CALAVERAS COUNTY PLANNING DEPARTMENT
891 Mountain Ranch Road,
San Andreas, California 95249
(209) 754-6394

Planning Commission Staff Report

Hearing Date	August 25, 2022
Project Number/Name	ACTION ITEM
Supervisorial District Number	D4, FOLENDORF
Assessor's Parcel Number(s)	065-032-001
Planner	Gabriel Elliott, Director of Planning

Date: August 25, 2022

PROJECT DESCRIPTION: Per Section 17.48.020(D), Permitted uses in PS, Public Space zone, the Planning Commission is tasked with making a consistency finding that a use is consistent with other permitted uses in the zoning category. Section D also stipulates that the commission concurrently initiates a change in the chapter for inclusion of the use.

Section 17.48.020 permits the following uses: A. All public uses, buildings, facilities, structures, offices, maintenance yards or storage facilities, provided that there are no toxic or hazardous materials stored at the site, and except those enumerated in Section 17.48.030 of this chapter; B. Residence for security personnel; C. Accepted farming practices.

Section 17.48.030 permits the following uses by Conditional Use Permit (CUP): A. Temporary outdoor sales; Hydroelectric power generation projects by public or private entities; B. Sanitary and septage waste disposal facilities; C .Class II or Class III landfills; D. Temporary employee housing, except for one mobile home for security purposes; E. Public or private entity facilities which involve the storage, handling, or use of toxic or hazardous materials; F. Fire protection facilities; G. Correction or prison facilities; H. Animal shelters; I. Commercial agriculture; J. ;K. Ambulance services. Subsection D stipulates that the Planning Commission make a consistency finding of a use that is not specifically listed in that section.

1. **APPLICANTS/LANDOWNERS:** North Bay Logistics Group, LLC
   1325 B Evans Avenue
   San Francisco, Ca 94124

PROJECT LOCATION: The proposed site is located at 5130 Kiva Place, abutting the Calaveras County Water District's (CCWD) wastewater treatment facility at Copper Cove. The parcel is part of Section 26, Town 01N, Range 12E, MDM.

SURROUNDING LAND USES

NORTH –VACANT LAND – RESIDENTIAL FURTHER NORTH
SOUTH – VACANT LAND
EAST – RESIDENTIAL
WEST- VACANT LAND

Figure 1 - Location Map

Figure 2- 2022 County Aerial Image

ANALYSIS

The applicant, North Bay Logistics, seeks a public private partnership with CCWD to locate a biosolids operation on the same parcel as the CCWD wastewater facility in Copper Cove.

The primary goal of this partnership, according to North Bay Logistics, is to create a collaboration that provides long-term solutions to Calaveras County via cost-effective bio solids management which lowers regional methane release per Senate Bill (SB) 1383. Additional benefits include a cost saving technology that serves underserved rural farming communities like ours, preserves natural farmland, regenerates local soil, improves infrastructure, create jobs, and provide savings to local rate payers.

The proposed biosolids composting facility will intake a total of 50,000 tons of biosolids annually, with 1/5th (10,000 tons) coming directly from CCWD. 50,000 tons annually equals approximately 4,166 tons monthly. The remaining 40,000 annual tons, or approximately 3,333 monthly tons of bio sludge waste materials will be hauled to the site from local and regional locations via 12-15 trucks per day mostly from areas within a 100-mile radius of Calaveras County. There is an additional 50,000 tons of bulking agents that will also be hauled from mostly local sources to the project site. The total capacity of the facility will not exceed 100,000 tons per year (or 8,333 tons per month) of both combined bulking agents and bio-solids. The mixture of sludge and building agents will be stored and processed on site via enclosed tipping/screening staging areas with a variation of truck loads per day. All trucks will enter the facility, board the scale, get load tags, then proceed to enclosed tipping house to dump raw materials then exit the facility. The facility's water consumption will be mostly utilized via access to reclaimed water on site from CCWD. The proposed facility will operate 7 days per week from 5am to 5pm.

The total operation involves a three-stage process consisting of a primary stage (two weeks), a secondary stage (two weeks), a curing stage (two weeks). The last stage is the curing stage which consists of vermicomposting filtration where the final stage of processing raw materials will take place in enclosed steel barn on site via a continuous flow system (four weeks). Once ready for harvest a final screening finishes the conversion of biosolids into Grade "A" fertilizer, and then packaging into 1 cubic foot bags for wholesale by the tons.

A Grade "A" compost is screened to 3/4" to eliminate rocks and other debris. This compost is ideal for improving soil structure, which will yield better crops and long-term health to lawns and gardens. The composting process is 100% natural with zero additives other than reclaimed water. The raw materials will be covered with a bio layer and placed on bio pads contributing to subpar Volatile Organic Compounds (VOCs) and best management practices.

If allowed, the total estimated cost of the composting technology and construction including concrete bunkers, concrete trench style sub floors, bio filter, industrial mechanics, water balancing, and solar power cell exceed $12 million dollars in improvements. The facility will hire 8 to 10 full time employees with several positions for part-time laborers offering competitive pay training & benefits. Also, the total estimated land area will be 60 acres, consisting of two ponds (10 acres), tipping & screening steel barns (5 acres), material storage (10 acres), primary (15 acres), and secondary (15 acres).

LAND USE AND ZONING

The property is zoned PS, Public Space, and is the current site of the CCWD wastewater treatment facility. The CCWD facility was constructed in 1973 and operated under CUP 88-06, and Waste Discharge Permit Order 94-147. In 1994, modifications and expansion were approved under CUP 93-53, on October 20, 1994, with an Environmental Impact Report (State Clearinghouse #94012011). The modifications included a new septage receiving station, two new treatment ponds to accommodate growth in the service area and to handle new septage loading, additional aeration of existing treatment ponds to control odor and to provide increase aeration/mixing capacity, improvements to effluent disinfection systems, and new piping and control systems.

Since the CCWD facility is located on the same parcel, and if approved, will be located on property owned by CCWD, staff is requesting that the Planning Commission, consistent with Section 17.48.030(D) of the zoning code, determine that the proposed biosolids composting is consistent with or less intensive than the waste facility use, and may be added as a permitted use or conditionally permitted use. If the Planning Commission determines that the proposed use is more consistent with permitted uses in Section 17.48.020., the Commission would make such finding and initiate a change in Section 17.48.020 or Section 17.48.030, for inclusion of the use.

SUITABILITY OF SITE FOR USE

Staff believes that the proposed use, although not listed as a permitted or conditional use in the PS zone, is consistent with the uses conditionally permitted uses in the zone.

ENVIRONMENTAL REVIEW

Staff, in conjunction with the County Counsel's office, will determine the appropriate environmental determination for the project once the land use consistency issue is resolved.

CONCLUSION

Sections 17.48.020 and 17.48.030 are a few of the sections of the zoning code that require the Planning Commission to make a consistency finding. Typically, the Planning Director would be tasked with that duty. Also, the two sections require that the Planning Commission, after making such consistency findings, initiate a change to the zoning code. The applicant proposes a state-of-the-art facility in Calaveras County that would provide employment for the area and reduce the amount of solid waste by-products transferred from the CCWD site to the landfill Although there is a recognition that there will be truck traffic unto the site, data is not yet available to determine the net truck traffic to the site after considering the reduction in truck traffic from CCWD as a result of the facility being built adjacent to the wastewater treatment facility. Staff has asked CCWD to provide, for comparison purposes only, the operational characteristics of the facility at Kiva Road. As of the writing of this report, that information has not been received. The information will help

determine what the net gain or loss of truck traffic to the site will be if the project is implemented

RECOMMENDATION

That the Planning Commission take the following actions:

1. Make a consistency finding that the proposed biosolids operation is consistent with used allowed by a Conditional Use Permit.
2. Amend Section 17.48.030 of the Zoning Code to allow biosolids operations in the PS (public Safety) zone.

ATTACHMENTS

1. ECS Project memo dated June 6, 2022
2. North Bay Logistics memo dated July 1, 2022
3. Conceptual Site map received August 4, 2022

ECS PROJECT MEMO

engineeredCOMPOSTsystems

Project Memo
272-103-02

DATE:	6/6/2022	ECS PROJECT #:	272-103
BY:	Baraka Poulin,	PROJECT NAME:	North Bay Logistics Group: Biosolids Composting
TO:	Cory Horton	COPY TO:	
SUBJECT:	Basis of Design		

RESPONSE REQUESTED

Yes	X	No		Hard Copy		E-Mail	X	Phone Call	

The following memo provides a conceptual overview of the proposed biosolids composting project. This intended for planning and will be refined during the design stage. The numbers and description herein are preliminary and do not represent final design values.

I. System Description

This project will compost 100,000 Tons/year of a biosolids – woody biomass mix using aerated static pile composting. The system features primary (sometimes called 'Active') composting with reversing aeration in a biolayer Covered Aerated Static Pile (CASP). Secondary composting will use a positively aerated ASP. Figure 1 shows the proposed primary and secondary aeration type, zone sizing and other system information.

Sizing	(US units)	Primary	Secondary
Aeration Type		Reversing	Positive
Aeration Floor Type		Trench	B/G Sparger
Pile Arrangement		Bunker	Mass Bed
Retention Time	days	16	24
Independent Aeration Zones	#	12	12
Fan Groups	#	1	1
Zone Width	ft	30	30
Zone Length	ft	90	110
Pile Depth	ft	8.7	8.7
Cover Depth	ft	1.0	0.0
Time to Fill Zone	days	1.3	2.3
Total System Mix Volume	CY	9,840	12,360

Figure 1 - System Configuration

The configuration combines up to 12 zones with a single variable speed supply and single variable speed exhaust fan connected by a common plenum (called a Fan Group in ECS vernacular). Every active CASP zone is equipped with hard-wired temperature probes inserted in the composting material. The CompTroller™ Graphical User Interface (GUI) uses the temperature feedback to control the aperture of a motorized aeration damper at each zone to meet operator input settings. Temperatures, damper commands, and other real-time data are both displayed and logged. Every batch of compost processed automatically generates a unique data file that includes hourly temperatures active, system status, and operator comments to document regulatory compliance.

II. Feedstock Summary

The primary project goal is to maximize biosolid composting. For heavy, wet, high-nitrogen feedstocks such as biosolids, the operator must add bulking amendment, such as woody biomass, to create a Best Management Practice (BMP) compliant feedstock. Figure 3 and Figure 3 show the initial anticipated mix composition.

Material	Wet Tons/yr	% Moisture	Sp. Gravity	C/N Ratio	TKN
Biosolids	50,000	80%	0.90	10	5.0%
Green Waste	50,000	40%	0.35	100	0.5%
Totals (TPY)	**100,000**				

Figure 2 - Feedstock Composition

Feedstock	(US units)	
Biosolids	DT/yr	10,000
Biosolids Solids	%	20%
Biosolids	WT/yr	50,000
Woody Amendment	WT/yr	50,000
Total Mix	WT/yr	100,000
Mix Density	lb/CY	893
Mix Moisture (initial)	%	60%
Mix C/N		29
Ratio: Woody Amendment/Feedstock	ton/ton	1.0

Figure 3 - Initial BMP Mix Assumptions

ECS's white paper provides more background on biosolids composting and BMP's:

https://compostsystems.com/wp-bmps-for-high-nitrogen-feedstocks/

III. Primary Composting

Primary composting will use high flow aeration to maintain sufficiently cool pile temperatures for good oxygen absorption into liquid at the film level. This helps achieve very rapid initial composting and facilitates the Process to Further Reduce Pathogens (PFRP). Figure 4 shows an example of what this type of system looks like. In positive mode, the positive fan pushes air from the bottom of the aeration floor up through the pile surface. In negative mode, the exhaust fan draws air down through the pile, into the floor and pushes it out through a biofilter. The ECS

CompTroller uses pile temperature sensors to automatically alternate the airflow direction to facilitate optimal conditions.

During loading, the zone will be in 'positive' mode to help reduce floor plugging.

The operator will apply a bio-layer cover to each new pile for regulatory compliance. Most operators pull this material from a post-PFRP zone nearby or use overs. This bio-layer cover provides insulation for PFRP, and when combined with surface irrigation, can also help scrub odors. The bio-layer cover material can be mixed into the batch at the end of primary composting.

Figure 4 - Biosolids compost facility with concrete bunker walls, trench style floors and biofilter

IV. Secondary Composting

Biosolids composting requires time for nitrogen to stabilize. After the high-energy active phase, a low flow-rate secondary ASP systems work well to provide further stabilization. Figure 5 shows an example of a positively aerated system using a mass-bed configuration. The bio-layer cover is not required for secondary composting.

Figure 5 - positively aerated ASP with mass-bed configuration and concrete pushwall

V. Electrical

The system requires 3 phase electrical power, preferably 460V although other voltages are acceptable. The fans represent 95% of the electrical load, with computers and controllers representing the minor balance. The fans will run at a somewhat uniform load 24 hours/day, every day. They will occasional ramp up or down to maintain a duct static setpoint, as the CompTroller modulates dampers based on zone temperature feedback.

- Total estimated HP: 260HP installed.
- Total Expected annual energy use: 1,000,000 kWh/yr

Mechanical		Primary	Secondary
Aeration Rate - Peak	CFM/CY	5.5	3.0
Fan Power - Installed (total)	HP	185	75
Fan Power - Installed (total)	kW	138	56
Fan Energy (Annual)	kWh/yr	687,000	302,000

Figure 6 - Electrical Load

VI. Operations

The typical process steps are:

1. Trucks deliver raw feedstocks to site. Biosolids are tipped into bunks. Woody biomass is tipped in receiving area and may be size reduced (grinding/shredding) as needed.
2. Stockpiled feedstocks are mixed and moisturized (brought up to a defined moisture content) using a horizontal mixer.
3. Mixed, moisturized feedstock is then placed in a primary reversing aeration bio-layer Covered Aerated Static Pile (CASP) zone.
4. The pile is covered with a bio-layer cover insulating layer
    a. During retention in the primary zone, the bio-layer cover layer is irrigated daily (to keep the temperature of the top of the pile down and to maintain moisture content in the cover material)
        i. Keeping the top of the pile cool allows for the natural condensation of potentially odorous VOC's and organic acids – preventing release to surrounding air
        ii. Keeping the bio-layer cover layer moist is important to maintaining an active biofilm, and to ensure good exhaust gas exchange at the bio-layer cover layer particle surface.
5. Towards the end of residence in the primary zone, the pile is heavily irrigated such that the average moisture content of the pile as a whole is brought back up to a defined moisture content (slightly less than that of the initial moisturized mix)
6. The operator moves material into secondary composting. The secondary surface is/can be irrigated as needed.
7. Upon completion of secondary composting, the operator moves the material to a screen
    a. The screened overs may be recirculated back to the start of the process, or if heavily contaminated, these may be sent to alternative daily cover or landfilled.
    b. The unders may be sold stockpiled on site as needed and sold as finished product.

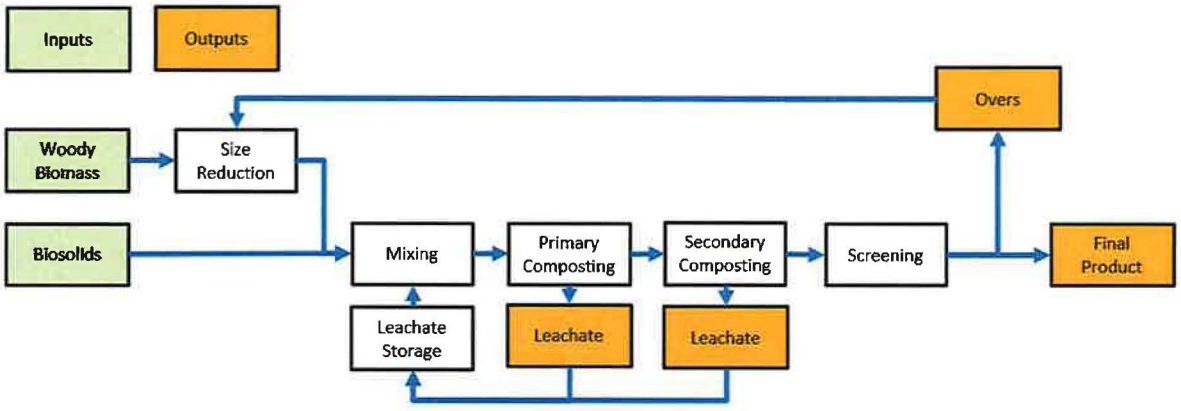


Figure 7 - Process Flow Diagram

VII. Control of Air Emissions

The ECS CASP design proposed here has demonstrated very low VOC and odor emission factors. This performance has been achieved by employing following strategies:

- Operations regularly produce a BMP compliant initial mix.
- The CASP aeration and control system consistently maintains near-optimal process conditions
- Active compost piles are covered with a biolayer cover in compliance with CalRecycle regulations
- Active compost piles utilize a biofilter in 'negative' mode
- Automatically controlled surface irrigation is available, and can be used as needed, to enhance the control efficiency of the biolayer

VIII. Water Modelling

This model is based upon thermodynamic calculations. The model starts by evaluating bio-oxidation of biologically available volatile solids (BVS) content in the feedstock. The model applies rates of BVS oxidation to yield CO2 and water (thus affecting the water balance). BVS oxidation is also critical to the moisture model because it is an exothermic process, generating heat, which drives evaporation. Thus, high rates of BVS oxidation will generate some water, but evaporate significantly more. The model also considers the impacts of rainfall, pile absorption, surface irrigation, and duct condensation under normal operating and 25-year 24-hour storm conditions.

A note for using these values: water balance estimates are very sensitive to input values. ECS provides these values to offer an order of magnitude for water consumption and generation. These values should be integrated into a site water management plan by a licensed civil engineer, with appropriate factors of safety designed into final sizing.

A. Key model Assumptions

- Average mix moisture:58%
- Average target moisture: 55%
- 24 hour/25-year storm: 3.5 inch rain/day
- Annual Rainfall: 32 in/yr
- Annual Pan evaporation 58 in/yr
- Average Aeration rate: 2.5 CFM/
- 60% of the duct condensate flows into contact water, the remaining 40% is stormwater

B. Water Generation:

On-site liquid is typically classified as pathogenic or non-pathogenic. These are often referred to as contact-water or stormwater. Liquid that contacts feedstock before completing the process to further reduce pathogens (PRFP) should only be reintroduced at the mixing step (at the beginning of the process) to avoid re-introducing pathogens. Nonpathogenic water use is more flexible. Figure 8 summarizes the liquid generation location, classification, condition, peak and annual quantity.

Max days w/o Withdrawal - Contact	10	days
Max days w/o Withdrawal - Storm	5	days

	Generation	Classification	Condition	Peak gal/mont	Annual Gal
	Tipping Area Water	Contact Water	Normal Operation	by others	by others
	Primary - Loaded Zone	Contact Water	Normal Operation	-	-
	Primary - Empty Zone	Contact Water	Normal Operation	9,174	53,118
	Primary - Loaded Zone	Contact Water	24-hr 25-yr Storm	25,849	-
	Primary - Empty Zone	Contact Water	24-hr 25-yr Storm	5,891	-
	Primary - Biofilter	Stormwater	Normal Operation	-	-
	Primary - Duct Condensate			222,888	2,567,970
60%	Primary - Duct Condensate	Contact Water	Normal Operation	133,733	1,540,782
40%	Primary - Duct Condensate	Stormwater	Normal Operation	89,155	1,027,188
	Secondary - Loaded Zone	Stormwater	Normal Operation	-	-
	Secondary - Empty Zone	Stormwater	Normal Operation	11,213	64,922
	Secondary - Loaded Zone	Stormwater	24-hr 25-yr Storm	31,593	-
	Secondary - Empty Zone	Stormwater	24-hr 25-yr Storm	5,891	-
	Primary - Biofilter	Stormwater	24-hr 25-yr Storm	15,231	-
	Total Storage Capacity/Annual Generation	Contact Water		**79,375**	**1,593,900**
	Total Storage Capacity/Annual Generation	Stormwater		**16,728**	**1,092,110**

Figure 8 - Summary of liquid generation

The Condition refers to either the generation occurring during normal operation, or during a 24-hour 25-year storm event. The storm events impact the short-term minimum tank sizing.

Primary duct condensate can be split between flowing back to the floor (and contacting pathogenic material) or draining out by the fan (not contacting pathogenic material).

This model only considers the process area. Tipping area and other impervious surfaces (roads, buildings etc.) should be analyzed by others and added to the overall water management plan.

Other notes:

1. Tank Sizing (Gal) = Storm Event (Gal) + Normal Operation Fill rate (Gal/Mo) * Retention (#Days/30)
2. The Total line adds Pre-PRFP Contact water from 25 year storm to existing accumulated volume (assuming no withdrawal for 10 days)
3. The model assumes 100% of rain that hits paved areas runs off

C. Water Consumption

Figure 9 shows the different locations throughout the process where water can be used.

Consumption	Water Source	Condition	Peak gal/month	Annual Gal
Feedstock - Mix Moisturization	Contact Water + Stormwater	Normal Operation	22,172	22,172
Primary - Surface Irrigation	Stormwater + Potable	Normal Operation	163,167	786,697
Primary - Post Process Re-wet	Stormwater + Potable	Normal Operation		1,739,119
Primary - Biofilter Surface Irrigation	Stormwater + Potable	Normal Operation	219,753	1,059,524
Secondary - Surface Irrigation	Stormwater + Potable	Normal Operation		961,518
Total				**4,569,030**

Figure 9 - Summary of water consumption

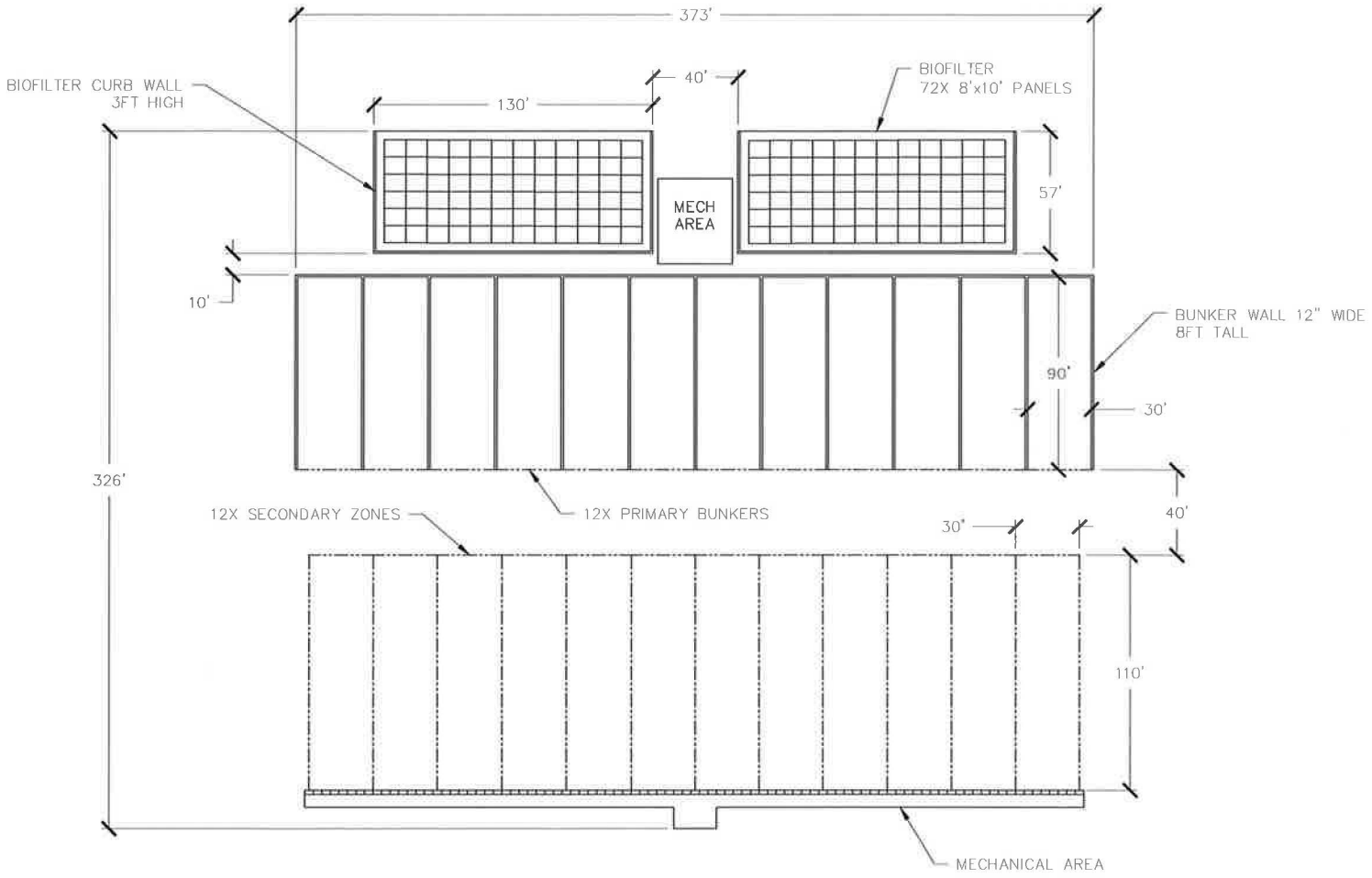
D. Net Use

Figure 10 shows significant liquid should be added to the process. Almost all compost sites are net water consumers. This site's dry conditions contribute to a fairly high net consumption. In fact, on a monthly basis, each month consumes more water than is generated, which helps alleviate the need for large storage volumes.

Note, this value can vary widely based on changing the input conditions. We suggest assuming +/-40%.

Cumulative Water Generation/(Consumption)				(1,883,020)
Total Buffer Capacity	16,728	gallons	mTPY	

Figure 10 - Net liquid generation/(consumption)



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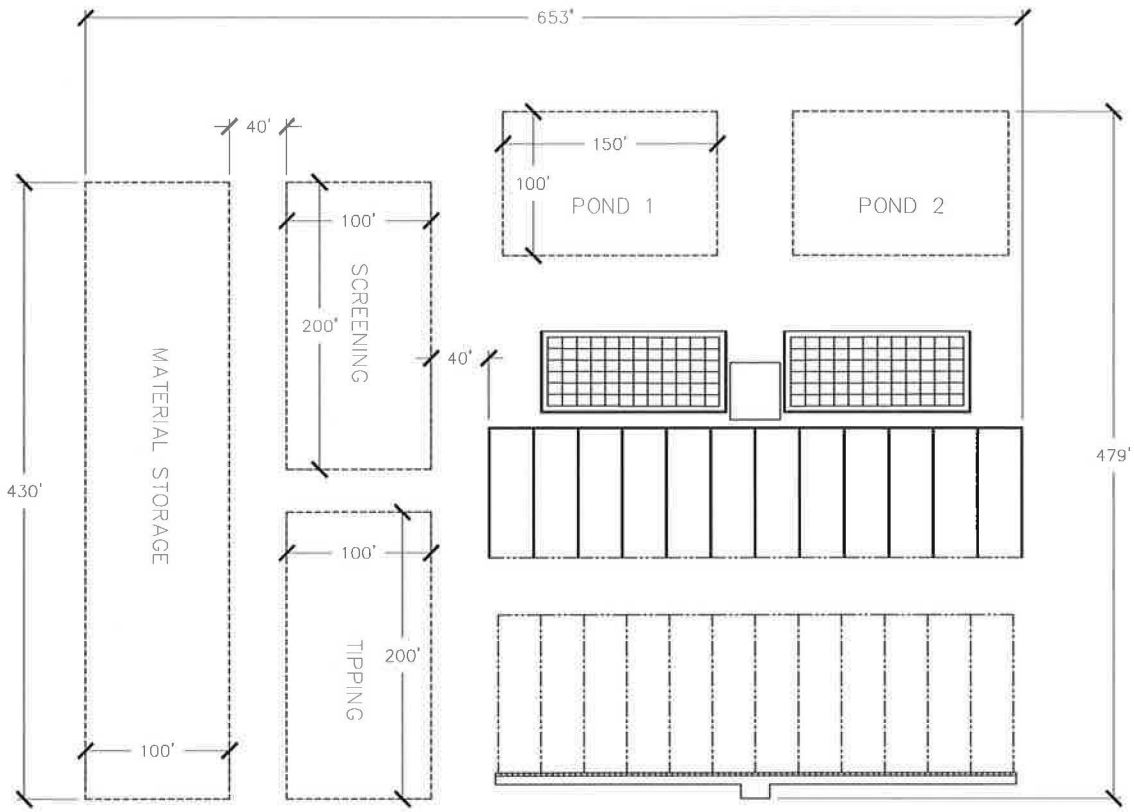
PROJECT:
SHT: 1 OF 4
DWG. NO: 272-103-G01
REV: —



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NORTH BAY LOGISTICS MEMO
DATED JULY 1, 2022

TO: Calaveras County Planning

FR: North Bay Logistics Group

DATE: July 1, 2022

REF: Description of Biosolids Operation Scope of Operation (Copperopolis, CA)

A.) Introduction: The proposed bio solids in Copperopolis Ca (Kiva & Littlejohn Rd) facility applicants seek a public private partnership with CCWD. The primary goal of this partnership is to create a collaboration that provides long-term solutions to Calaveras County via cost-effective biosolids management, lowering regional methane's per SB 1383, cost saving technology to underserved rural farming community, regional food stability, preservation natural farmland, regeneration of local soil, improve infrastructure, create jobs, and provide savings to local ratepayers.

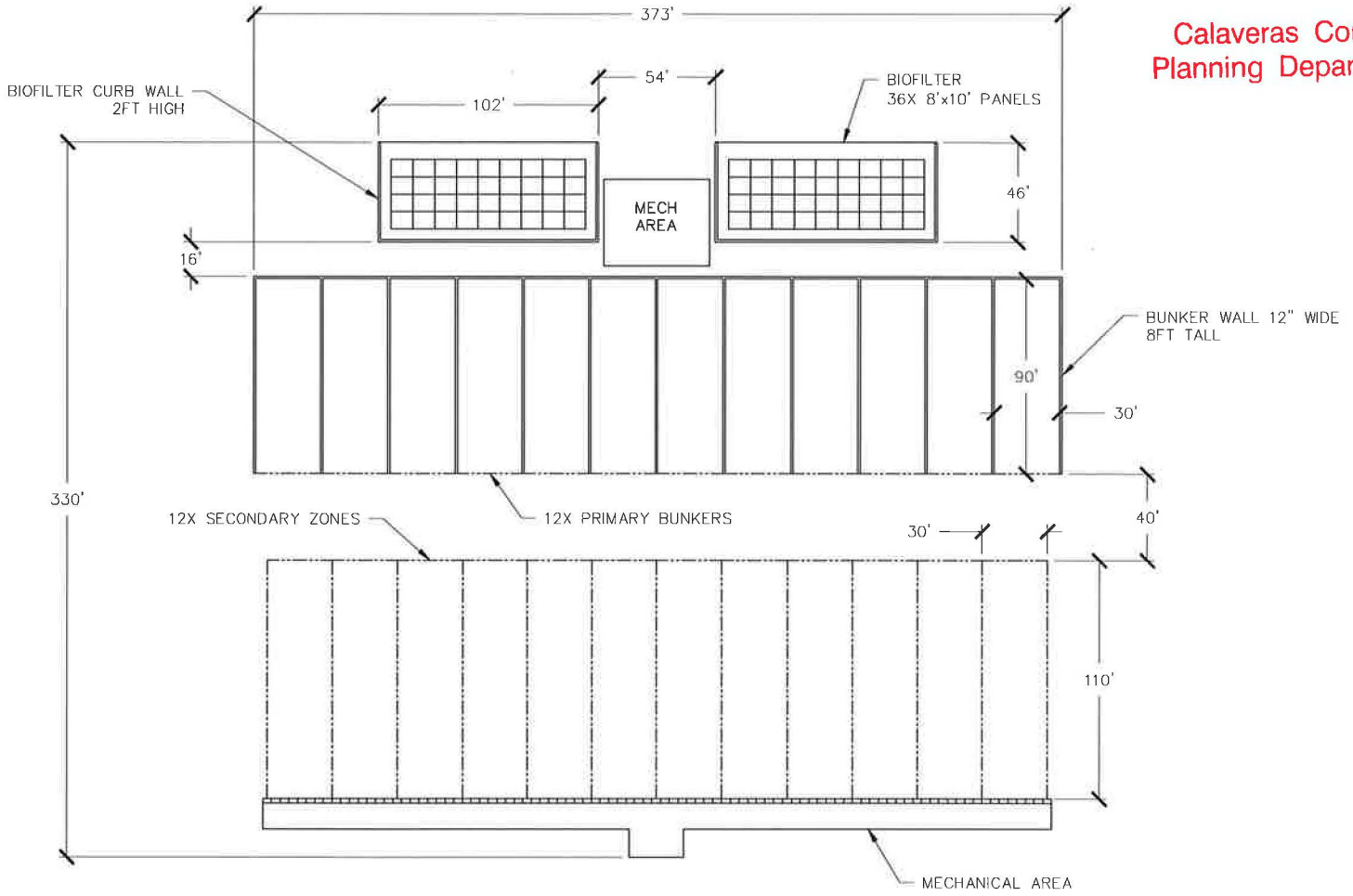
B.) STAGE 1 Logistics of Materials The proposed biosolids composting facility will intake a total of fifty thousand tons of biosolids annually 1/5 will be directly from CCWD. The bio sludge waste materials will be hauled to the site from local and regional locations with an increase of traffic of 12-15 trucks per day mostly from areas within a 100-mile radius. The additional fifty thousand tons of bulking agents will also be hauled from mostly local sources. Stored and processed on site via enclosed tipping/screening staging area with a variation of truck loads per day. This facility will operate 7 days per week from 5am to 5pm. The facility's water consumption will be mostly utilized via access to reclaimed water on site normally wasted. The total capacity of the facility will not exceed one hundred thousand tons per year of both combined bulking agents and biosolids. All trucks will enter the facility, board the scale, get load tags, then proceed to an enclosed tipping house to dump raw materials then exit the facility.

C.) STAGE 2 Processing of Materials: Composting All biosolids in addition to organic materials are mixed in the enclosed screening barn and prepared for implementation via CASP bio-pad systems to create class A compost and vermicast. This process is 100% natural with zero additives other than water. The beginning product stemming from dry cake or sludge biowaste will be converted to end product class A compost and natural soil amendments. The raw materials will be covered with a bio layer and placed on bio pads contributing to subpar VOCs and best management practices. 1.) Primary Stage – 2 Weeks 2.) Secondary Stage – 2 Weeks 3.) Curing Stage – 2 Weeks

D.) STAGE 3 Processing of Materials: Vermicomposting 1.) Vermicomposting – 4 Weeks 2.) Vermicomposting Filtration- the final stage of the processing of raw materials will take place in the enclosed steel barn on site via continuous flow vermicomposting systems. Once ready for harvest a final screening finishes the conversion of biosolids into class fertilizer. 3.) Packaging 1 cu ft bags for retail via conveyor, wholesale by the tons.

E.) Land Use: The total estimated land usage will be 60 acres. Two Ponds – 10 Acres Tipping & Screening Steel Barns – 5 Acres Material Storage – 10 Acres Primary – 15 Acres Secondary – 15 Acres

F.) Infrastructure Development Improvements The total estimated cost of the composting technology and construction including concrete bunkers, concrete trench style sub floors, bio filter, industrial mechanics, water balancing, and solar power cell exceed twelve million dollars in improvements. Please see the attached proposal for a breakdown on auxiliaries. The facility will hire 8 to 10 full time employees with several positions for part-time laborers offering competitive pay training & benefits



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1	UPDATED BIOFILTER AND APRON AND MECH AREA DIMS.	HLG	8/3/2022

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REV:	1

CONCEPTUAL SITE MAP
RECEIVED AUGUST 4, 2022

LITTLE JOHN ROAD/KIVA PLACE
SITE

-	SEE SHEET 1 FOR REVISION HISTORY	-	-
NO	REVISION		

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