County of Mendocino

Notice of Meeting

Special Meetings

Thursday, May 26, 2022 | **2:30 PM** | **Via Video Conference**

Caspar Transfer Station Joint Coordinating Committee

Join Zoom Meeting

https://mendocinocounty.zoom.us/j/89049234391?pwd=OXVSZGlLSHRqN1NBUXgzNGRJd0szUT09

Meeting ID: 890 4923 4391

Passcode: 289754

Join by Phone 1 (669) 900-9128

Caspar Transfer Station Joint Coordinating Committee meetings will be conducted virtually and not available for in person public participation pursuant to the provisions of Government Code section 54953 and the recommendation of the Mendocino County Health Officer.

The public may participate digitally in meetings by sending comments to fisettea@mendocinocounty.org or by clicking the link above to join the Zoom meeting, in lieu of personal attendance.

All email comment must be received by 8:00 A.M. the morning of the meeting in order to be published online prior to the meeting.

TO SPEAK DURING PUBLIC COMMENT PORTIONS OF THE AGENDA VIA ZOOM, PLEASE JOIN THE MEETING AND USE THE RAISE HAND FEATURE WHEN THE CHAIR CALLS FOR PUBLIC COMMENT.

AGENDA

1. MEETING CALLED TO ORDER AND ROLL CALL

2. CONDUCT OF BUSINESS

2A. Discussion and Possible Action Including Adoption of Resolution of the Caspar Transfer Station Joint Coordinating Committee Finding that State or Local Officials Continue to Recommend Measures to Promote Social Distancing in Connection with Public Meetings

Recommended Action: Adopt resolution finding that State or Local Officials continue to recommend measures to promote social distancing in connection with public meetings.

Attachments: (1) Draft Resolution, (2) Recommendations for Safely Holding Public Meetings

from the Mendocino County Public Health Officer

2B. Presentation from HDR Engineering, Inc., on Preliminary Financial & Environmental Analysis for Potential Central Coast Transfer Station Sites

Recommended Action: Receive presentation.

Attachments: Preliminary Financial and Environmental Analysis for Potential Central Coast Transfer Station

2C. Discussion and Possible Direction to Central Coast Transfer Station Project Manager, Tom Varga, on Further Assignments and Tasks

Recommended Action: Provide direction as appropriate.

3. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

The Committee will receive public comments on items not appearing on the agenda and within the subject matter jurisdiction of the Committee. The Committee will not enter into a detailed discussion or take any action on any items presented during public comments. Such items may only be referred to staff for administrative action or scheduled on a subsequent agenda for discussion. Persons wishing to speak on specific agenda items should do so at the time specified for those items. The presiding Chair shall limit public comments to three minutes.

4. ADJOURNMENT

The Caspar Transfer Station Joint Coordinating Committee complies with ADA requirements and upon request, will attempt to reasonably accommodate individuals with disabilities by making meeting material available in appropriate alternative formats (pursuant to Government Code Section 54953.2). Anyone requiring reasonable accommodation to participate in the meeting should contact the Mendocino County Department of Transportation by calling (707) 463-4363 at least 5 days prior to the meeting.

Public Health Department
of Mendocino County
Healthy People, Healthy Communities
Andy Coren, MD,
County Health Officer

Recommendations for Safely Holding Public Meetings from the Mendocino County Public Health Officer

March 9, 2022

Each local governmental body is authorized to determine whether to hold public meetings in person, online (teleconferencing by electronic means, through either audio or video, or both), or via a combination of methods. The following are my recommendations as the County Health Officer, to minimize the risk of COVID-19 transmission during a public meeting.

1. I continue to strongly recommend online public meetings (i.e., teleconferencing meetings) to the extent possible, as these meetings present the lowest risk of transmission of SARS CoV-2, the virus that causes COVID-19. This recommendation is made due to the current community prevalence rates. While the winter surge has declined and the availability of hospital beds has improved, the County continues to be an area, defined by the Centers for Disease Control (CDC), with "High Community Transmission" risk. In addition, rates remain high with the Omicron variant of COVID-19 being the predominant variant, the impact of which on the spread of COVID-19 has shown to dramatically increase the transmission of COVID-19. Additionally, I make this recommendation based on the unique characteristics of public governmental meetings (such as the increased mixing associated with bringing people together from across the community, the need to enable those who are immunocompromised or unvaccinated to be able to safely continue to fully participate in such governmental meetings, and the challenges with fully ascertaining and ensuring compliance with vaccination and other safety recommendations at such meetings), and the continued increased safety protection that physical/social distancing provides as one means by which to reduce the risk of COVID-19 transmission.

2. If a local agency determines to hold in-person meetings, offering the opportunity to attend via a call-in option or an internet-based service option is recommended, when possible to give those at higher risk of and/or higher concern about COVID-19 an alternative to participating in person.

3. A written safety protocol should be developed and followed. This protocol need not be pre-approved by the Health Officer/County Public Health. It is strongly recommended that any safety protocol require the following:

a. social distancing, i.e., six feet of separation between attendees and seating arrangements should allow for staff and members of the public to easily maintain at least six-foot distance from one another at all practicable times;

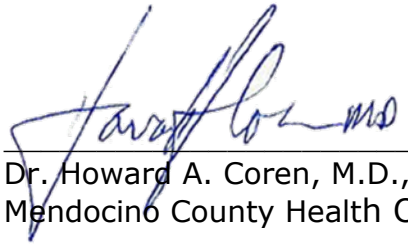
b. face masks for all attendees;

c. upgraded ventilation systems and/or opening door(s) and window(s) if available for improved optimum ventilation;

d. attendees should be screened for COVID-19 symptoms;

e. voluntary sign-in sheets with names and contact information to assist in contact tracing in the event any cases might be linked to that public meeting; and

f. it is recommended that local agencies consider limiting in-person attendance to those attendees (1) who have current COVID-19 vaccination status (received all boosters for which they are eligible) or (2) who have proof of negative COVID-19 antigen test within the last 48 hours prior to the meeting or are within 90 days of recent COVID-19 infection.



Dr. Howard A. Coren, M.D.,
Mendocino County Health Officer

Dated: March 9, 2022

RESOLUTION OF THE CASPAR TRANSFER STATION JOINT COORDINATING COMMITTEE FINDING THAT STATE OR LOCAL OFFICIALS CONTINUE TO RECOMMEND MEASURES TO PROMOTE SOCIAL DISTANCING IN CONNECTION WITH PUBLIC MEETINGS

WHEREAS, all meetings of the Caspar Transfer Station Joint Coordinating Committee are open and public, as required by the Ralph M. Brown Act (Cal. Gov. Code §§ 54950 – 54963), so that any member of the public may attend, participate, and view the legislative bodies conduct their business; and

WHEREAS, the Brown Act, Government Code section 54953(e), makes provisions for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions; and

WHEREAS, on March 4, 2020, Governor Newsom issued a Proclamation of a State of Emergency declaring a state of emergency exists due to the outbreak of respiratory illness due to a novel coronavirus (a disease now known as COVID-19), pursuant to the California Emergency Services Act (Government Code section 8625) and that State of Emergency is still in effect in the State of California; and

WHEREAS, as of the date of this Resolution, neither the Governor nor the state Legislature have exercised their respective powers pursuant to Government Code section 8629 to lift the state of emergency either by proclamation or by concurrent resolution the state Legislature; and

WHEREAS, the California Department of Industrial Relations has issued regulations related to COVID-19 Prevention for employees and places of employment. Title 8 of the California Code of Regulations, Section 3205(c)(5)(D) specifically recommends physical (social) distancing as one of the measures to decrease the spread of COVID-19 based on the fact that particles containing the virus can travel more than six feet, especially indoors; and

WHEREAS, the Mendocino County Public Health Officer continues to recommend teleconferencing during public meetings of all legislative bodies to protect the community's health against the spread of COVID-19, based in part on the continued increased safety protection that physical/social distancing provides as one means by which to reduce the risk of COVID-19 transmission; and

WHEREAS, the Caspar Transfer Station Joint Coordinating Committee finds that state or local officials have imposed or recommended measures to promote social distancing based on the Mendocino County Public Health Officer recommendation and the California Department of Industrial Relations' issuance of regulations related to COVID-19 Prevention through Title 8 of the California Code of Regulations, Section 3205(c)(5)(D); and

WHEREAS, as a consequence, the Caspar Transfer Station Joint Coordinating Committee does hereby find that current conditions meet the circumstances set for in Government Code section 54953(e)(3) to allow this legislative body to conduct its meetings by teleconferencing without compliance with Government Code section 54953 (b)(3), pursuant to Section 54953(e), and that such legislative body shall comply with the requirements to provide the public with access to the meetings as prescribed by Government Code section 54953(e)(2) to ensure the public can safely participate in and observe local government meetings.

NOW, THEREFORE, BE IT RESOLVED by the Caspar Transfer Station Joint Coordinating Committee, as follows:

SECTION 1. RECITALS.

All of the above recitals are true and correct and are incorporated into this Resolution by this reference.

SECTION 2. STATE OR LOCAL OFFICIALS CONTINUE TO RECOMMEND MEASURES TO PROMOTE SOCIAL DISTANCING IN CONNECTION WITH PUBLIC MEETINGS.

The Caspar Transfer Station Joint Coordinating Committee finds that State or local officials continue to recommend measures to promote social distancing pursuant to Government Code section 54953(e)(3) to allow legislative bodies to use teleconferencing to hold public meetings in accordance with Government Code section 54953(e)(2) to ensure members of the public have continued access to safely observe and participate in local government meetings.

SECTION 3. REMOTE TELECONFERENCE MEETINGS.

The Caspar Transfer Station Joint Coordinating Committee is hereby authorized to take all actions necessary to carry out the intent and purpose of this Resolution including, conducting open and public meetings in accordance with Government Code section 54953(e)(2) and other applicable provisions of the Brown Act.

SECTION 4. EFFECTIVE DATE.

This Resolution shall take effect immediately upon its adoption.

The foregoing Resolution introduced by_____, seconded by _____, and carried this _____ of _____ 2022, by the Caspar Transfer Station Joint Coordinating Committee, by the following vote:

AYES:

NO:

ABSENT:

ABSTAIN:

WHEREUPON, the Chair declared said Resolution adopted and SO ORDERED.

_____
Ted Williams, Chair
Caspar Transfer Station Joint Coordinating Committee

Preliminary Financial and Greenhouse Gas Analysis for Potential Central Coast Transfer Station

Central Coast Transfer Station

at Pudding Creek Site and Highway 20 Site

Mendocino County, California

May 2022

Contents

APPENDICES

1.0 Purpose

This report is prepared for the County of Mendocino and the Central Coast Transfer Station Coordinating Committee. The purpose of this report is to:

1) Perform a planning level cost benefit analysis of capital and operational costs of the proposed Central Coast Transfer Station (CCTS); and
2) Estimate the relative greenhouse gas (GHG) emissions impact from the use of each potential location for the CCTS.

2.0 Background

2.1 Previous Studies

Mendocino County (County) and the City of Fort Bragg (City) first started exploring the option of developing a CCTS in 2006 after the current system was determined to be inefficient. The County in conjunction with the City performed a siting study that identified 25 potentially suitable sites. After review from the public and CalTrans, five sites were identified for further study.

In 2013, the Highway 20 site as identified in the siting study was determined to be the preferred site for the CCTS. In 2016, an Environmental Impact Report (EIR) was prepared for the project during the local permitting process. As the County and City negotiated a land swap for the facility, the project was put on hold. Initial cost estimates for the Highway 20 transfer station were between $4 and $5 million but did not include land acquisition costs.

In 2019, the City of Fort Bragg hired Diversion Strategies to review the project's feasibility considering new regulations and the current waste climate. The study focused on the Highway 20 location, the Caspar Transfer Station owned by the County and operated by Solid Waste of Willits (SWOW), and Waste Management's Pudding Creek Facility. The ultimate recommendation of this report was to include transfer operations in the upcoming collection Request for Proposals for Franchise Area 2 and the City of Fort Bragg waste and recycling collection. A preliminary financial pro forma was prepared by Diversion Strategies which outlined several assumptions and costs, and identified a $107.60 per ton tip fee for the CCTS based on an annual inbound throughput of 14,467 tons.

In August 2021, a financial pro forma was prepared by Tom Varga which estimated the total capital costs of the Highway 20 Transfer Station between $8.5 and $9.5 million and the Pudding Creek Transfer Station at $4.85 million.

2.2 California Waste Diversion Compliance

California has passed several regulations mandating diversion of recyclable and organic material away from landfill, namely Assembly Bill (AB) 341, AB 1826, and Senate Bill (SB) 1383. Each of these bills require certain residents, businesses,

and multi-family property owners to implement recycling programs and organic waste collection programs. The proposed CCTS would assist the region in its ability to move materials more efficiently to the appropriate recycling, composting, or disposal facility. The following is a summary of each regulation.

AB 341
AB 341 created a state policy that no less than 75% of solid waste generated in California is to be source reduced, recycled, or composted by the year 2020. This bill required any commercial or public entity that generates more than four cubic yards of commercial solid waste per week or is a multi-family residential dwelling unit of five or more to utilize recycling services.

AB 1826
Also known as the Mandatory Commercial Organics Recycling Mandate, this bill required businesses, including multi-family residential dwellings with five or more units, to arrange organic waste recycling services. The mandate is based on how much organic waste or solid waste the business generated per week.

SB 1383
The latest landmark regulation is SB 1383, the Short-Lived Climate Pollutants bill. SB 1383 mandates a 50% reduction in organic waste disposal by 2020 and 75% reduction by 2025. CalRecycle has outlined several steps they deem necessary to achieve these goals, including requirements related to organic waste collection services, public education and outreach, edible food recovery programs, and reporting and enforcement.

3.0 Potential Locations

The County and City have identified two potential locations for the CCTS: Waste Management's Pudding Creek site, and the Highway 20 site. The status quo entails commercial hauling of waste and recyclables directly to the Solid Waste of Willits (SWOW) Transfer Station (TS) and Materials Recovery Facility (MRF), commercial hauling of organic waste to Cold Creek Compost, and self-hauling of waste, recyclables, and organic waste to the Caspar Transfer Station.

Please refer to the May 2020 Central Coast Transfer Station Project Review and Recommendations prepared by Diversion Strategies (Diversion Strategies May 2020 Report) for detailed descriptions of proposed CCTS location. The following is a brief description of key information used to generate the financial and GHG analysis.

3.1 Highway 20 Site

This proposed location is located roughly 3.5 miles east of the Highway 20 and Route 1 intersection. The original plan for this facility was to utilize five (5) acres with the ability to expand to 10 acres if necessary to meet future needs. This area is owned by the California Department of Forestry and is a greenfield site covered with trees and other vegetation. As stated above, the site has gone through the

EIR process for a 30,000 square foot (sf) transfer station building with the ability to process 100 tons per day (TPD) on normal days with a peak of 200 TPD.

The Highway 20 parcel is located outside the City's water and sewer networks and is assumed to require water wells and a new septic system to support operations.

Figure 1. Project boundary for CCTS Highway 20 Location as presented by Diversion Strategies May 2020 Report

3.2 Pudding Creek Site

The Fort Bragg Disposal/Waste Management (WM) Pudding Creek facility is comprised of a transfer station, truck maintenance facility, hauling yard, and recycling buy-back facility. The transfer station component is direct transfer from self-haul or collection truck to transfer trailer. These operations are assumed to take place outdoors, while truck maintenance occurs in an enclosed building.

Details of the existing infrastructure at this facility are unknown, therefore the following assumptions were made:

- A new 10,000 sf transfer station building would need to be constructed
- Basic utilities exist at the facility but need to be upgraded to meet the needs of the proposed transfer station
- No commercial scale exists at the facility
- The buy-back center functions efficiently and does not require any upgrades

- The existing paving and grading can be used for the proposed facility but will require new foundation for the proposed building

Figure 2. Pudding Creek facility as presented by Diversion Strategies May 2020

3.3 Status Quo

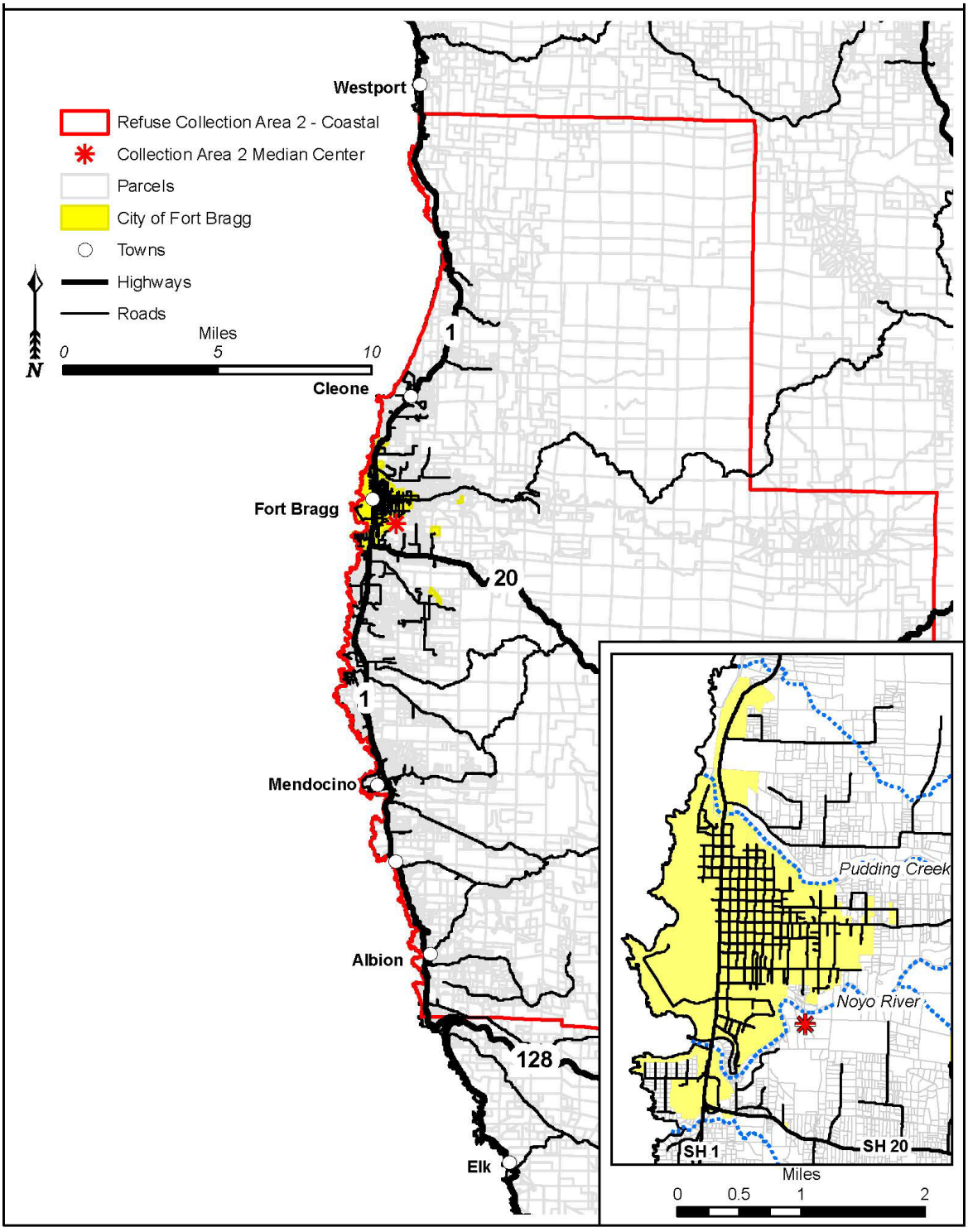
Waste Management currently operates a direct transfer operation at Pudding Creek, and has the ability to consolidate their collection trucks into trailers prior to transportation to SWOW TS. However, for the purposes of this study, we are assuming all commercial collection vehicles haul directly to the SWOW TS. Self-haul is first tipped at the Caspar Transfer Station, then hauled to the SWOW TS. This waste management practice is considered the status quo.

Figure 3. Solid Waste of Willits Transfer Station

4.0 Waste Centroid

For the purposes of this report, it was essential to identify a waste centroid (i.e., the geographic center of waste mass) to calculate the average hauling distances from the point of collection to each of the proposed locations. Within the central coast region, or Collection Area No. 2, the relative percentage of waste generation accounts (i.e., homes or businesses that generate solid waste) are 25% from the City of Fort Bragg and 75% from the unincorporated Mendocino County. The County was able to identify a population centroid as an area located just east of the City limits as shown in Figure 4. The exact latitude and longitude coordinates used for this location were 39.4299, -123.7929. For the purposes of this study, we have assumed the population and waste centroid are the same.

Figure 4. Refuse Collection Area No. 2 Population Centroid



5.0 Transfer Station Sizing

In 2016, the EIR that evaluated the Highway 20 facility included a 30,000-sf building, however, in the 2006 siting study the original estimated building size was 10,000 sf. Due to the large discrepancy in these building sizes, HDR performed preliminary sizing analysis to determine the appropriate size for this proposed transfer station.

The key assumptions for this sizing are as follows:

- Self-haul vehicles are 82 vehicles per day with an average load of 0.25 tons per vehicle making up 21% of the waste collected.
- Commercial haulers are 12.6 trips per day (63 trips/week) with an average load of 6 tons per vehicle making up 79% of the waste collected.
- Hours of operation are 5 days per week, 8 hours per day with a maximum peak of 200 tons per day.
- MSW density ranges from 300 to 450 lbs. per cubic yard.
- Average unloading time for self-haul vehicles is 12 minutes, average unloading time for commercial vehicles is 6 minutes.
- Maximum waste storage piles are 12 feet in height.
- Three days of stockpile storage capacity (600 tons storage capacity).
- Average load out time 30 minutes for 22 tons per load.

Based on these assumptions and other design considerations, a **10,000-sf building** was determined to be sufficient for the County and City's purposes.

6.0 Financial Analysis

6.1 Financial Assumptions

The following highlights the main assumptions for each cost category. A copy of the financial pro forma is included in **Appendix A.**

Collection Costs

- Overall
  - Use of waste centroid as starting point for all waste collection.
  - Self-haul vehicles are 82 vehicles per day making up 21% of the waste collected.
  - Commercial haulers are 12.6 trips per day (63 trips/week) making up 79% of the waste collected.
  - Self-haul drivers' salary matches the labor rate of County "Heavy Equipment SVS Technician" but does not include benefits.
  - Commercial drivers' salary is consistent with the labor rate of County "Heavy Equipment SVS Technician" and assume half the benefit rate for County employees (i.e., 45% instead of 90%).
  - All vehicles consume diesel fuel estimated at $6.19 (as of March 2022)

- All vehicles assumed to require the same level of mechanic labor, parts, and repairs.
- Self-haul vehicle replacement after 10 years; Commercial vehicles replacement after 7 years.
- Self-haul assumed to include zero percent (0%) overhead and profit; Commercial vehicles assumed to include twenty percent (20%) overhead and profit.
- Tip fees are not included in collection costs to not double count tip fees.

CCTS Capital Costs

- Overall
  - The new transfer station building is a 10,000-sf pre-engineered metal building.
  - The same facility is proposed at each site (no repurposing existing structure at Pudding Creek with limited reuse of paved areas)
  - The proposed transfer is assumed to be sales tax exempt.
  - Annual debt service financing assumptions are 20 years at a three percent (3%) interest rate.
- Highway 20
  - The acquisition price was estimated by Tom Varga based on comparable properties in the area at $30,000 per acre. The County has expressed interest in acquiring up to 10-acres for this project.
  - Clearing and grubbing will be required for all 10-acres
  - There will be new asphalt paving for access roads and concrete paving for driveways and high traffic areas.
  - The site has no existing utilities and will require water wells and a new septic system.
  - The Highway 20 improvements identified in previous study are included.
  - A buy-back center is incorporated into the design.
- Pudding Creek
  - The acquisition price was estimated by Tom Varga based on comparable properties in the area at $44,000 per acre. The existing site has been identified as 9 acres.
  - Mobilization/demolition of the existing facility to be 4% of proposed work.
  - The existing paving can be reused; there is no new paving required except for building foundation.
  - The site has access to all necessary utilities but requires some utility upgrades.
  - The traffic signal construction identified in previous study is included.
  - The existing buy-back center will continue to be sufficient for proposed activities.

CCTS Operation Costs

- Overall
  - The facility operates five (5) days-per-week, eight (8) hours-per-day
  - Labor rates are based on Mendocino County November 14, 2021, wage chart and include benefits of 90.32% (71.95% plus non-productive benefits of 18.37%)
  - The operation assumes three (3) full-time staff.
  - The operation includes a new stationary tamping crane and wheel loader.

Hauling Costs from the CCTS *(Separate from collection costs)*

- Destination
  - Mixed municipal solid waste (MSW) is assumed to be hauled to Potrero Hills Landfill with a tip fee of $45 per ton. (Note: the actual contracted tipping fee may be lower or higher. HDR reached out to Potrero Hills who quoted a tipping fee of $90 per ton.).
  - Recyclables are assumed to be hauled to the SWOW MRF with a tip fee of $80.00 per ton.
  - Organics assumed to be hauled to Cold Creek Compost with a tip fee of $38.58 per ton.
- Waste Distribution
  - The total annual throughput is estimated at 26,000 tons (100 tons x 5 days per week x 52 weeks).
  - 50% of the material is MSW sent to landfill.
  - 30% of the material is recyclables sent to the TS.
  - 20% of the material is organics sent to compost.
- Cost Assumptions
  - All drivers' salary and benefits match the labor rate of County "Heavy Equipment SVS Technician".
  - All vehicles consume diesel fuel estimated at $6.19 per gallon (as of March 2022).
  - All vehicles assumed to require same level of mechanic labor, parts, and repairs.
  - All vehicles assumed to be replaced after seven years.
  - Overhead and profit assumed to be twenty percent (20%).

Status Quo Assumptions:

  - Self-haul tips at Casper Transfer Station at a tip fee of $38.75 per cubic yard or $172.00 per ton (based on a MSW density of 450 lbs. per cubic yard).
  - Commercial vehicles haul municipal solid waste directly to SWOW TS at a tip fee of $81.28 per ton.
  - Commercial vehicles haul recyclables directly to the SWOW MRF at a tip fee of $80.00 per ton.

6.2 Preliminary Financial Summary – Collection Costs

For the collection cost modeling, we assumed both self-hauling and commercial vehicles have labor costs and vehicle operating costs. The value of time for those who self-haul and commercial drivers was assumed to be the same. Regarding labor benefits, no fringe benefits were included, but for commercial drivers, a 45% fringe benefit rate was assumed.

In the collection cost model, the annual tonnage was split between self-haul (21%) and commercial vehicles (79%). The total miles and hours traveled per year were estimated by factoring in loading and unloading time, hauling time and distance, and number of trips based on tonnage. For this exercise, the numbers of drivers, trucks, and trailers were not rounded up (i.e., 0.5 driver equals 1.0 driver). This assumption utilizing less than full-time drivers, trucks, and trailers provides more accurate costs for collection. Items included in the estimated annual collection costs were labor, fuel, tires, maintenance and repairs, truck amortization, trailer amortization, insurance, license, and taxes, and overhead and profit. As stated in the assumptions, overhead and profit was assumed to be zero for the self-haul vehicles, in addition to no labor fringe benefits being included.

Collecting waste from the Central Coast region and hauling to either the Highway 20 or Pudding Creek proposed locations result in an annual cost of $594,000 to $608,000, respectively. The Highway 20 and Pudding Creek locations are 3.6 miles and 3.9 miles, respectively, from the waste centroid, therefore their collection costs are similar. Comparatively, for the status quo, directly hauling to the SWOW TS and the Caspar Transfer Station, would be roughly $1.2 million. The status quo scenario requires use of the Caspar Transfer Station by self-haul customers in terms of transportation costs, but does not include tipping fees for either SWOW TS or Caspar Transfer Station.

Table 1 shows the collection cost summary. On a per ton basis, the cost is roughly 72% less for commercial vehicles and 30% less for self-haul vehicles to use the proposed Central Coast Transfer Station instead of the SWOW TS.

Table 1. Collection Cost Summary Table

Collection Costs:	Highway 20	Pudding Creek	Status Quo
Annual Combined Collection Costs	$594,000	$608,000	$1,219,000
Self-haul Collection Cost per Ton	$82.10	$84.60	$126.40
Commercial Collection Costs per Ton	$7.10	$7.10	$25.80

6.3 Preliminary Financial Summary – Capital Costs

Methods

Capital costs were broken into five categories: 1) site acquisition, 2) sitework, 3) transfer station building, 4) support features, and 5) initial purchase of mobile equipment.

SITE ACQUISITION

As stated, site acquisition costs were estimated by Tom Varga and directly applied to the proposed acquired acreage, 10 acres for Highway 20 and nine (9) acres for Pudding Creek.

SITEWORK

Sitework includes preparation of the site for construction. For Highway 20, this includes new asphalt and concrete paving, and for Pudding Creek some demolition of existing site components.

TRANSFER STATION BUILDING

The same design costs are used for both proposed locations. This includes a 10,000-sf transfer station building with roll-up doors and negative ventilation to a biofilter.

SUPPORT FEATURES

For Highway 20, this includes the buy-back center and highway improvements. Highway improvements were estimated from a previous study performed by Tom Varga. That same study determined the requirement for Pudding Creek to install a new traffic signal. It was assumed that the existing buy-back center at Pudding Creek was sufficient for the needs of the CCTS and a new buy-back center would not need to be developed.

MOBILE EQUIPMENT

Both proposed locations would need to purchase new material handling equipment. A new front-end loader and tamping crane were included in the facility's capital costs. Costs for operating the equipment were included in the cost model.

ALLOWANCES & CONTINGENCIES

Construction contingencies and allowances for the engineering and design, permitting, and construction inspection were estimated as a percentage of the overall opinion of construction cost. For the purposes of this study, HDR applied a 25% contingency to the opinion of cost based on the conceptual level of design. Currently, the country is experiencing extreme volatility in the construction industry due to supply chain disruptions and high inflation and therefore the 25% continency may be insufficient in current market conditions.

Results

Table 2 is an excerpt pulled from the financial pro forma (**Appendix A**) that summaries the capital costs of each proposed location for the CCTS. Overall, the differences between the costs are not significant due to the assumption that no existing structures, aside from the existing paving and buy-back center, could be reused at the current Pudding Creek facility. It is assumed the necessary demolition to construct the proposed building at Pudding Creek will equate to four percent (4%) of the total cost of the building; this is to break up the existing paving and replace with proper foundation. There may be additional cost savings if the existing building could be upgraded to meet the needs of the CCTS. Overall, the total cost to construct, design, and permit the CCTS at the Highway 20 location is roughly $6,100,000 and at the Pudding Creek location is roughly $6,600,000.

Table 2. CCTS Capital Cost Estimate Summary

Capital Cost Estimate Summary		Highway 20	Pudding Creek
Site Acquisition		$300,000	$396,000
Sitework		$442,000	$400,000
Transfer Building		$2,063,000	$2,063,000
Support Features		$724,450	$1,000,000
Mobile Equipment (Initial Purchase)		$525,000	$525,000
SUBTOTAL		**$4,054,450**	**$4,384,000**
Contingency	25%	$1,014,000	$1,096,000
Engineering & Design	10%	$405,000	$438,000
Permitting	5%	$203,000	$219,000
Construction Inspection	10%	$405,000	$438,000
TOTAL CAPITAL COST		**$6,081,450**	**$6,575,000**
Capital Cost Annual Debt Service		$313,000.00	$338,000.00
Annual Tonnage		26000	26000
TS CAPITAL COST PER TON		**$12.04**	**$13.00**
TS CAPITAL COST PER SQUARE FOOT		**$31.30**	**$33.80**

6.4 Preliminary Financial Analysis – Operational

Operational costs were estimated by including costs for labor, utilities, equipment operation, maintenance, fuel, and replacement reserves. It also assumed a percentage for insurance and building and site maintenance based off the total capital cost, and a percentage for general admin services off the total operational cost.

Although Pudding Creek is an existing facility, it was assumed that the required labor would be the same at both facilities. Table 3 shows the proposed labor cost to operate the facility which amounts to three full-time staff.

Table 3. Labor Cost Summary

Job Classification	Qty	Labor Rate	Hrs/Yr	Total
Equipment Superintendent	0.5	$71	2080 hrs	$ 74,300
Heavy Equipment Mechanic	0	$56	2080 hrs	$ -
Heavy Equipment SVS Technician	0.5	$39	2080 hrs	$ 40,400
Account Specialist 1	1	$40	2080 hrs	$ 82,200
Hazardous Material Oper Spec	0	$70	2080 hrs	$ -
Grounds Maintenance Tech I	1	$40	2080 hrs	$ 83,100
Grounds Maintenance Tech III	0	$51	2080 hrs	$ -
Overtime	10%	$ 280,000	1.5	$ 42,000
Total Staff	**3**			***$ 322,000***

The difference in operating costs of the facility comes out to the Pudding Creek facility being tied to the municipal sanitary sewer system, and the Highway 20 location requiring water well and septic tank installation. The difference for these costs is roughly $25,000 annually. The septic costs were based on past financial analyses and not directly from the County or City costs. Table 4 shows a summary of the proposed operational costs.

Table 4. Operational Cost Summary

		Highway 20	Pudding Creek
Item Description		**Annual Costs**	**Annual Costs**
Labor			
		$ 322,000	***$ 322,000***
Insurance			
		$ 30,000	***$ 33,000***
Building and Site Maintenance			
		$ 79,000	***$ 82,000***
Utilities - Building and Site			
		$ 56,640	***$ 31,340***
Equipment O&M			
		$ 54,700	***$ 49,700***
Mobile Equipment Fuel			
		$ 31,000	***$ 31,000***
Equipment Replacement Reserves			
		$ 52,500	***$ 52,500***
	ANNUAL SUBTOTAL	**$ 625,840**	**$ 601,540**
	General & Admin Services (10%)	$ 62,600	$ 60,200
	ANNUAL TOTAL	**$ 688,440**	**$ 661,740**
	TPY	**26,000**	**26,000**
	Operating Cost ($/ton)	**$ 26.48**	**$ 25.45**

6.5 Preliminary Financial Analysis – Annual Costs

Annual costs included the capital cost debt service, operating costs, and hauling and tip fee costs associated with each option. For the status quo, annual costs only include the tip fee associated with the material tonnages hauled to the facility, either Casper Transfer Station for self-haul or SWOW TS for commercial vehicles. Hauling costs and tip fees are also included in the annual costs (shown separately). Hauling costs were estimated by first determining the number of truck loads by material type, then calculating the total miles traveled per year. This was used to estimate the number of drivers, trucks, and trailers required to service the hauling route. Fuel costs, tire replacement, maintenance and repairs, and truck and trailer amortization were included in estimating the hauling costs. It was also assumed 2.5% of the total capital cost for the trucks be estimated for insurance, license, and taxes, and that 20% of the operation and maintenance was overhead and profit.

Table 5 shows the annual costs for both proposed CCTS locations, as well as the status quo. Table 6 presents the same annual costs on a per ton basis either by total throughput (26,000 tons per year), and by material category (breakdown described in Section 6.1). The status quo includes the breakdown by hauler type and waste type to incorporate the appropriate tip fee per waste.

Table 5. CCTS Annual Capital, Operating, and Hauling Costs

Transfer Station Annual Costs:	Highway 20	Pudding Creek	Status Quo
Capital Cost Annual Debt Service	$313,000	$338,000	
Annual Operating Costs	$688,440	$661,740	
Annual TS Costs(1)	**$1,001,440**	**$999,740**	
Annual LF Haul & Tip Costs	$1,185,600	$1,203,800	
Annual MRF Haul & Tip Costs	$722,280	$733,980	
Annual ORG Haul & Tip Costs	$309,816	$318,656	
Annual Costs including Haul & Tip Costs	**$3,219,136**	**$3,256,176**	**$2,425,415**

(1) For Status Quo, includes Casper tip fee for self-haul and Willits TS tip fee for commercial MSW, Willits MRF tip fee for commercial recyclables, and Cold Creek Compost tip fee for commercial organics

Table 6. CCTS Annual Costs on a Per Ton Basis

Transfer Station Costs Per Ton:	Highway 20	Pudding Creek	Status Quo
Capital Cost Annual Debt Service	$31.30	$33.80	
Annual Operating Costs	$26.48	$25.45	
Annual TS Costs Per Ton	**$57.78**	**$59.25**	
Annual LF Haul & Tip Costs	$91.20	$92.60	
Annual MRF Haul & Tip Costs	$92.60	$94.10	
Annual ORG Haul & Tip Costs	$59.58	$61.28	
Annual Average TS Costs with Haul & Tip Costs	**$143.07**	**$146.04**	**$93.29**

Table 5 and Table 6 only factor in costs associated directly with the CCTS, which shows that operating the CCTS would be more costly than the status quo. However, if collection costs are considered, the total annual costs become similar for all options (Table 7). These annual costs presented assume a landfill tip fee of $45 per ton. If the City and County can negotiate a better landfill tip fee rate, for example, $30 per ton, then the costs become even closer as shown in Table 8.

Table 7. Annual Program Costs with Landfill Tip Fee at $45 per Ton

Annual Costs	Highway 20	Pudding Creek	Status Quo
Annual Collection Costs			
Self-Haul Collection Costs	$448,000	$462,000	$690,000
Commercial Collection Costs	$146,000	$146,000	$529,000
Annual TS Costs			
Annual Capital Costs (Debt Service)	$313,000	$338,000	N/A
Annual Operating Costs	$688,440	$661,740	N/A
Annual Haul & Tip Costs	$2,217,696	$2,256,436	$2,425,415
Total Annual Costs	**$3,813,136**	**$3,864,176**	**$3,644,415**

(1) For Status Quo, includes Casper tip fee for self-haul and Willits TS tip fee for commercial MSW, Willits MRF tip fee for commercial recyclables, and Cold Creek Compost tip fee for commercial organics

Table 8. Annual Program Costs with LF Tip Fee at $30 per Ton

Annual Costs	Highway 20	Pudding Creek	Status Quo
Annual Collection Costs			
Self-Haul Collection Costs	$448,000	$462,000	$690,000
Commercial Collection Costs	$146,000	$146,000	$529,000
Annual TS Costs			
Annual Capital Costs (Debt Service)	$313,000	$338,000	N/A
Annual Operating Costs	$688,440	$661,740	N/A
Annual Haul & Tip Costs	$2,022,696	$2,061,436	$2,425,415
Total Annual Costs	**$3,618,136**	**$3,669,176**	**$3,644,415**

(1) For Status Quo, includes Casper tip fee for self-haul and Willits TS tip fee for commercial MSW, Willits MRF tip fee for commercial recyclables, and Cold Creek Compost tip fee for commercial organics

6.6 Preliminary Financial Analysis – Cost Recovery Tip Fee

To determine the associated tip fee for each transfer station option, the capital, operation, and haul and tip fee costs were combined for each waste type (i.e., MSW, recyclables, and organics), then divided by the associated tonnage. However, the CCTS may not want to charge for recycling, or provide for reduced recycling rates, which would result in a higher MSW and/or organics tipping fee. All options assume a $45 per ton tip fee at the landfill.

Table 9. Highway 20 Cost Recovery Tip Fee

Highway 20 Cost Recovery Tip Fee	MSW Fee	Recyclables Fee	Organics Fee
Capital	$156,500	$93,900	$62,600
Operating	$344,220	$206,532	$137,688
Haul & Tip	$1,185,600	$722,280	$309,816
Proposed Tip Fee per Ton	**$129.72**	**$131.12**	**$98.10**

Table 10. Pudding Creek Cost Recovery Tip Fee

Pudding Creek Cost Recovery Tip Fee	MSW Fee	Recyclables Fee	Organics Fee
Capital	$169,000	$101,400	$67,600
Operating	$330,870	$198,522	$132,348
Haul & Tip	$1,203,800	$733,980	$318,656
Proposed Tip Fee per Ton	**$131.05**	**$132.55**	**$99.73**

7.0 Greenhouse Gas (GHG) Analysis

7.1 Introduction

A GHG emissions model was prepared comparing the transportation emissions related to use of the proposed CCTS locations (Pudding Creek and Highway 20), and the current status quo.

HDR developed a project-specific transportation GHG model utilizing the U.S. EPA April 2022 Emission Factors for Greenhouse Gas Inventories from their GHG Emission Factors Hub (EPA GHG Hub). This model was selected over the U.S. EPA Waste Reduction Model (WARM) because the WARM is designed to compare waste management scenarios, however for this study, the ultimate destination of the waste streams is the same. The main difference between the scenarios is the haul distances relative to collection and transfer.

7.2 Transportation GHG Model

The model is a simple evaluation of the GHG emissions associated with the collection and hauling of materials to and from different facilities. As provided in the EPA GHG Hub, Table 11 shows the emissions factors applicable to this model. It was assumed that self-haul vehicles would be mostly gasoline fueled pick-up trucks and SUVs, and collection and transfer trucks were both assigned the heavy-duty diesel vehicle classification.

Table 11. EPA GHG Hub Emission Factors

Category	Type	Year	g CH4/ mile	g N2O/ mile
Self-Haul	Gasoline Light-Duty Trucks	2018	0.0081	0.0015
Collection Vehicle	Diesel Medium and Heavy-Duty Vehicles	2007-2019	0.029	0.0214
Transfer Truck	Diesel Medium and Heavy-Duty Vehicles	2007-2019	0.029	0.0214

The emission factors are than calculated to metric ton of carbon dioxide equivalent (MTCO2E) as follows:

METHANE TO MTCO2E/YEAR:

$$\#\frac{g\ CH4}{mile}\times\frac{1\ mole}{16.04\ g\ CH4}\times\frac{85\ g\ CO2}{1\ g\ CH4}\times\frac{44.01\ g\ CO2}{mole\ CO2}\times\frac{1\ lbs}{453.59\ g}\times\frac{1\ MT}{2204\ lbs}$$
$$=\frac{MTCO2e}{mile}\times\frac{miles}{year}=\frac{MTCO2e}{year}$$

NITROUS OXIDE TO MTCO2/YEAR:

$$\#\frac{g\ N2O}{mile}\times\frac{1\ mole}{44.01\ g\ N2O}\times\frac{298\ g\ CO2}{1\ g\ N2O}\times\frac{44.01\ g\ CO2}{mole}\times\frac{1\ lbs}{453.59\ g}\times\frac{1\ MT}{2204\ lbs}$$
$$=\frac{MTCO2e}{mile}\times\frac{miles}{year}=\frac{MTCO2e}{year}$$

7.3 GHG Assumptions

Locations

The following addresses or coordinates were used to determine the collection or hauling distances.

Table 12. GHG Analysis Locations

Locations	Address
Waste Centroid	39.4299, -123.7929
Casper Transfer Station	14000 Prairie Way, Mendocino, CA 95460
Solid Waste of Willits (SWOW) TS or MRF	351 Franklin Ave, Willits, CA 95490
Cold Creek Compost	6000 East Side, Potter Valley Rd, Ukiah, CA 95482
Potrero Hills Landfill	3675 Potrero Hills Ln, Suisun City, CA 94585
Pudding Creek CCTS	219 Pudding Creek Rd, Fort Bragg, CA 95437
Highway 20 CCTS	39.2576, -123.4734

Transportation Routes and Distances

Table 13 summarizes the hauling distances used between each location, and the number of trips per year. The trips per year were calculated as part of the financial analysis found in Appendix A.

Table 13. Status Quo Transportation Assumptions

Vehicle Type	Start	Finish	Miles/Trip (one-way)	Trips/ Year	Miles/Year (one-way)
Self-Haul to Casper	Waste Centroid	Casper Transfer Station	8.3	5,460	45,318
Collection to TS - MSW	Waste Centroid	SWOW TS or MRF	33.6	1,712	57,523
Collection to MRF	Waste Centroid	SWOW TS or MRF	33.6	1,027	34,507
Collection to ORG	Waste Centroid	Cold Creek Compost	56.8	685	38,908
Transfer from Casper - MSW	Casper Transfer Station	SWOW TS or MRF	39.8	124	4,939
Transfer from Casper - MRF	Casper Transfer Station	SWOW TS or MRF	39.8	74	2,963
Transfer from Casper - ORG	Casper Transfer Station	SWOW TS or MRF	39.8	50	1,976
Transfer from TS - MSW	SWOW TS or MRF	Potrero Hills Landfill	145	591	85,695
Transfer from TS - Org	SWOW TS or MRF	Cold Creek Compost	23.6	50	1,171

Table 14. Pudding Creek Transportation Assumptions

Vehicle Type	Start	Finish	Miles/Trip (one-way)	Trips/ Year	Miles/Year (one-way)
Self-Haul to CCTS	Waste Centroid	Pudding Creek CCTS	3.9	5,460	21,294
Collection to CCTS	Waste Centroid	Pudding Creek CCTS	3.9	3,424	13,354
Transfer to ORG	Pudding Creek CCTS	Cold Creek Compost	58.7	236	13,880
/Transfer to MRF	Pudding Creek CCTS	SWOW TS or MRF	35.5	352	12,481
Transfer to Landfill	Pudding Creek CCTS	Potrero Hills Landfill	191	591	112,881

Table 15. Highway 20 Transportation Assumptions

Vehicle Type	Start	Finish	Miles/Trip (one-way)	Trips/ Year	Miles/Year (one-way)
Self-Haul to CCTS	Waste Centroid	Highway 20 CCTS	3.6	5,460	19,656
Collection to CCTS	Waste Centroid	Highway 20 CCTS	3.6	3,424	12,326
Transfer to ORG	Highway 20 CCTS	Cold Creek Compost	56.8	236	13,431
Transfer to MRF	Highway 20 CCTS	SWOW TS or MRF	33.6	352	11,813
Transfer to Landfill	Highway 20 CCTS	Potrero Hills Landfill	178	591	105,198

Project Life

As assumed in the financial analysis, the team used a 20-year project life to estimate the lifecycle transportation GHG emissions associated with the three hauling scenarios.

7.4 GHG Results

The GHG analysis showed that the Status Quo generates 61.59 MTCO2E over the project life, Pudding Creek generates 40.86 MTCO2E, and Highway 20 generates 38.21 MTCO2E. This demonstrates that the Highway 20 CCTS proposed location has the lowest GHG impact related to transportation.

Table 16. Status Quo GHG Results

Status Quo	CH4		N20		Combined	Lifetime
Vehicle Type	**g/year**	**MTCO2e/ year**	**g/year**	**MTCO2e/ year**	**MTCO2e/ year**	**MTCO2e/ 20 years**
Self-Haul to Casper	367.08	0.08	67.98	0.02	0.10	2.10
Collection to TS - MSW	1,668.17	0.38	1,231.00	0.37	0.75	15.03
Collection to MRF	1,000.71	0.23	738.45	0.22	0.45	9.02
Collection to ORG	1,128.33	0.26	832.63	0.25	0.51	10.17
Transfer from Casper - MSW	143.23	0.03	105.69	0.03	0.06	1.29
Transfer from Casper - MRF	85.94	0.02	63.41	0.02	0.04	0.77
Transfer from Casper - ORG	57.29	0.01	42.28	0.01	0.03	0.52
Transfer from TS - MSW	2,485.16	0.57	1,833.87	0.55	1.12	22.39
Transfer from TS - Org	33.97	0.01	25.07	0.01	0.02	0.31
					Total	**61.59**

Table 17. Pudding Creek GHG Results

Pudding Creek	CH4		N20		Combined	Lifetime
Vehicle Type	**g/year**	**MTCO2e/ year**	**g/year**	**MTCO2e/ year**	**MTCO2e/ year**	**MTCO2e/ 20 years**
Self-Haul to CCTS	172.48	0.04	31.94	0.01	0.05	0.99
Collection to CCTS	387.25	0.09	285.77	0.09	0.17	3.49
Transfer to ORG	402.52	0.09	297.03	0.09	0.18	3.63
Transfer to MRF	361.94	0.08	267.09	0.08	0.16	3.26
Transfer to Landfill	3,273.55	0.75	2,415.65	0.72	1.47	29.50
					Total	**40.86**

Table 18. Highway 20 GHG Results

Highway 20	CH4		N20		Combined	Lifetime
Vehicle Type	**g/year**	**MTCO2e/ year**	**g/year**	**MTCO2e/ year**	**MTCO2e/ year**	**MTCO2e/ 20 years**
Self-Haul to CCTS	159.21	0.04	29.48	0.01	0.05	0.91
Collection to CCTS	357.47	0.08	263.78	0.08	0.16	3.22
Transfer to ORG	389.49	0.09	287.42	0.09	0.18	3.51
Transfer to MRF	342.57	0.08	252.79	0.08	0.15	3.09
Transfer to Landfill	3,050.74	0.70	2,251.24	0.67	1.37	27.49
					Total	**38.21**

8.0 Conclusions

8.1 Financial Analysis

The proposed CCTS at Highway 20 and Pudding Creek locations have similar expected capital and operating costs. The capital costs fall within the $6,000,000 to $7,000,000 range and are assumed to be funded by public debit issued for 20 years at 3% interest.

The CCTS total operating cost (regardless of the Highway 20 or Pudding Creek location), including debt service, operating costs, and collection, hauling, and tipping materials to the final processing or disposal facility, is approximately

$3,800,000 per year. Incorporating collection costs into the annual total system cost, the County and City are currently spending a total of approximately $3,000,000 annually for the collection, haul, and disposal of materials under the status quo.

The CCTS costs are based on an assumed County disposal fee of CCTS municipal solid waste at $45 per ton. If the contract disposal rate for municipal solid waste were reduced to $30 per ton, the County show an annual savings of approximately $200,000 at either CCTS location.

The financial analysis summary is shown below in Tables 19 and 20.

Table 19. Financial Summary with Landfill Tip Fee at $45 per Ton

Financial Analysis Summary	Highway 20	Pudding Creek	Status Quo
Total Annual Costs	$3,813,136	$3,864,176	$3,644,415

Table 20. Financial Summary with Landfill Tip Fee at $30 per Ton

Financial Analysis Summary	Highway 20	Pudding Creek	Status Quo
Total Annual Costs	$3,618,136	$3,669,176	$3,644,415

8.2 GHG Impact Analysis

Based on the GHG analysis, Highway 20 has the least GHG impact related to transportation emissions, and both Pudding Creek and Highway 20 have less GHG impact than the current Status Quo.

Table 21. GHG Analysis Summary

Transfer Station	MTCO2e per 20 Years
Status Quo	61.59
Pudding Creek	40.86
Highway 20	38.21

APPENDIX A

Capital Cost Estimate Summary		Highway 20	Pudding Creek
Site Acquisition		$300,000	$396,000
Sitework		$442,000	$400,000
Transfer Building		$2,063,000	$2,063,000
Support Features		$724,450	$1,000,000
Mobile Equipment (Initial Purchase)		$525,000	$525,000
SUBTOTAL		**$4,054,450**	**$4,384,000**
Contingency	25%	$1,014,000	$1,096,000
Engineering & Design	10%	$405,000	$438,000
Permitting	5%	$203,000	$219,000
Construction Inspection	10%	$405,000	$438,000
TOTAL CAPITAL COST		**$6,081,450**	**$6,575,000**
Capital Cost Annual Debt Service		$313,000.00	$338,000.00
Annual Tonnage		26000	26000
TS CAPITAL COST PER TON		**$12.04**	**$13.00**
TS CAPITAL COST PER SQUARE FOOT		**$31.30**	**$33.80**

ASSUMPTIONS

1. No sales tax is included. Assumed facility is tax exempt.
2. Costs rounded to nearest thousand.
3. Costs are included for scales, scoreboards and digital displays as well as certain mobile equipment.
4. No costs are included for furniture, furnishings or miscellaneous building equipment.
5. Assumed project to be competitively bid under one general contract.
6. Assumed construction to be during normal working hours.
7. The construction costs are used for budgeting and planning purposes only.
8. Annual Debt Service financing assumptions:
   - Capital debt (years): 20
   - Interest rates: 3%
9. Cost per ton calculated from the estimated throughput.
10. Mobile equipment replacement funds included in annual O&M costs.

I. SITE ACQUISITION

Item	Unit Price	Units	Quantity	Item Cost	Quantity	Item Cost
Land	$30,000	Acre	10.0	$300,000	9.0	$396,000
	$44,000.00	Acre				
Subtotal I				$300,000		$396,000

II. SITEWORK

Item	Unit Price	Units	Quantity	Item Cost	Quantity	Item Cost
Mobilization/Demob (1)	4.00%	LS - 4% of Work	0	$0	3,330,000	$133,000
Clearing and Grubbing	$2,000	Acre	10	$20,000	0	$0
Earthwork (2)	$6	CY	1,500	$9,000	1,500	$9,000
New Asphalt Pavement (3	$6	SF	21,780	$131,000	0	$0
New Concrete Pavement (	$16	SF	1,500	$24,000	0	$0
Drainage & Erosion Contr	$250,000	LS	1	$250,000	1	$250,000

Site Landscaping & Signage	$3,000	LS	1	$3,000	1	$3,000
Final site clean-up	$5,000	LS	1	$5,000	1	$5,000
Subtotal II				$442,000		$400,000

Notes:

(1) Assume Highway 20 location does not require demolition.

(2) General Earthwork includes moving soil, backfill, embankment, etc. No off site disposal needed.

(3) Assume site paving at Pudding Creek is sufficient for proposed operations minus foundation

III. TRANSFER BUILDING

Item	Unit Price	Units	Quantity	Item Cost	Quantity	Item Cost
Pre-engineered Building	$75	SF	10,000	$750,000	10,000	$750,000
Roll-up Doors	$3,000	EA	4	$12,000	4	$12,000
Transfer Station Foundatic	$600	CY	224	$134,000	224	$134,000
Transfer Station Tipping F	$350	CY	370	$130,000	370	$130,000
Mechanical & Fire Protecti	$16	SF	10,000	$160,000	10,000	$160,000
Electrical Systems	$20	SF	10,000	$200,000	10,000	$200,000
Utilities	$200,000	LS	1	$200,000	1	$200,000
Steel Hoppers/Chutes	$125,000	EA	1	$125,000	1	$125,000
Surveying	$25,000	LS	1	$25,000	1	$25,000
Geotech	$40,000	LS	1	$40,000	1	$40,000
Load-out scales	$200,000	EA	1	$200,000	1	$200,000
Ventilation system	$3	SF	5,000	$15,000	1	$15,000
Biofilter	$40,000	LS	1	$40,000		$40,000
Yard Lighting and wirling	$4,000	EA	8	$32,000	8	$32,000
Subtotal III				$2,063,000		$2,063,000
$/SF				$206		$206

Notes: Metal building includes structural steel, column free

IV. SUPPORT FEATURES

Item	Unit Price	Units	Quantity	Item Cost	Quantity	Item Cost
Buy-Back Scale	$1,250	EA	1	$1,250	0	$0
Buy-Back Containers	$1,500	EA	5	$7,500	0	$0
Concrete Slabwork	$400	CY	18	$7,200	0	$0
Septic System	$8,500	LS	1	$8,500	0	$0
Traffic Signal	$1,000,000	LS	0	$0	1	$1,000,000
Highway 20 Road Improve	$700,000	LS	1	$700,000	0	$0
Subtotal III				$724,450		$1,000,000

Notes: Traffic Signal and Highway 20 Road Improvement from Tom Varga Estimate

V. MOBILE EQUIPMENT

Item	Unit Price	Units	Quantity	Item Cost	Quantity	Item Cost
Front End Loader - New	$350,000	EA	1	$350,000	1	$350,000
Tamping Crane - New	$175,000	EA	1	$175,000	1	$175,000
Subtotal V				$525,000		$525,000

Note: (1) Yard tractor included to move and position the transfer trailers on-site.

Transfer Trucks & Trailers - included with TS Haul cost

	ITEM DESCRIPTION	Highway 20					Pudding Creek				
			QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE		QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
LABOR											
	Job Classification	**Qty**	**Labor Rate**	**Hrs/Yr**		**Total**	**Qty**	**Labor Rate**	**Hrs/Yr**		**Total**
	Equipment Superintendent	0.5	$71	2080 hrs		$ 74,300	0.5	$71	2080 hrs		$ 74,300
	Heavy Equipment Mechanic	0	$56	2080 hrs		$ -	0	$56	2080 hrs		$ -
	Heavy Equipment SVS Technician	0.5	$39	2080 hrs		$ 40,400	0.5	$39	2080 hrs		$ 40,400
	Account Specialist 1	1	$40	2080 hrs		$ 82,200	1	$40	2080 hrs		$ 82,200
	Hazardous Material Oper Spec	0	$70	2080 hrs		$ -	0	$70	2080 hrs		$ -
	Grounds Maintenance Tech I	1	$40	2080 hrs		$ 83,100	1	$40	2080 hrs		$ 83,100
	Grounds Maintenance Tech III	0	$51	2080 hrs		$ -	0	$51	2080 hrs		$ -
	Overtime	10%	$ 280,000	1.5		$ 42,000	10%	$ 280,000	1.5		$ 42,000
	Total Staff	**3**			***Subtotal***	***$ 322,000***	**3**			***Subtotal***	***$ 322,000***
	Notes/Assumptions:										
	Personnel numbers based on 5 days per week, 8 hours per day operation.										
	Labor wages based on Mendocino County 11/14/21 wage chart Labor rates include benefits of				90.32%			Labor rates include benefits o		90.32%	
	Overtime assumes percentage of all salaries and 1.5x average rate.										
	Additional administration and directorship no included										
INSURANCE											
	Item		**Quantity**		**Unit Price**	**Total**		**Quantity**		**Unit Price**	**Total**
	General, Liability, Fire, Etc.	0.5%	$6,081,450	bldgs/equipment value		***$ 30,000***	0.5%	$6,575,000	bldgs/equipment value		***$ 33,000***
BUILDING AND SITE MAINTENANCE											
	Item		**Quantity**		**Unit Price**	**Total**		**Quantity**		**Unit Price**	**Total**
	General Maintenance	1.3%	$6,081,450	bldgs/equipment value		***$ 79,000***	1.3%	$6,575,000	bldgs/equipment value		***$ 82,000***
UTILITIES - BUILDING AND SITE											
	Item		**Quantity**		**Unit Price**	**Total**		**Quantity**		**Unit Price**	**Total**
	Electricity Usage		93,000 kwh		$0.20	$ 18,600		93,000 kwh		$0.20	$ 18,600
	Electricity Demand - Monthly		87 kw/month		$6	$ 6,400		87 kw/month		$6	$ 6,400
	Heating - Natural gas		000 DTH		$5 /DTH	$ -		000 DTH		$5 /DTH	$ -
	Water		138,000 gal		$6 /748 gal	$ 1,200		138,000 gal		$6 /748 gal	$ 1,200
	Sanitary Service		69,000 gal		$300 /748 gal	$ 27,700		69,000 gal		$26 /748 gal	$ 2,400
	Site Stormwater		210,000 sf		$21 /yr/3500 sf	$ 1,300		210,000 sf		$21 /yr/3500 sf	$ 1,300
	Telephone/Mobile Phones	3	phone service		$40 /month	$ 1,440	3	phone service		$40 /month	$ 1,440
					Subtotal	***$ 56,640***				***Subtotal***	***$ 31,340***
Notes/Assumptions:											
	Electricity usage	0.5	watts/sf				0.5	watts/sf			
		10,000	square feet, transfer station				10,000	square feet, transfer station			
		0	square feet, all other buildings				0	square feet, all other buildings			
	Stationary Tamping Crane	75	hp	780	hours/year	(est. 3 hrs/day)	75	hp	780	hours/year	(est. 3 hrs/day)
	Assume natural gas use	0	therm/sf/season (DTH = decatherm)				0	therm/sf/season (DTH = decatherm)			
	Water use - domestic & washdown	10	gpd/FTE	5	gpd/100 SF	(transfer station)	10	gpd/FTE	5	gpd/100 SF	(transfer station)
	Electricity unit price is the average of City of Ukiah 2020 summer and winter rates for Industrial Service										

EQUIPMENT O&M

Item	Qty	Units/Yr	Unit Price	Total	Qty	Units/Yr	Unit Price	Total
Stationary Tamping Crane - electric	1	780 hrs	$5	$ 3,900	1	780 hrs	$5	$ 3,900
Wheel Loader	1	2080 hrs	$10	$ 20,800	1	2080 hrs	$10	$ 20,800
General Maint & Operating Supplies	1	LS	$15,000	$ 15,000	1	LS	$10,000	$ 10,000
Minor Equipment & Operating Rentals	1	LS	$15,000	$ 15,000	1	LS	$15,000	$ 15,000
			Subtotal	***$ 54,700***			***Subtotal***	***$ 49,700***

Notes/Assumptions:

Additional Maint & Op for water tanks & septic system

MOBILE EQUIPMENT FUEL

Item	Qty	Rate	Hrs/Yr	Unit Price	Total	Qty	Rate	Hrs/Yr	Unit Price	Total
Wheel Loader	1	3 gal/hr	2080 hrs	$4.97	$ 31,000	1	3 gal/hr	2080 hrs	$4.97	$ 31,000
				Subtotal	***$ 31,000***				***Subtotal***	***$ 31,000***

EQUIPMENT REPLACEMENT RESERVES

Item	Qty	Equip Life	Price	Total - Annual	Qty	Equip Life	Price	Total - Annual
Stationary Tamping Crane O&M	1	10 yrs	$175,000	$17,500	1	10 yrs	$175,000	$17,500
Wheel Loader	1	10 yrs	$350,000	$35,000	1	10 yrs	$350,000	$35,000
			Subtotal	***$ 52,500***			***Subtotal***	***$ 52,500***
			ANNUAL SUBTOTAL	**$ 625,840**			**ANNUAL SUBTOTAL**	**$ 601,540**
			General & Admin Services (10%)	$ 62,600			General & Admin Services (10%)	$ 60,200
			ANNUAL TOTAL	**$ 688,440**			**ANNUAL TOTAL**	**$ 661,740**
TPD Peak		**100.00**	**TPY**	**26,000**	**TPD Peak**		**100.00**	**TPY**	**26,000**
			Operating Cost ($/ton)	**$ 26.48**				**Operating Cost ($/ton)**	**$ 25.45**

Notes:

1. Excludes construction and equipment capital debt service.
2. General & Admin Services assumed to include home office charges and taxes under contract operations.

		Highway 20	Pudding Creek
Item Description		Annual Costs	Annual Costs
Labor			
		$ 322,000	*$ 322,000*
Insurance			
		$ 30,000	*$ 33,000*
Building and Site Maintenance			
		$ 79,000	*$ 82,000*
Utilities - Building and Site			
		$ 56,640	*$ 31,340*
Equipment O&M			
		$ 54,700	*$ 49,700*
Mobile Equipment Fuel			
		$ 31,000	*$ 31,000*
Equipment Replacement Reserves			
		$ 52,500	*$ 52,500*
	ANNUAL SUBTOTAL	**$ 625,840**	**$ 601,540**
	General & Admin Services (10%)	$ 62,600	$ 60,200
	ANNUAL TOTAL	**$ 688,440**	**$ 661,740**
	TPY	**26,000**	**26,000**
	Operating Cost ($/ton)	**$ 26.48**	**$ 25.45**

Notes:

1. Excludes construction and equipment capital debt service.
2. General & Admin Services assumed to include home office charges and taxes under contract operations.

		Highway 20 to Potrero Hills Landfill	Pudding Creek to Potrero Hills Landfill	*Comments*
Number of Trailer Loads		591	591	*Assumes average 22 ton payload*
Tonnage (tpy):		**13,000**	**13,000**	
Load & Unload Time (minutes):		30	30	*assumption*
One-Way Distance (miles)		**174**	**180**	
Average Speed (mph):		45	45	
Average Trips/Year:		591	591	
Average Trips/Month:		49	49	
Average Trips/Week:		11	11	
Hours Per Trip		8.2	8.5	
Weekly Freight Hours:		94	97	
Wkly Prorated Veh Inspect/Breaks:		5	5	*1 hour per day*
Annual Freight Hours:		4,865	5,024	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr		205,636	212,760	
Annual Costs Assumptions:				
Driver Labor				
	Drivers (based on total time)	2.5	2.5	
	Driver annual salary & benefits	$55,189	$55,189	*Heavy Equipment SVS Technician*
	Fringe benefits (% of salary)	30.00%	30.00%	*no benefits*
Fuel				
	Fuel Cost per Gallon	$6.19	$6.19	*Diesel Fuel estimate*
	Miles per Gallon	6.5	6.5	
Tires				
	New Tires Price	$400	$400	
	# New Tires Per 50,000 Miles	18	18	*6 tires on tractor & 12 tires on trailers*
Maintenance & Repairs				
	Mechanic Labor annual salary	$61,214	$61,214	*Heavy Equipment Mechanic, no benefits*
	Mechanic Labor % per Truck	1%	1%	
	Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	*Estimate*
Truck Amortization				
	Number of Tractors	2.3	2.4	*Update based on loads/day*
	Capital Cost - per semi-truck	$150,000	$150,000	*New truck price based on historic vendor/project data*
	Resale Value (% of truck $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	
Trailer Amortization				
	Number of Trailers	4.3	4.4	*Includes spares*
	Capital Cost -- per trailer	$70,000	$70,000	*Walking floor*
	Resale Value (% of purchase $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	

Insurance, License & Taxes (per yr/truck) @ 2.5% $ Capital Cost	$3,800	$3,800	*Estimate % of capital cost*
Overhead & Profit - Contract Haul @ % of O&M	20%	20%	*Contingency or OHP on contract haul*

Annual Haul Cost to Disposal:		Highway 20 to Potrero Hills Landfill	Pudding Creek to Potrero Hills Landfill	Comments
	Driver Labor	$136,000	$140,000	Time Based
	Fuel, Oil & Grease	$196,000	$203,000	Mileage & Time Based
	Tires	$30,000	$31,000	Mileage Based
	Maintenance & Repairs	$43,000	$44,000	Mileage & Time Based
	Truck Amortization	$47,000	$48,000	100% Utilized
	Trailer Amortization	$40,000	$41,000	100% Utilized
	Insurance, Licensing & Taxes	$9,000	$9,000	No. trucks
	Overhead & Profit	$100,000	$103,000	Assumed contracted
MSW Haul Cost to Landfill		**$601,000**	**$619,000**	
Total Haul Cost/Ton		**$46.20**	**$47.60**	

Landfill Tip Fee/Ton	**$45.00**	**$45.00**
Total LF tip fee and Haul Cost/Ton	**$91.20**	**$92.60**
Annual MSW Haul Cost & Tip Fee	**$1,185,600**	**$1,203,800**
Raw hauling cost per hour without tip fee	**$123.53**	**$123.22**

		Highway 20 to Willits MRF	Pudding Creek to Willits MRF	Comments
Number of Trailer Loads		355	355	*Assumes average 22 ton payload*
Tonnage (tpy):		**7,800**	**7,800**	
Load & Unload Time (minutes):		30	30	*assumption*
One-Way Distance (miles)		**30**	**36**	
Average Speed (mph):		45	45	
Average Trips/Year:		355	355	
Average Trips/Month:		30	30	
Average Trips/Week:		7	7	
Hours Per Trip		1.8	2.1	
Weekly Freight Hours:		13	15	
Wkly Prorated Veh Inspect/Breaks:		6	6	*1 hour per day*
Annual Freight Hours:		667	764	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr		21,300	25,560	
Annual Costs Assumptions:				
Driver Labor				
	Drivers (based on total time)	0.5	0.5	
	Driver annual salary & benefits	$55,189	$55,189	*Heavy Equipment SVS Technician, includes benefits*
	Fringe benefits (% of salary)	30.00%	30.00%	*no benefits*
Fuel				
	Fuel Cost per Gallon	$6.19	$6.19	*Diesel Fuel estimate*
	Miles per Gallon	6.5	6.5	
Tires				
	New Tires Price	$400	$400	
	# New Tires Per 50,000 Miles	18	18	*6 tires on tractor & 12 tires on trailers*
Maintenance & Repairs				
	Mechanic Labor annual salary	$61,214	$61,214	*Heavy Equipment Mechanic, no benefits*
	Mechanic Labor % per Truck	1%	1%	
	Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	*Estimate*
Truck Amortization				
	Number of Tractors	0.3	0.4	*Update based on loads/day*
	Capital Cost - per semi-truck	$150,000	$150,000	*New truck price based on historic vendor/project data*
	Resale Value (% of truck $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	
Trailer Amortization				
	Number of Trailers	2.3	2.4	*Includes spares*
	Capital Cost -- per trailer	$70,000	$70,000	*Walking floor*
	Resale Value (% of purchase $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	
Insurance, License & Taxes (per yr/truck) @ 2.5% $ Capital Cost		$3,800	$3,800	*Estimate % of capital cost*

Overhead & Profit - Contract Haul @ % of O&M 20% 20% *Contingency or OHP on contract haul*

Annual Haul Cost to Disposal:		Highway 20 to Willits MRF	Pudding Creek to Willits MRF	Comments
	Driver Labor	$26,000	$29,000	Time Based
	Fuel, Oil & Grease	$20,000	$24,000	Mileage & Time Based
	Tires	$3,000	$4,000	Mileage Based
	Maintenance & Repairs	$4,000	$5,000	Mileage & Time Based
	Truck Amortization	$6,000	$7,000	100% Utilized
	Trailer Amortization	$22,000	$22,000	100% Utilized
	Insurance, Licensing & Taxes	$1,000	$1,000	No. trucks
	Overhead & Profit	$16,000	$18,000	Assumed contracted
Recyclables haul to MRF		**$98,000**	**$110,000**	
Total Haul Cost/Ton		**$12.60**	**$14.10**	

MRF Tip Fee/Ton	**$80.00**	**$80.00**

Total MRF tip fee and Haul Cost/Ton	**$92.60**	**$94.10**

Annual MRF Haul Cost & Tip Fee	**$722,280**	**$733,980**

Raw hauling cost per hour without tip fee	**$146.85**	**$143.90**

		Highway 20 to Cold Creek Compost	Pudding Creek to Cold Creek Compost	*Comments*
Number of Trailer Loads		236	236	*Assumes average 22 ton payload*
Tonnage (tpy):		**5,200**	**5,200**	
Load & Unload Time (minutes):		30	30	*assumption*
One-Way Distance (miles)		**53**	**59**	
Average Speed (mph):		45	45	
Average Trips/Year:		237	237	
Average Trips/Month:		20	20	
Average Trips/Week:		5	5	
Hours Per Trip		2.9	3.1	
Weekly Freight Hours:		14	16	
Wkly Prorated Veh Inspect/Breaks:		6	6	*1 hour per day*
Annual Freight Hours:		742	812	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr		25,122	27,966	
Annual Costs Assumptions:				
Driver Labor				
	Drivers (based on total time)	0.5	0.5	
	Driver annual salary & benefits	$55,189	$55,189	*Heavy Equipment SVS Technician, includes benefits*
	Fringe benefits (% of salary)	30.00%	30.00%	*no benefits*
Fuel				
	Fuel Cost per Gallon	$6.19	$6.19	*Diesel Fuel estimate*
	Miles per Gallon	6.5	6.5	
Tires				
	New Tires Price	$400	$400	
	# New Tires Per 50,000 Miles	18	18	*6 tires on tractor & 12 tires on trailers*
Maintenance & Repairs				
	Mechanic Labor annual salary	$61,214	$61,214	*Heavy Equipment Mechanic, no benefits*
	Mechanic Labor % per Truck	1%	1%	
	Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	*Estimate*
Truck Amortization				
	Number of Tractors	0.4	0.4	*Update based on loads/day*
	Capital Cost - per semi-truck	$150,000	$150,000	*New truck price based on historic vendor/project data*
	Resale Value (% of truck $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	
Trailer Amortization				
	Number of Trailers	2.4	2.4	*Includes spares*
	Capital Cost -- per trailer	$70,000	$70,000	*Walking floor*
	Resale Value (% of purchase $)	20%	20%	
	Replacement Schedule (years)	7	7	
	Interest Rate	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	

Insurance, License & Taxes (per yr/truck) @ 2.5% $ Capital Cost	$3,800	$3,800	*Estimate % of capital cost*
Overhead & Profit - Contract Haul @ % of O&M	20%	20%	*Contingency or OHP on contract haul*

Annual Haul Cost to Disposal:		Highway 20 to Cold Creek Compost	Pudding Creek to Cold Creek Compost	Comments
	Driver Labor	$28,000	$30,000	Time Based
	Fuel, Oil & Grease	$24,000	$27,000	Mileage & Time Based
	Tires	$4,000	$4,000	Mileage Based
	Maintenance & Repairs	$5,000	$6,000	Mileage & Time Based
	Truck Amortization	$7,000	$8,000	100% Utilized
	Trailer Amortization	$22,000	$22,000	100% Utilized
	Insurance, Licensing & Taxes	$1,000	$1,000	No. trucks
	Overhead & Profit	$18,000	$20,000	Assumed contracted
Organics haul to Compost Site		**$109,000**	**$118,000**	
Total Haul Cost/Ton		**$21.00**	**$22.70**	

Compost Tip Fee / ton	**$38.58**	**$38.58**
Total Compost tip fee and Haul Cost / ton	**$59.58**	**$61.28**
Annual ORG Haul Cost & Tip Fee	**$309,816**	**$318,656**
Raw haul cost per hour without tip fee	**$146.81**	**$145.36**

	Waste Centroid to Highway 20	Waste Centroid to Pudding Creek	Waste Centroid to Casper TS	Comments
Number of Trailer Loads	21,840	21,840	21,840	*Assumes average 0.25 ton payload*
Tonnage (tpy):	**5,460**	**5,460**	**5,460**	*Assumes 21% of waste*
Load & Unload Time (minutes):	30	30	30	*assumption*
One-Way Distance (miles)	**3.6**	**3.9**	**8.3**	
Average Speed (mph):	45	45	45	
Average Trips/Year:	21,840	21,840	21,840	
Average Trips/Month:	1,820	1,820	1,820	
Average Trips/Week:	420	420	420	
Hours Per Trip	0.7	0.7	0.9	
Weekly Freight Hours:	277	283	365	
Wkly Prorated Veh Inspect/Breaks:	-	-	-	*N/A*
Annual Freight Hours:	14,414	14,706	18,977	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr	157,248	170,352	362,544	

Annual Costs Assumptions:

Driver Labor

Drivers (based on total time)	6.9	7.1	9.1	
Driver annual salary	$42,453	$42,453	$42,453	*Heavy Equipment SVS Technician*
Fringe benefits (% of salary)	0.00%	0.00%	0.00%	*No benefits*

Fuel

Fuel Cost per Gallon	$6.19	$6.19	$6.19	*Diesel Fuel estimate*
Miles per Gallon	15	15	15	

Tires

New Tires Price	$400	$400	$400	
# New Tires Per 50,000 Miles	4	4	4	*4 tires on vehicle*

Maintenance & Repairs

Mechanic Labor annual salary	$61,214	$61,214	$61,214	*Heavy Equipment Mechanic, no benefits*
Mechanic Labor % per Truck	1%	1%	1%	
Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	$0.20	*Estimate*

Truck Amortization

Number of Trucks	6.9	7.1	9.1	*Update based on loads/day*
Capital Cost -- per passenger truck	$50,000	$50,000	$50,000	
Resale Value (% of truck $)	20%	20%	20%	
Replacement Schedule (years)	10	10	10	
Interest Rate	4%	4%	4%	
Capital Recovery Factor (A/P,i,n)	0.1233	0.1233	0.1233	

Trailer Amortization

Number of Trailers	2.3	2.3	3.0	*Includes spares*
Capital Cost -- per trailer	$20,000	$20,000	$20,000	
Resale Value (% of purchase $)	20%	20%	20%	
Replacement Schedule (years)	10	10	10	
Interest Rate	4%	4%	4%	
Capital Recovery Factor (A/P,i,n)	0.1233	0.1233	0.1233	

Insurance, License & Taxes (per yr/truck) @ 2.5% $ Capital Cost	$1,300	$1,300	$1,300 *Estimate % of capital cost*
Overhead & Profit - Contract Haul @ % of O&M	0%	0%	0% *Contingency or OHP on contract haul*

Annual Collection Cost to TS:		Waste Centroid to Highway 20	Waste Centroid to Pudding Creek	Waste Centroid to Casper TS	Comments
	Driver Labor	$294,000	$300,000	$387,000	Time Based
	Fuel, Oil & Grease	$65,000	$70,000	$150,000	Mileage & Time Based
	Tires	$5,000	$5,000	$12,000	Mileage Based
	Maintenance & Repairs	$36,000	$38,000	$78,000	Mileage & Time Based
	Truck Amortization	$34,000	$35,000	$45,000	100% Utilized
	Trailer Amortization	$5,000	$5,000	$6,000	100% Utilized
	Insurance, Licensing & Taxes	$9,000	$9,000	$12,000	No. trucks
	Overhead & Profit	$0	$0	$0	Assumed no profit
Self-Haul Cost to MRF		**$448,000**	**$462,000**	**$690,000**	
Total Self-Haul Cost/Ton		**$82.10**	**$84.60**	**$126.40**	

MRF Tip Fee	**$0.00**	**$0.00**	
Total Collection tip fee and Haul Cost	**$82.10**	**$84.60**	**$126.40**

Cost per hour	**$ 31.08**	**$ 31.42**	**$ 36.36**

Casper Tip Fee = $38.75/cubic yard. Assume MSW is 450 lbs/cubic yard

$	CY	2000 lbs
CY	450 lbs	ton

		Waste Centroid to Highway 20	Waste Centroid to Pudding Creek	Waste Centroid to Willits	*Comments*
Number of Trailer Loads		3,423	3,423	3,423	*Assumes average 6 ton payload*
Tonnage (tpy):		**20,540**	**20,540**	**20,540**	*Assumes 79% of waste*
Load & Unload Time (minutes):		30	30	30	*assumption*
One-Way Distance (miles)		**4**	**4**	**33.6**	
Average Speed (mph):		45	45	45	
Average Trips/Year:		3,424	3,424	3,424	
Average Trips/Month:		286	286	286	
Average Trips/Week:		66	66	66	
Hours Per Trip		0.7	0.7	2.0	
Weekly Freight Hours:		45	45	132	
Wkly Prorated Veh Inspect/Breaks:		6	6	6	*1 hour per day*
Annual Freight Hours:		2,326	2,326	6,841	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr		27,392	27,392	230,093	
Annual Costs Assumptions:					
Driver Labor					
	Drivers (based on total time)	1.3	1.3	3.4	
	Driver annual salary	$61,557	$61,557	$61,557	*Heavy Equipment SVS Technician*
	Fringe benefits (% of salary)	45.00%	45.00%	45.00%	*45% benefits (half of City/County benefits)*
Fuel					
	Fuel Cost per Gallon	$6.19	$6.19	$6.19	*Diesel Fuel estimate*
	Miles per Gallon	15	15	15	
Tires					
	New Tires Price	$400	$400	$400	
	# New Tires Per 50,000 Miles	4	4	4	*4 tires on vehicle*
Maintenance & Repairs					
	Mechanic Labor annual salary	$88,761	$88,761	$88,761	*Heavy Equipment Mechanic, 45% benefits*
	Mechanic Labor % per Truck	1%	1%	1%	
	Parts, Repairs, Overhaul ($/mile)	$0.20	$0.20	$0.20	*Estimate*
Truck Amortization					
	Number of Trucks	1.1	1.1	3.3	*Update based on loads/day*
	Capital Cost - per collection truck	$150,000	$150,000	$150,000	*New truck price based on historic vendor/project data*
	Resale Value (% of truck $)	20%	20%	20%	
	Replacement Schedule (years)	7	7	7	
	Interest Rate	4%	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	0.1666	
Trailer Amortization					
	Number of Trailers	0	0	0	
	Capital Cost -- per trailer	$70,000	$70,000	$70,000	
	Resale Value (% of purchase $)	20%	20%	20%	
	Replacement Schedule (years)	7	7	7	
	Interest Rate	4%	4%	4%	
	Capital Recovery Factor (A/P,i,n)	0.1666	0.1666	0.1666	

Insurance, License & Taxes (per yr/truck) @ 2.5% $ Capital Cost		$3,800	$3,800	$3,800	*Estimate % of capital cost*
Overhead & Profit - Contract Haul @ % of O&M		20%	20%	20%	*Contingency or OHP on contract haul*

Annual Collection Cost to TS:		Waste Centroid to Highway 20	Waste Centroid to Pudding Creek	Waste Centroid to Willits	Comments
	Driver Labor	$78,000	$78,000	$212,000	Time Based
	Fuel, Oil & Grease	$11,000	$11,000	$95,000	Mileage & Time Based
	Tires	$1,000	$1,000	$7,000	Mileage Based
	Maintenance & Repairs	$6,000	$6,000	$49,000	Mileage & Time Based
	Truck Amortization	$22,000	$22,000	$66,000	100% Utilized
	Trailer Amortization	$0	$0	$0	100% Utilized
	Insurance, Licensing & Taxes	$4,000	$4,000	$12,000	No. trucks
	Overhead & Profit	$24,000	$24,000	$88,000	Assumed contracted
Franchise Haul Cost to MRF		**$146,000**	**$146,000**	**$529,000**	
Total Franchise Haul Cost/Ton		**$7.10**	**$7.10**	**$25.80**	

MRF Tip Fee	**$0.00**	**$0.00**	
Total Collection Haul Cost Per Ton	**$7.10**	**$7.10**	**$25.80**

Cost per hour	**$ 62.92**	**$ 62.92**	**$ 77.52**

Collection Costs:	Highway 20	Pudding Creek	Status Quo	
Annual Combined Collection Costs	$594,000	$608,000	$1,219,000	
Self-haul Collection Cost per Ton	$82.10	$84.60	$126.40	Does not include Casper Tip Fee
Commercial Collection Costs per Ton	$7.10	$7.10	$25.80	Does not include Willits Tip Fee

Transfer Station Annual Costs:	Highway 20	Pudding Creek	Status Quo
Capital Cost Annual Debt Service	$313,000	$338,000	
Annual Operating Costs	$688,440	$661,740	
Annual TS Costs(1)	**$1,001,440**	**$999,740**	
Annual LF Haul & Tip Costs	$1,185,600	$1,203,800	
Annual MRF Haul & Tip Costs	$722,280	$733,980	
Annual ORG Haul & Tip Costs	$309,816	$318,656	
Annual Costs including Haul & Tip Costs	**$3,219,136**	**$3,256,176**	**$2,425,415**

(1) For Status Quo, includes Casper tip fee for self-haul and Willits TS tip fee for commercial MSW, Willits MRF tip fee for commercial recyclables, and Cold Creek Compost tip fee for commercial organics

Transfer Station Costs Per Ton:	Highway 20	Pudding Creek	Status Quo
Capital Cost Annual Debt Service	$31.30	$33.80	
Annual Operating Costs	$26.48	$25.45	
Annual TS Costs Per Ton	**$57.78**	**$59.25**	
Annual LF Haul & Tip Costs	$91.20	$92.60	
Annual MRF Haul & Tip Costs	$92.60	$94.10	
Annual ORG Haul & Tip Costs	$59.58	$61.28	
Annual Average TS Costs with Haul & Tip Costs	**$143.07**	**$146.04**	**$93.29**

Annual Costs	Highway 20	Pudding Creek	Status Quo
Annual Collection Costs			
Self-Haul Collection Costs	$448,000	$462,000	$690,000
Commercial Collection Costs	$146,000	$146,000	$529,000
Annual TS Costs			
Annual Capital Costs (Debt Service)	$313,000	$338,000	N/A
Annual Operating Costs	$688,440	$661,740	N/A
Annual Haul & Tip Costs	$2,217,696	$2,256,436	$2,425,415
Total Annual Costs	**$3,813,136**	**$3,864,176**	**$3,644,415**

(1) For Status Quo, includes Casper tip fee for self-haul and Willits TS tip fee for commercial MSW, Willits MRF tip fee for commercial recyclables, and Cold Creek Compost tip fee for commercial organics

Highway 20 Cost Recovery Tip Fee	MSW Fee	Recyclables Fee	Organics Fee
Capital	$156,500	$93,900	$62,600
Operating	$344,220	$206,532	$137,688
Haul & Tip	$1,185,600	$722,280	$309,816
Proposed Tip Fee per Ton	**$129.72**	**$131.12**	**$98.10**

Pudding Creek Cost Recovery Tip Fee	MSW Fee	Recyclables Fee	Organics Fee
Capital	$169,000	$101,400	$67,600
Operating	$330,870	$198,522	$132,348
Haul & Tip	$1,203,800	$733,980	$318,656
Proposed Tip Fee per Ton	**$131.05**	**$132.55**	**$99.73**

Tip Fee Summary	MSW Fee	Recyclables Fee	Organics Fee
Highway 20	$129.72	$131.12	$98.10
Pudding Creek	$131.05	$132.55	$99.73
Status Quo	$45.00	$80.00	$38.58

Financial Analysis Summary	Highway 20	Pudding Creek	Status Quo
Total Annual Costs	$3,813,136	$3,864,176	$3,644,415
Tip Fee Per Ton - MSW	$129.72	$131.05	$45.00
Tip Fee Per Ton - Recyclables	$131.12	$132.55	$80.00
Tip Fee Per Ton - Organics	$98.10	$99.73	$38.58

APPENDIX B

Mendocino County CCTS GHG Transportation Analysis

Emission Factors

Category	Type	Year	g CH4/mile	g N2O/mile
Self-Haul	Gasoline Light-Duty Trucks	2018	0.0081	0.0015
Collection Vehicle	Diesel Medium and Heavy-Dut	2007-2019	0.029	0.0214
Transfer Truck	Diesel Medium and Heavy-Dut	2007-2019	0.029	0.0214

Locations	Address
Waste Centroid	39.4299, -123.7929
Casper Transfer Station	14000 Prairie Way, Mendocino, CA 95460
Solid Waste of Willits (SWOW) TS or M	351 Franklin Ave, Willits, CA 95490
Cold Creek Compost	6000 East Side, Potter Valley Rd, Ukiah, CA 95482
Potrero Hills Landfill	3675 Potrero Hills Ln, Suisun City, CA 94585
Pudding Creek CCTS	219 Pudding Creek Rd, Fort Bragg, CA 95437
Highway 20 CCTS	39.2576, -123.4734

Status Quo

						CH4		N20		Combined	Lifetime
Vehicle Type	**Start**	**Finish**	**Miles/Trip (one-way)**	**Trips/Year**	**Miles/Year (one-way)**	**g/year**	**MTCO2e/year**	**g/year**	**MTCO2e/year**	**MTCO2e/year**	**MTCO2e/20 years**
Self-Haul to Casper	Waste Centroid	Casper Transfer Station	8.3	5,460	45,318	367.08	0.08	67.98	0.02	0.10	2.10
Collection to TS - MSW	Waste Centroid	SWOW TS or MRF	33.6	1,712	57,523	1,668.17	0.38	1,231.00	0.37	0.75	15.03
Collection to MRF	Waste Centroid	SWOW TS or MRF	33.6	1,027	34,507	1,000.71	0.23	738.45	0.22	0.45	9.02
Collection to ORG	Waste Centroid	Cold Creek Compost	56.8	685	38,908	1,128.33	0.26	832.63	0.25	0.51	10.17
Transfer from Casper - MSW	Casper Transfer Station	SWOW TS or MRF	39.8	124	4,939	143.23	0.03	105.69	0.03	0.06	1.29
Transfer from Casper - MRF	Casper Transfer Station	SWOW TS or MRF	39.8	74	2,963	85.94	0.02	63.41	0.02	0.04	0.77
Transfer from Casper - ORG	Casper Transfer Station	SWOW TS or MRF	39.8	50	1,976	57.29	0.01	42.28	0.01	0.03	0.52
Transfer from TS - MSW	SWOW TS or MRF	Potrero Hills Landfill	145	591	85,695	2,485.16	0.57	1,833.87	0.55	1.12	22.39
Transfer from TS - Org	SWOW TS or MRF	Cold Creek Compost	23.6	50	1,171	33.97	0.01	25.07	0.01	0.02	0.31
										Total	**61.59**

Pudding Creek

						CH4		N20		Combined	Lifetime
Vehicle Type	**Start**	**Finish**	**Miles/Trip (one-way)**	**Trips/Year**	**Miles/Year (one-way)**	**g/year**	**MTCO2e/year**	**g/year**	**MTCO2e/year**	**MTCO2e/year**	**MTCO2e/20 years**
Self-Haul to CCTS	Waste Centroid	Pudding Creek CCTS	3.9	5,460	21,294	172.48	0.04	31.94	0.01	0.05	0.99
Collection to CCTS	Waste Centroid	Pudding Creek CCTS	3.9	3,424	13,354	387.25	0.09	285.77	0.09	0.17	3.49
Transfer to ORG	Pudding Creek CCTS	Cold Creek Compost	58.7	236	13,880	402.52	0.09	297.03	0.09	0.18	3.63
Transfer to MRF	Pudding Creek CCTS	SWOW TS or MRF	35.5	352	12,481	361.94	0.08	267.09	0.08	0.16	3.26
Transfer to Landfill	Pudding Creek CCTS	Potrero Hills Landfill	191	591	112,881	3,273.55	0.75	2,415.65	0.72	1.47	29.50
										Total	**40.86**

Highway 20

						CH4		N20		Combined	Lifetime
Vehicle Type	**Start**	**Finish**	**Miles/Trip (one-way)**	**Trips/Year**	**Miles/Year (one-way)**	**g/year**	**MTCO2e/year**	**g/year**	**MTCO2e/year**	**MTCO2e/year**	**MTCO2e/20 years**
Self-Haul to CCTS	Waste Centroid	Highway 20 CCTS	3.6	5,460	19,656	159.21	0.04	29.48	0.01	0.05	0.91
Collection to CCTS	Waste Centroid	Highway 20 CCTS	3.6	3,424	12,326	357.47	0.08	263.78	0.08	0.16	3.22

Transfer to ORG	Highway 20 CCTS	Cold Creek Compost	56.8	236	13,431	389.49	0.09	287.42	0.09	0.18	3.51
Transfer to MRF	Highway 20 CCTS	SWOW TS or MRF	33.6	352	11,813	342.57	0.08	252.79	0.08	0.15	3.09
Transfer to Landfill	Highway 20 CCTS	Potrero Hills Landfill	178	591	105,198	3,050.74	0.70	2,251.24	0.67	1.37	27.49
										Total	**38.21**

GHG Summary Table

Transfer Station	**MTCO2e per 20 Years**
Status Quo	61.59
Pudding Creek	40.86
Highway 20	38.21