposed rock slope protection design).
- Institutional controls with modification to the Mill Pond Dam, including construction of seawall at cribwall (alternative to current proposed rock slope protection design).

Additional information is provided in the attached table. Input regarding ARARs (as solicited from agencies by DTSC) is necessary prior to proceeding with evaluation of the additional alternatives listed above. Accordingly, the draft list of alternatives provided herein may need to be revised based on the forthcoming feedback on ARARs to be provided by the agencies.

Very truly yours,
Mendocino Railway



Mike Buck
Project Manager

Attachments

Table 1 Draft Additional Remedial Alternatives

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- DTSC. 2017. Human Health Risk Assessment (HHRA) Note Number 2 – Dioxin Remedial Goals. April.
- DTSC. 2019. Letter from Juliet Pettijohn, DTSC, to Mr. David G. Massengill, Georgia-Pacific LLC, RE: Georgia-Pacific, Operable Unit E Feasibility Study, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. October 24.
- DTSC. 2020a. Letter from Juliet Pettijohn, DTSC, to Mr. David G. Massengill, Georgia-Pacific LLC, RE: Operable Unit E Draft Remedial Action Plan and Confirmation of No Further Action for Operable Unit E Soil and Ponds 5 and 9, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. December 8.
- DTSC. 2020b. Letter from Ms. Juliet Pettijohn, to Mr. David G. Massengill, Senior Director, Georgia-Pacific LLC, re: Pond 6, North Pond, and Pond 8 Sediment Sampling Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. 26 May.
- DTSC. 2020c. Letter from Julie Pettijohn, Branch Chief, to Mr. David Massengill, Georgia-Pacific LLC, RE: Site-wide Groundwater Operation and Maintenance Plan, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. 30 March.
- DTSC. 2024a. Letter from Morgan Bigelow, DTSC, to Mike Buck, Mendocino Railway, RE: Requirement to Complete Feasibility Study Addendum for Former Georgia-Pacific Mill Site, 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Site Code 202276). March 28.
- DTSC. 2024b. Letter from Morgan Bigelow, DTSC, to Mike Buck, Mendocino Railway, RE: Requested Extension for Feasibility Study Addendum, Former Georgia-Pacific Mill Site, 90 West Redwood Avenue, Fort Bragg, Mendocino County, California (Site Code 202276). May 16.
- Kennedy Jenks. 2019. Final Feasibility Study, Operable Unit E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. 12 September.
- Kennedy Jenks. 2020a. Draft Remedial Action Plan, Operable Unit E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. 14 October.
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Kennedy Jenks Consultants. 2020b. Pond 6, North Pond, and Pond 8 Sediment Sampling Report, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. 8 April.

Kennedy Jenks. 2020c. Operable Unit D and Operable Unit E Groundwater Operation & Maintenance Plan. 23 March.

Kennedy Jenks. 2023a. Groundwater Monitoring Report (Revised), Operable Units C, D, & E, Former Georgia-Pacific Wood Products Facility, Fort Bragg, California. November 22.

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Mendocino Railway. 2023. Letter from Mike Buck, Mendocino Railway, to Morgan Bigelow, DTSC, RE: Request to Add Respondent to Order. September 6.

cc: Kim Walsh, DTSC
Robert Pinoli, Mendocino Railway
Jeremie Maehr, Kennedy Jenks
Rachel Morgan, Kennedy Jenks

Table 1: Draft Additional Remedial Alternatives

Media	AOC	Risk Summary	Remedial Alternative	Additional Evaluation to be Completed	Alternative Description	Description of Dam Modifications
Aquatic Sediment	Pond 8	Dioxin TEQ is the primary risk drivers in sediment. Risks evaluated in the BHHRA indicate ELCRs are 2E-6 cumulative with the primary contributors of 1E-6 for dioxin and 1E-6 for arsenic. Arsenic concentrations are at background.	Institutional Controls w/Dam Modifications - RSP	Current Proposed Project in CDP 9-22	Restrict future land use via deed restriction and implement risk management plan for soil/sediment based on COIs and associated risks. Dam repairs provide improved sediment containment. Dam modifications include three elements: 1) a rock slope protection (RSP) buttress at the crib wall section; 2) ground improvements and an earth-fill buttress at the eastern dam section; and 3) a cutoff wall installed near the center of the pond to divide into two smaller ponds.	Soil buttress, rock slope protection, Pond 8 dividing wall, retain beach berm.
			On-Site Terrestrial Treatment and Consolidation Option	Y	Excavation and consolidation of sediment. Construction of landfill for containment on site, depending on characterization of sediment. Pond 8 and dam retained; dam modifications required.	Soil buttress, rock slope protection, Pond 8 dividing wall, retain beach berm.
			Excavation and Filling of West Pond, Disposal, Modifications to Dam	Y	Excavation of pond sediment in the west half of the pond. Disposal offsite at a permitted landfill. Fill in west half of the pond and revegetate the area. Removal of existing dam spillway and portion of north wall. New spillway with low level outlet in eastern half of pond. Installation of culvert through beach berm or removal of beach berm. Construction of wetland in lowland area.	Remove existing spillway. Construct new spill way in eastern half of pond. May require modification or removal of beach berm.
			Institutional Controls w/Dam Modifications - Construction of Drilled Secant Pile Wall at Cribwall	Y	Restrict future land use via deed restriction and implement risk management plan for soil/sediment based on COIs and associated risks. Dam repairs provide improved sediment containment. Dam modifications include three elements: 1) a secant pile wall at the crib wall section ; 2) ground improvements and an earth-fill buttress at the eastern dam section; and 3) a cutoff wall installed near the center of the pond to divide into two smaller ponds.	Soil buttress, secant pile wall, Pond 8 dividing wall, retain beach berm.
			Institutional Controls w/Dam Modifications - Construction of RSP Interior to Pond	Y	Restrict future land use via deed restriction and implement risk management plan for soil/sediment based on COIs and associated risks. Dam repairs provide improved sediment containment. Dam modifications include three elements: 1) a rock slope protection (RSP) buttress at the crib wall section, on the interior of Pond 8 ; 2) ground improvements and an earth-fill buttress at the eastern dam section; and 3) a cutoff wall installed near the center of the pond to divide into two smaller ponds.	Soil buttress, rock slope protection interior of Pond 8, Pond 8 dividing wall, retain beach berm.
			Institutional Controls w/Dam Modifications - Jet Grouting of Dam near Cribwall and North Berm	Y	Restrict future land use via deed restriction and implement risk management plan for soil/sediment based on COIs and associated risks. Dam repairs provide improved sediment containment. Dam modifications include three elements: 1) jet grouting at the crib wall section ; 2) ground improvements and an earth-fill buttress at the eastern dam section; and 3) a cutoff wall installed near the center of the pond to divide into two smaller ponds.	Soil buttress, jet grouting, Pond 8 dividing wall, retain beach berm.
			Institutional Controls w/Dam Modifications - Construction of Seawall	Y	Restrict future land use via deed restriction and implement risk management plan for soil/sediment based on COIs and associated risks. Dam repairs provide improved sediment containment. Dam modifications include three elements: 1) a seawall at the crib wall section ; 2) ground improvements and an earth-fill buttress at the eastern dam section; and 3) a cutoff wall installed near the center of the pond to divide into two smaller ponds.	Soil buttress, seawall, Pond 8 dividing wall, retain beach berm.