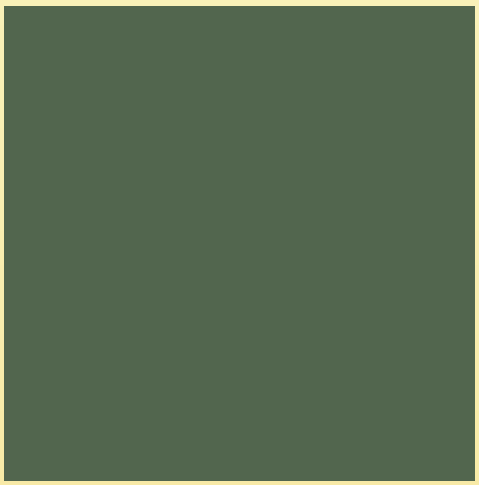
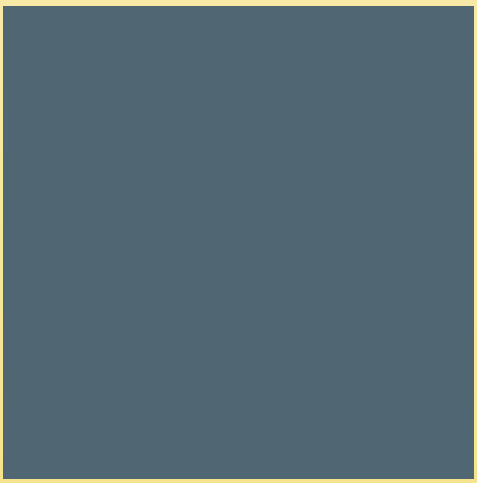
North Pinellas County Transfer Station Conceptual Feasibility Report

November 2007





HDR

November, 2007

PINELLAS COUNTY UTILITIES

DEPARTMENT OF SOLID WASTE OPERATIONS

NORTH PINELLAS COUNTY TRANSFER STATION

CONCEPTUAL FEASIBILITY REPORT

TASK NO. 15

HDR ONE COMPANY | *Many Solutions*

Executive Summary

At the request of the City of Dunedin, the Pinellas County Solid Waste Technical Management Committee (TMC) authorized preparation of a Feasibility Report on the siting and operation of a municipal solid waste (MSW) transfer station to serve the northern portion of Pinellas County. HDR was tasked by the Department of Solid Waste Operations to conduct this study. The Feasibility Report is intended to conduct preliminary investigations on the economic viability of a North County Transfer Station.

HDR conducted a preliminary GIS review and a windshield survey of appropriately zoned property in the project area. This survey indicated that identifying a new site for a transfer station would be difficult. Before a transfer station can be sited, the site must meet several County and State siting restrictions and comply with a regulated permitting process. Therefore, a general location near Dunedin was selected which would minimize the total transportation distance between the waste generation area, transfer station and the County disposal facilities and allow an analysis of the transportation cost differential for direct haul versus transfer haul. Since the City of Clearwater already operates a transfer station for waste collected within its boundaries, the Clearwater transfer station site was also considered to be a possible location for a larger facility. The Clearwater transfer station site would also minimize siting issues. Therefore two options were investigated:

- Option 1 – A transfer station located near Dunedin serving the County areas north of the City of Clearwater.
- Option 2 – A new larger transfer station located at the site of the existing Clearwater transfer station serving all of the north County area including Clearwater.

Utilizing the Pinellas County Planning Department 2007 updated population projections to 2025 for permanent, seasonal and tourist population, solid waste projections for each community in the north County area were developed, based on Clearwater waste generation data. The Clearwater data was selected as the best available information that is most representative of the residential and commercial development mix in the north County area. Using a transfer station design year of 2025, design criteria were established based on an open-top transfer station concept for a 650 ton per day and 1,140 ton per day facility.

An economic analysis was conducted that compared the total costs for direct haul to the County disposal complex with the two transfer station options, which included the following cost components:

- Direct haul costs from each community in the north County to the County disposal facilities and to each transfer station option, based on a time and distance analysis for crew sizes ranging from one to three personnel
- Estimated capital construction costs for the transfer stations and the amortization of those costs based on a bank loan at 8% over 20 years.
- Estimated operation and maintenance costs for the operation of the transfer stations; and,
- Transfer haul in semi-trailers from the transfer stations to the County disposal facilities, based on a time and distance analysis

The summary of this analysis as presented in Table 1, shows that in all cases, using a transfer station is more costly than direct haul of solid waste for disposal at Bridgeway Acres, and would therefore argue against constructing and operating such a facility.

Many variables are involved in any community's decision to site solid waste disposal facilities, such as landfills, waste-to-energy plants or transfer stations. Often, such decisions are affected by considerations other than cost, including:

- Reduced vehicle emissions and traffic congestion;
- Convenience for residents for public drop-off;
- Ability to schedule transfer deliveries in off-peak periods and reducing queuing at scales;

- Minimizing overtime pay for drivers and sanitation helpers;
- Just local preference.

Because of the very preliminary nature of this feasibility study, this report has concentrated on economic and cost factors.

Also, the feasibility study did not deal with any of the policy issues that must be decided in the event that the decision is made to proceed further with this project. Some of these policy decisions include:

1. Tipping Fee – Will users of the transfer station pay a separate per ton charge for use of the facility, in addition to the Bridgeway Acres per ton fee; or will the County want to consider a unified system wide disposal charge?
2. Facility Use – How will the County assure that customers located within the service area will utilize the transfer station? Options include a County Ordinance, contracts with municipalities, or franchises for the private haulers. This would be particularly important in light of the feasibility studies' cost projections.
3. Other Services – Will the County want to consider providing other disposal services at the transfer station, such as recycling drop-off, household hazardous waste collection, white goods, batteries, etc? This feasibility analysis assumed a "no frills" facility, and these extra services would increase operating and capital costs and require a larger site, but might provide added benefits that would justify the additional costs.
4. Capital Cost Financing – The study assumes a typical bank loan financing at 8% for 20 years for the facility construction, but other financing options might be available.
5. Operational Responsibility – Should the facility be publicly or privately operated?

Ultimately, this feasibility study is intended to provide only sufficient data and information upon which reasonable decisions can be made to either continue further consideration of developing a transfer station for Northern Pinellas County, or to abandon the project. This report is intended to provide the information necessary to make that determination.

Table 1 – Option Comparison Summary ($/ton)

	Collection Crew Size	Total Option 1 Costs	Total Option 2 Costs	Direct Haul to RRF
Tarpon Springs	1	$ 25.41	$ 26.71	$ 18.01
	2	$ 26.80	$ 28.89	$ 21.03
	3	$ 28.18	$ 30.75	$ 24.05
Crystal Beach	1	$ 23.86	$ 25.29	$ 16.90
	2	$ 24.91	$ 26.99	$ 19.55
	3	$ 25.95	$ 28.38	$ 22.20
Safety Harbor	1	$ 19.64	$ 23.71	$ 13.34
	2	$ 20.32	$ 24.13	$ 14.81
	3	$ 21.01	$ 24.86	$ 16.28
Palm Harbor	1	$ 23.12	$ 24.38	$ 15.79
	2	$ 23.89	$ 25.51	$ 18.07
	3	$ 24.66	$ 26.53	$ 20.35
Curlew	1	$ 23.47	$ 23.82	$ 15.42
	2	$ 24.22	$ 24.64	$ 17.58
	3	$ 24.98	$ 25.45	$ 19.74
Oldsmar	1	$ 25.02	$ 24.66	$ 15.05
	2	$ 25.70	$ 26.01	$ 17.09
	3	$ 26.38	$ 27.15	$ 19.12
Dunedin	1	$ 22.40	$ 24.22	$ 15.42
	2	$ 23.15	$ 25.23	$ 17.58
	3	$ 23.90	$ 26.18	$ 19.74

I. Introduction/Purpose

The Pinellas County Solid Waste System TMC has requested a Feasibility Report on the siting and operation of a MSW transfer station to serve the northern portion of Pinellas County (County). This action by the TMC originated at the request of the City of Dunedin. Currently, all MSW that is generated within the County is disposed at the Bridgeway Acres Landfill or the Waste-to-Energy Facility located at the same location (BWA) by the vehicles in which the MSW was collected. The one exception is for MSW that arrives at BWA in transfer vehicles from the City of Clearwater, which operates its own MSW transfer station.

HDR has been asked by the Pinellas County Utilities Department of Solid Waste Operations (DSWO) to prepare this Feasibility Report, which is intended only to provide the preliminary information and analyses necessary for the TMC to determine if the concept of a North County Transfer Station is worthy of further detailed evaluation for implementation.

II. Potential Service Area

Since the City of Clearwater already operates a transfer station for its waste, the potential service area for the North County Transfer Station consists of the communities north of Clearwater to the border with Pasco County on the north and Hillsborough County on the east (see Figure 1). However, the Clearwater transfer station is operating at its maximum capacity and was constructed using a push-pit technology, which is no longer supported by the manufacturer. Therefore, the City of Clearwater may be interested in participating in a new transfer station facility.

III. Waste Quantity Estimates and Projections

The important factors in evaluating the need for a transfer station are projections of future waste generation rates and of the quantities of waste that are likely to flow to the proposed facility. Projecting waste generation requires estimating future population growth, and per capita waste generation and diversion trends.

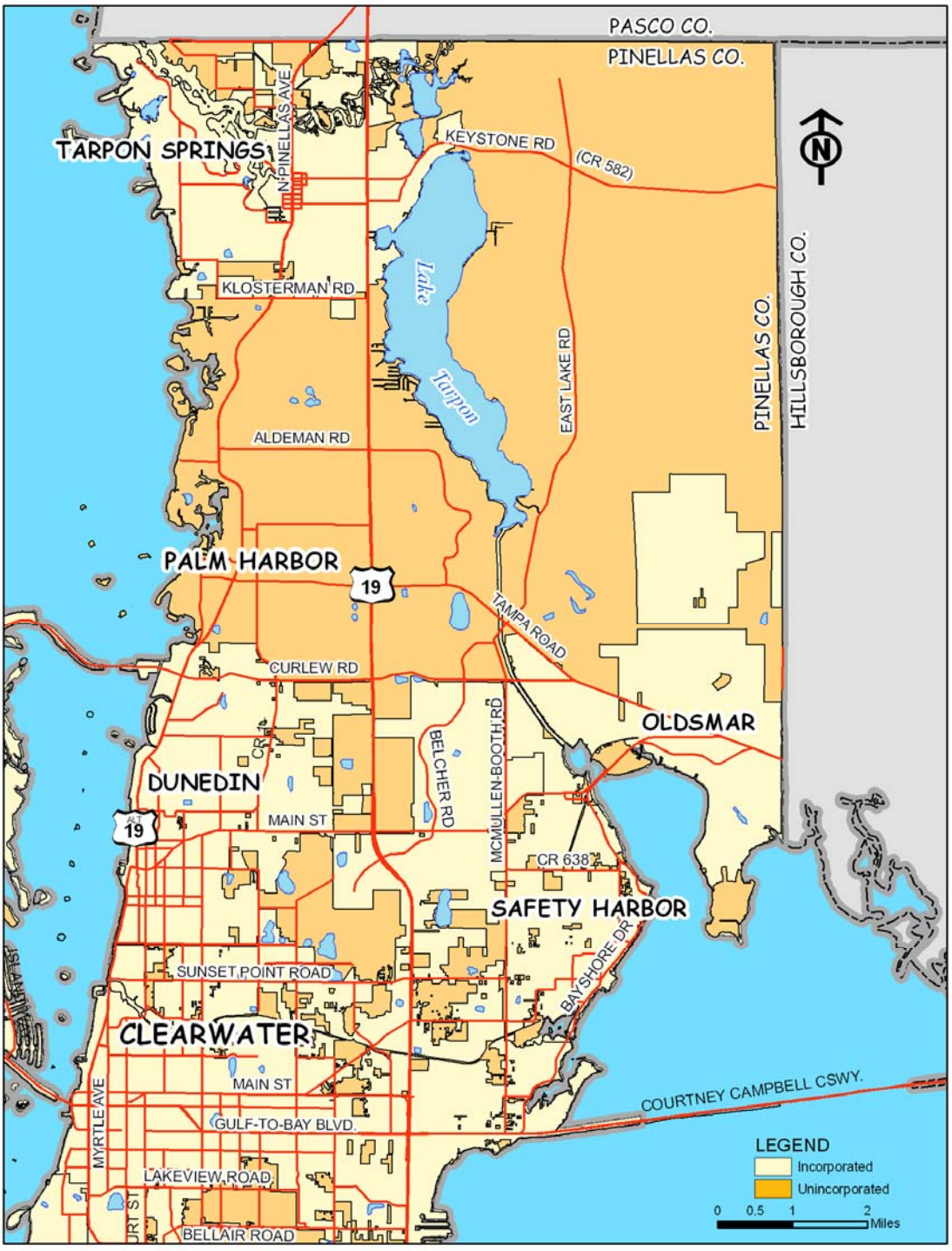
Pinellas County is a highly urbanized county with an estimated total permanent and seasonal resident population of over 1,100,000 in 2005. It ranks fifth in population in the State of Florida with a population density of 3,291 persons per square mile, the highest in the State. The current population estimates for the north County communities are shown in Table 2. This data includes permanent, seasonal and tourist population projections for Pinellas County though 2025.

Table 2 – North County Community Population Data

Planning Sector	2005	2010	2015	2020	2025
Tarpon Springs	33,426	34,965	36,139	37,024	37,686
East Lake Tarpon	40,158	41,763	42,621	43,074	43,310
Palm Harbor	69,262	70,853	71,708	72,163	72,403
Dunedin	46,051	46,653	47,072	47,363	47,564
Safety Harbor/Oldsmar	33,151	34,579	35,547	36,193	36,623
Clearwater	171,899	174,272	175,964	177,168	178,023
Total	**393,947**	**403,085**	**409,051**	**412,985**	**415,609**
Pinellas County	**1,113,897**	**1,136,175**	**1,153,111**	**1,165,771**	**1,176,113**

Source: Pinellas County Planning Department 07/04, Rev. 02/07 (updated projections by Planning Sector)

Figure 1 – Potential Service Area



This population data, in conjunction with the DSWO and Clearwater solid waste quantity data were used to develop an estimated per capita waste generation rate of 0.79 tons per year per person, and an estimated waste generation has been calculated for each of the Service Area communities, as shown in Table 3. This data has been subsequently used to develop the potential design capacity of a North County Transfer Station.

Table 3 – Waste Quantity Estimates (Tons/Yr)

Planning Sector	2005	2010	2015	2020	2025
Tarpon Springs	26,407	27,622	28,550	29,249	29,772
East Lake Tarpon	31,725	32,993	33,671	34,028	34,215
Palm Harbor	54,717	55,974	56,649	57,009	57,198
Dunedin	36,380	36,856	37,187	37,417	37,576
Safety Harbor/Oldsmar	26,189	27,317	28,082	28,592	28,932
Clearwater	135,800	137,675	139,012	139,963	140,638
Total w/ Clearwater	**311,218**	**318,437**	**323,150**	**326,258**	**328,331**
Total w/o Clearwater	**175,418**	**180,762**	**184,139**	**186,295**	**187,693**

Design Capacity

When planning for a transfer station it is necessary to design for peak delivery days as well as for waste quantity growth due to population increases. In designing for the peak day in Florida, there is typically a seasonal component due to tourists and a daily fluctuation that occurs due to weekly collection and disposal patterns. These patterns typically increase the average daily delivery by 50%. It is assumed that the transfer station would be open five and a half days a week to coincide with most residential waste collection patterns. Based on these assumptions, the average daily delivery for a North County Transfer Station (excluding Clearwater) with a 2025 design year would be approximately 650 tons per day with the peak daily delivery estimated at approximately 980 tons per day. If Clearwater is included into the service area, the average daily capacity of the transfer station with a design year of 2025 would be approximately 1,140 tons per day with a peak daily delivery of approximately 1,720 tons per day.

IV. Transfer Station Options

Facility Configuration

It is assumed for this analysis that the new transfer station will be a top-loading type. The new facility would include a scale house with one inbound and one outbound scale with digital weight indicators that are wired to a local computer and ticket printer. Each scale would be a minimum of 50 feet long with a 10-foot approach and exit slabs at each end. Load-out scales under the transfer chutes would be provided to optimize payloads and minimize transfer haul costs. Queuing space provided before the inbound scale will allow collection vehicles to queue on site, thereby preventing any congestion on public roads. With dedicated inbound and outbound scales, all collection vehicle traffic would normally be able to access the tipping floor within a 20 minute maximum waiting time once on site.

After crossing the inbound scale, collection trucks will proceed directly to the transfer building to unload inside the building. Upon exiting the building, the trucks can weigh out on the outbound scale (if not tared) and exit the site.

Transfer vehicles would enter the site using a designated roadway on site to the transfer building, where they would position themselves under one of the two transfer ports. Upon completion of the transfer operation, the vehicles would exit the site using a lane that allows bypass of the scales.

The main building would be a totally enclosed facility to mitigate noise and odors. A minimum of 12-foot-high push/containment walls would be provided along the sides of the building to facilitate maximum daily storage of materials on the tipping floor. To facilitate cleanliness and good housekeeping, difficult to clean corners and areas would be minimized inside the tipping floor. The tipping floor would be sized to accommodate peak flows of traffic and tonnage.

The transfer building would provide for the simultaneous unloading of collection vehicles. Space would be provided behind the two top-loading transfer ports to allow for the operation of a mobile tamping device to

optimize payloads. Weigh scales would be located under each of the top-loading ports to monitor the weights of the transfer vehicles prior to exiting.

Facility Throughput Capacity

The throughput capacity of any transfer station is limited by three physical factors: i) the receiving capacity, ii) the waste storage capacity and iii) the station load-out capacity. In addition, the throughput capacity of any transfer station is limited by its permitted throughput capacity. All four of these factors must be considered when planning for the County's future needs.

The number of scales (i.e., the length of queue) and number of unloading positions controls waste receiving capacity. If the vehicles are only weighed in and vehicle tare weights are used to determine net payload, this maximum traffic volume is about 60 vehicles per hour (vph). The receiving capacity is further limited by the queuing space in front of the scale. For the purpose of capacity analysis, the distance from the end of the scale approach slab to the facility access road entrance determines the maximum queuing capacity. Using an assumed truck spacing of 50 feet, the maximum vehicle queue is determined and combined with the average scale transaction time to arrive at a maximum traffic volume.

Collection vehicles do not arrive at the transfer station site at a uniform rate during the day. The collection of waste is normally restricted to a uniform starting time in the morning, to avoid noise complaints in residential neighborhoods. This means the trucks tend to arrive during a 2-hour peak each morning and afternoon. During these peak periods, the transfer station can expect to receive approximately 75 percent of its daily deliveries. Therefore, a facility that handles collection vehicles only will typically need space for about one collection vehicle for every 100 tons of daily capacity.

In order to minimize the size of the transfer station building, an exterior truck maneuvering area is normally utilized. Trucks preparing to dump their loads approach the building, then turn and back into the transfer station. The trucks then dump on to the tipping floor. The number of unloading positions required is determined by the peak vehicle volume and the required vehicle turn-around times. Typical unloading times for collection vehicles and self-haul vehicles are approximately six minutes and fifteen minutes, respectively. However, since the vehicles do not dump directly into the load-out hopper, a loader must clear the tipping floor by pushing the load into the pit, or into the storage areas, after each load is dumped on the floor. This operation typically takes approximately 90 seconds.

Waste storage capacity is critical for maximizing the throughput of a transfer station, since the waste is not delivered at a uniform daily rate. In addition, daily delivery rates fluctuate considerably during a week due to differing current collection practices. As a minimum, the station should have capacity to store half of its daily capacity. Storage equal to the daily rated capacity is generally preferred to provide a contingency for equipment breakdowns. Based on these criteria, the principal facility design assumptions are shown in Table 4.

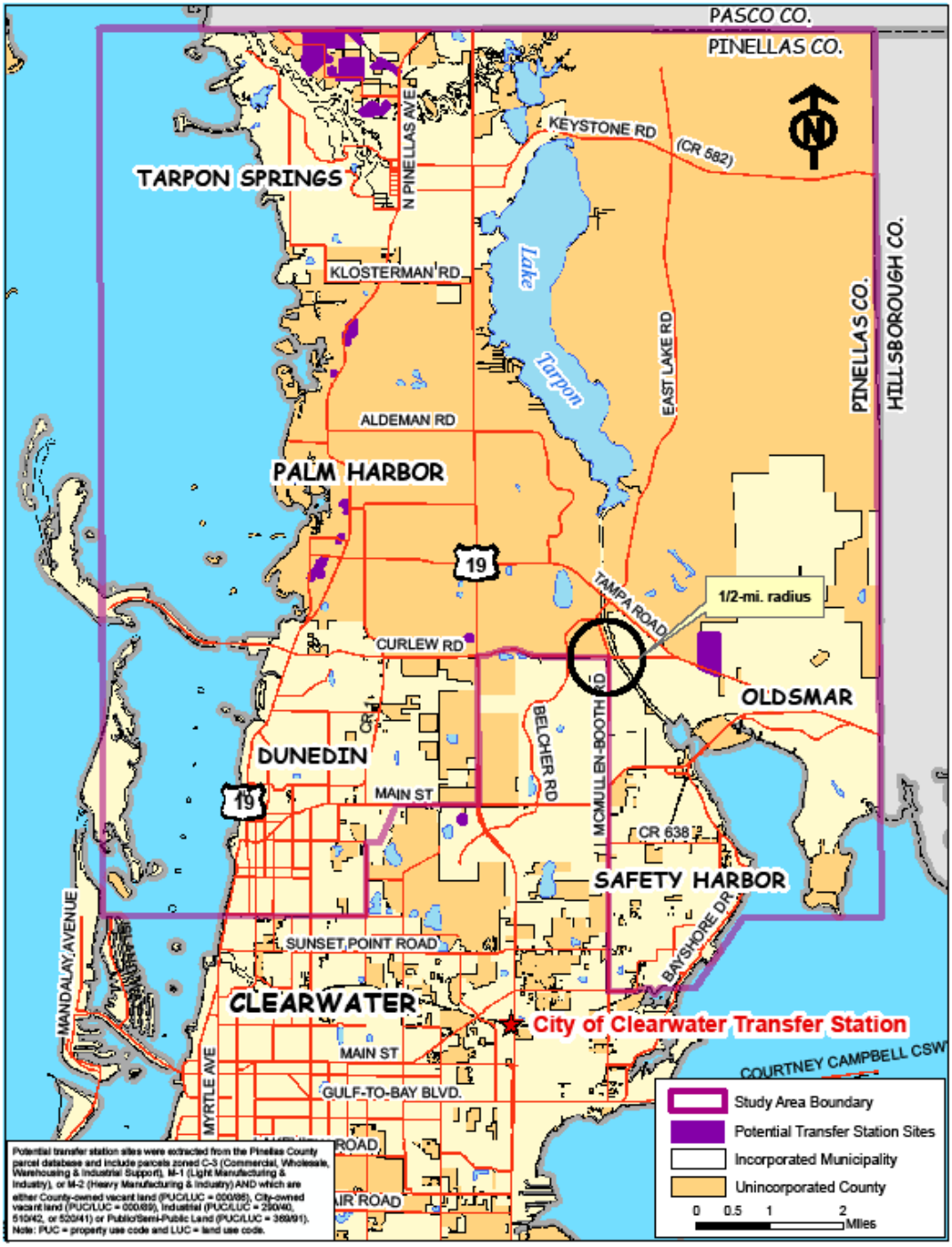
Table 4 – Facility Design Criteria Assumptions

Design Parameter	Option 1	Option 2
2025 Design Capacity (tpd)	650	1,140
2025 Peak Day Deliveries (tons)	980	1,720
Number of Scales	2	2
Number of Hoppers	2	3
Floor Storage (Ft^3)	8,400	14,700
Total Tipping Floor (Ft^2)	18,700	30,400
Lower Loadout Area (Ft^2)	3,300	7,200
Truck Payloads (tons)	7	7
Truck Loading Time (minutes)	20	20
Operating Days/Week	6	6
Operating Hours/Week	55	55

Locational Options

Since the County is highly urbanized it is assumed that the siting of a new transfer station will be difficult. Although this study is not intended to determine an actual facility location, the selection of a general facility location is necessary to conduct a haul cost analysis. Therefore, a hypothetical site was chosen for consideration within the vicinity of Curlew Road and McMullen Booth Road (see Figure 2).

Figure 2 – Locational Considerations



This area was selected because of its proximity to the city of Dunedin (the requesting party regarding this study) and for its access to the principal north-south county transportation routes. This location would also reduce counter-traffic flow away from the final disposal location. The area is principally comprised of portions of Unincorporated Pinellas County and the City of Clearwater.

A second location option that was also considered in this study is the existing Clearwater transfer station site. Since this site is already permitted for use as a transfer station, many of the obstacles to site approval could be avoided. The site is secluded and the facility is aging and approaching the end of its useful life. The site is of sufficient size for construction of a new larger facility adjacent to the existing facility, capable of handling both Clearwater and the other north County waste quantities.

However, facility siting would require compliance with state regulations for solid waste facility siting and local zoning requirements. The following sections provide a general description of those siting requirements.

County Siting Restrictions

Under existing County ordinances, a transfer station may only be located in an M-1 (light manufacturing and industry) zone or a C-3 (commercial, warehouse, wholesale, and industrial) zone; for an enclosed facility. The County does require enclosed transfer stations in M-2 (heavy manufacturing and industrial) zone, but only under conditional use.

The County would require the facility to be screened or have a landscaped open area and have a maximum impervious surface ratio of 0.95. If 300 ft. from a residential area, all industrial processes must be inside a building and all storage areas, except storage of passenger vehicles, must have a solid fence or wall with a minimum height of 6 ft. If the facility is directly abutting a residential area, all nonresidential uses of land must have a solid fence or wall with a minimum height of 6 ft. along the property line and no storage, except storage of passenger vehicles, is permitted within 20 ft. The building height can not exceed 100 ft., a minimum allowable area of 25,000 sq. ft. or a minimum width of 100 ft. and a depth of 200 ft. The setback requirements for the site are 25 ft. – front, 25 ft. – side, and 25 ft. – rear. All emission of smoke, dust, fumes, dirt or odor must be prevented. No discharge of waste or other matter is permitted into any stream, lake or the groundwater.

The County also requires annual reporting of the tonnage and types of materials received, and the tonnage and types of materials transferred or recycled, if determined to be applicable by Pinellas County Utilities Solid Waste Operations Department.

If a municipal location is selected for the facility, more extensive discussions with the municipality would be needed. A preliminary review of the current municipal ordinances did not indicate whether or not transfer stations would be permitted within their light or heavy industrial zones, as is allowed by the County.

State Permitting Restrictions

The state of Florida not only requires local permitting for all new transfer stations, but also a Florida Department of Environmental Protection (FDEP) application to “construct, operate, modify, or close a solid waste management facility” must be submitted along with a comprehensive engineering report and an operational plan. The report must include, at a minimum, a geological and hydro-geological investigation, storm-water system design, verification of training requirements, hours of operation, waste screening procedures, contingency plans, waste quantity reports, litter control, erosion control and drawings signed and sealed by a Florida Professional Engineer.

Also, for facilities owned or operated by a county, a description of the existing or proposed recycling facilities or activities at the site, if any, must be provided, along with a description of whether, and the extent to which, these recycling facilities or activities will contribute to the county’s achievement of the waste reduction and recycling goals. If the facility is an outdoor facility, it cannot be located within 10,000 feet of any licensed and operating airport runway used by turbine powered aircraft, or within 5,000 feet of any licensed and operating

airport runway used only by piston engine aircraft, unless the applicant demonstrates that the facility is designed and will be operated so that it does not pose a bird hazard to aircraft.

V. Financial Analysis

In order to compare transportation options on an economic basis, several variables must be considered which include:

- Quantity of waste coming from the centroid of each generation district or community;
- Capital and financing costs for facilities and equipment;
- Transportation times and distances between the various facility options and related costs; and,
- Facility operation costs.

Therefore, we have utilized the community waste generation quantities presented above as the basis for this analysis.

Construction Cost Estimates

Since this feasibility study is not intended to provide a specific site recommendation for a North County Transfer Station, a generic cost estimate for the transfer station construction was developed. If the County decides on a transfer station location, the estimate would be updated to reflect the site specific factors that might impact the actual construction cost. A summary of the cost estimate for a 650 ton per day transfer station is provided in Table 5 that could serve all of the north County except for Clearwater. A second cost estimate has been provided for a larger 1,140 ton per day facility that could include the waste projections from Clearwater as well and is shown in Table 4 as Option 2. It is assumed that the actual capital costs could vary plus or minus 10 percent due to economic conditions in the construction trades.

Table 5 – Estimated Facility Capital Cost

Cost Component		Option 1	Option 2
Site Acquisition (1)		$60,000	$120,000
Site Preparation & Development (2)		$682,800	$878,500
Transfer Building/Maneuvering Area (3)		$2,552,600	$4,059,700
Scale House and Scales (4)		$487,500	$487,500
On-site Mobile Equipment (5)		$535,000	$735,000
Subtotal Construction & Equipment		$4,317,900	$6,280,700
Contingency	15%	$647,700	$942,100
Surveying & Soils Report		$25,000	$25,000
Facility Permitting	2%	$99,300	$144,500
Design/Engineering	8%	$348,000	$510,200
Construction Monitoring	6%	$261,000	$382,700
Est. Total Facility Capital Cost		**$5,698,900**	**$8,285,200**

Notes: (1) Assumes a cost of $20,000 per acre
(2) Includes estimates for earthwork, roadways, site utilities, fencing and landscaping (no demolition)
(3) Pre-engineered building, concrete floors, containment walls and foundation, load-out scales
(4) Pre-engineered building, 2 truck scales, interior furnishings
(5) Front-end loader, sweeper, tamping crane, pickup

Facility Equipment Requirements

For the purpose of this report we have assumed that the transfer station will be equipped with certain mobile equipment that will need to be purchased under the facility capital costs. These include:

- A front-end loader for loading the transfer trailers
- A tractor sweeper for periodic cleaning the transfer station floor and site litter control

- A tamping crane for maximizing trailer payload densities; and
- A pickup truck

Transfer trucks and trailers will also be required. The trailers are assumed to have an average payload capacity of 20 tons. However, the number of vehicles will vary depending on the assumed throughput and the transportation distance between the transfer station and the disposal location. Therefore, these capital requirements have been addressed separately under the haul cost analysis.

Facility Financing Costs

The approach to financing a potential transfer station has not been determined at this conceptual evaluation stage. The costs for financing a project will vary depending on the approach selected. For the purpose of this analysis, it is assumed that the money will be borrowed and that interest costs will be incurred based on a simple principal and interest basis. The financing assumptions are as follows:

- Amortization period 20 years;
- Interest rate of 8%;
- No additional financing costs;
- No debt service reserve requirement; or
- No interest charges during construction.

Facility Operating Cost Estimates

The typical operating costs for both transfer station options was also developed based on generic design configuration without any detailed site information. These costs are limited to the actual on-site operations and do not include the hauling operation costs, which are provided in the following section. The results of this analysis are shown in Table 6.

Table 6 - Estimated 2007 Facility Operating Cost

Cost Component		Option 1	Option 2
Labor [1]		$334,000	$432,000
Building & Site Maintenance [2]		$85,000	$124,000
Utilities [3]		$26,900	$37,700
Rolling StockFuel [4]		$21,600	$40,900
Equipment O&M /Replacement [5]		$79,500	$121,100
Subtotal Operation & Maintenance		$547,000	$755,700
Contingency	15%	$82,000	$113,000
Accounting, Supplies, Misc.	5%	$31,000	$43,000
Administrative Overhead	20%	$126,000	$174,000
Annual Debt Service		$580,446	$580,446
Est. Total Facility Annual Cost		**$1,366,446**	**$1,666,146**

Notes: (1) Based on staff of 5.5 with 10% overtime
(2) Estimate based on 1.5% of total capital cost
(3) Estimated costs based typical telephone, electrical, water and sewer usage.
(4) Based on typical fuel usage diesel fuel cost of $3 per gallon
(5) Based on Owning and Operating Cost Methodology per Caterpillar Performance Handbook and typical support O&M charges

Haul Cost Analysis

As noted above, a full siting study and siting approval process would have to be completed to determine the site for a potential transfer station. For the purpose of this report, the analysis was conducted based on the two general locations in the vicinity of the City of Dunedin; Option 1 based on the intersection of Curlew Road and McMullen Booth and Option 2 based on an expanded facility at the existing Clearwater transfer station site.

Using these two theoretical locations, average travel time and distances were developed using internet mapping software between each community's population centroid and either the transfer station site or the Bridgeway Acres landfill and RRF. These travel times and distances are shown in Table 7. Although travel times will vary based on traffic conditions and the route selected, an average travel speed of between 31 and 35 miles per hour was assumed for the purpose of this report.

Table 7 – Estimated Travel Time and Distance Data (1)

	Direct Haul RRF		TS Option 1		TS Option 2	
Community	Miles	Travel Time (min)	Miles	Travel Time (min)	Miles	Travel Time (min)
Crystal Beach	23.4	42	9.2	17	11.0	20
Curlew	19.4	35	5.2	9	6.4	12
Dunedin	19.2	35	5.1	9	6.6	12
Oldsmar	17.6	32	3.2	6	8.7	16
Ozona	19.0	35	7.2	13	9.2	17
Palm Harbor	20.5	37	6.3	11	8.1	15
Safety Harbor	13.0	24	3.1	6	3.6	6
Tarpon Springs	26.2	48	12.1	22	13.9	25

Notes: (1) One-way miles and estimated average travel times.

Hauling Cost Variables

The cost involved in transporting solid waste from its collection point to a disposal site is often referred to as the primary haul cost; while the haul cost from the transfer station to the disposal site is often called the secondary haul cost. Most of the costs are related to travel time which will vary somewhat based on travel distance, congestion, etc. The key variables for each of these haul cost components, which will impact the economic feasibility of a transfer station, include the following:

- The size of the collection crew on the vehicle, which affects labor hours;
- Collection vehicle payload capacity;
- Number of vehicles and spares required for the operation;
- The travel time to the unloading facility;
- The queuing and unloading time at the facility;
- Vehicle operating (fuel, maintenance, insurance, tires and replacement costs); and,
- Overhead and profit, if applicable with contract operations.

Information was collected from the various public and private haulers regarding their crew sizes and average payload data was obtained from the County scale records. Travel and queuing times were obtained from internet mapping programs and adjusted based on hauler survey information. Vehicle operating costs were based on Bureau of Labor Employment and Wage data and fuel data from the EIA Weekly Retail On-Highway Diesel Prices for the Florida region. Since labor costs have a major impact on the primary haul costs, direct collection haul costs were developed based on various crew sizes (1 to 3) for each community and compared with the hourly operating costs for a transfer vehicle as shown in Table 8.

Table 8 – Estimated Hourly Truck Operations Costs

		Transfer Truck 2007$	Packer 1 2007$	Packer 2 2007$	Packer 3 2007$
Driver [1]		$ 23.22	$ 22.00	$ 22.00	$ 22.00
Laborers [2]		$ -	$ -	$ 15.00	$ 30.00
Fuel and Oil [3]		$ 21.53	$ 21.53	$ 21.53	$ 21.53
Tires [4]		$ 0.76	$ 0.25	$ 0.25	$ 0.25
Maintenance & Repairs [5]		$ 9.56	$ 7.39	$ 7.39	$ 7.39
Equipment Replacement [6]		$ 20.52	$ 15.87	$ 15.87	$ 15.87
Insurance, License & Taxes [7]		$ 3.19	$ 2.46	$ 2.46	$ 2.46
Subtotal Haul Operations		$ 78.77	$ 69.51	$ 84.51	$ 99.51
Mark-up for OH & Profit [8]	15%	$ 11.81	$ 10.43	$ 12.68	$ 14.93
Total Contract Haul Cost		$ 90.58	$ 79.94	$ 97.19	$ 114.44

Assumptions:
(1) Based on typical rates for transfer and packer truck drivers
(2) Assumes a two-man crew under Packer 2 and three-man crew under Packer 3
(3) Based diesel fuel cost of $2.96/ gallon and 5.5 miles per gallon
(4) Based on typical tire replacement at $265 per tire
(5) Based on 7.5% of the vehicle cost
(6) Based on 8 year replacement amortized at 6% interest rate
(7) Based on 2.5% of the vehicle cost.
(8) Assumes 15% contractor hauler markup for overhead and profit

Cost Comparisons

Applying the hourly cost for various primary and secondary haul vehicles to the various travel distances, the differential haul cost of direct haul and transfer haul to the RRF/BWA was compared to determine the 2009 haul cost differential for each community in the designated service area, which is a theoretical date for completing a new facility. The result of this analysis is shown in Table 9 for transfer station Option 1 and in Table 10 for transfer station Option 2.

Table 9 – Option 1 Haul Comparisons ($/ton)

	Collection Crew Size	Direct Haul to TS	Transfer Haul to RRF	2009 TS O&M Costs	Total Transfer Costs	Direct Haul to RRF
Tarpon Springs	1	$ 12.66			$ 25.41	$ 18.01
	2	$ 14.05	$ 4.86	7.89	$ 26.80	$ 21.03
	3	$ 15.43			$ 28.18	$ 24.05
Crystal Beach	1	$ 11.11			$ 23.86	$ 16.90
	2	$ 12.16	$ 4.86	7.89	$ 24.91	$ 19.55
	3	$ 13.20			$ 25.95	$ 22.20
Safety Harbor	1	$ 6.89			$ 19.64	$ 13.34
	2	$ 7.57	$ 4.86	7.89	$ 20.32	$ 14.81
	3	$ 8.26			$ 21.01	$ 16.28
Palm Harbor	1	$ 10.37			$ 23.12	$ 15.79
	2	$ 11.14	$ 4.86	7.89	$ 23.89	$ 18.07
	3	$ 11.91			$ 24.66	$ 20.35
Curlew	1	$ 10.71			$ 23.47	$ 15.42
	2	$ 11.47	$ 4.86	7.89	$ 24.22	$ 17.58
	3	$ 12.23			$ 24.98	$ 19.74
Oldsmar	1	$ 12.27			$ 25.02	$ 15.05
	2	$ 12.95	$ 4.86	7.89	$ 25.70	$ 17.09
	3	$ 13.63			$ 26.38	$ 19.12
Dunedin	1	$ 9.65			$ 22.40	$ 15.42
	2	$ 10.40	$ 4.86	7.89	$ 23.15	$ 17.58
	3	$ 11.15			$ 23.90	$ 19.74

Table 10 – Option 2 Haul Comparisons ($/ton)

	Collection Crew Size	Direct Haul to TS	Transfer Haul to RRF	2009 TS O&M Costs	Total Transfer Costs	Direct Haul to RRF
Tarpon Springs	1	$ 13.89			$ 26.71	$ 18.01
	2	$ 16.06	$ 6.51	$ 6.31	$ 28.89	$ 21.03
	3	$ 17.93			$ 30.75	$ 24.05
Crystal Beach	1	$ 12.46			$ 25.29	$ 16.90
	2	$ 14.17	$ 6.51	$ 6.31	$ 26.99	$ 19.55
	3	$ 15.56			$ 28.38	$ 22.20
Safety Harbor	1	$ 10.58			$ 23.40	$ 13.34
	2	$ 11.31	$ 6.51	$ 6.31	$ 24.13	$ 14.81
	3	$ 12.03			$ 24.86	$ 16.28
Palm Harbor	1	$ 11.55			$ 24.38	$ 15.79
	2	$ 12.69	$ 6.51	$ 6.31	$ 25.51	$ 18.07
	3	$ 13.71			$ 26.53	$ 20.35
Curlew	1	$ 10.99			$ 23.82	$ 15.42
	2	$ 11.81	$ 6.51	$ 6.31	$ 24.64	$ 17.58
	3	$ 12.63			$ 25.45	$ 19.74
Oldsmar	1	$ 11.83			$ 24.66	$ 15.05
	2	$ 13.18	$ 6.51	$ 6.31	$ 26.01	$ 17.09
	3	$ 14.33			$ 27.15	$ 19.12
Dunedin	1	$ 11.39			$ 24.22	$ 15.42
	2	$ 12.41	$ 6.51	$ 6.31	$ 25.23	$ 17.58
	3	$ 13.36			$ 26.18	$ 19.74

VI. Conclusions

Although HDR did conduct a preliminary GIS review and a windshield survey of appropriately zoned property in the project area, the analyzed locations were selected to minimize the total transportation distance between the waste generation district, transfer station and the County disposal facilities and to allow an analysis of the transportation cost differential for direct haul versus transfer haul. Our preliminary survey indicated that identifying a new site for a transfer station would be difficult. Before a transfer station can be sited, the site must meet several County and State siting restrictions and comply with a regulated permitting process. The Clearwater transfer station site would minimize the siting issues.

The City of Clearwater has successfully operated a transfer station for many years as their preferred option for transporting solid waste to final disposal and has retired the debt on their existing facility. Clearwater's transfer station is an integral part of their solid waste system, which allows them to reduce the size of their collection fleet and maximize collection productivity.

However, as can be seen from Tables 8 and 9 above, neither transfer station option evaluated provided a overall cost savings over direct haul based on the assumptions utilized for this feasibility analysis, for any of the communities evaluated. An argument could be made against constructing and operating a transfer station facility. Locating a transfer station further to the north might improve the transportation economics for some of the more northern communities by shortening their collection vehicle haul distance and lengthening the transfer haul, but would likely reduce the size of the service area and reduce the economy of scale for the transfer station operations.

Many variables are involved in any community's decision to site solid waste disposal facilities, such as landfills, waste-to-energy plants or transfer stations. Often, such decisions are affected by considerations other than cost including:

- Reduced vehicle emissions and traffic congestion;

- Convenience for residents for public drop-off;
- Ability to schedule transfer deliveries in off-peak periods and reducing queuing at scales;
- Minimizing overtime pay for drivers and sanitation helpers;
- Just local preference

Because of the very preliminary nature of this feasibility study, this report has concentrated on economic and cost factors.

The feasibility study did not deal with any of the policy issues that also must be decided in the event that the decision is made to proceed further with this project. Some of these policy decisions include:

1. Tipping Fee – Will users of the transfer station pay a separate per ton charge for use of the facility, in addition to the Bridgeway Acres per ton fee; or will the County want to consider a unified system wide disposal charge?
2. Facility Use – How will the County assure that customers located within the service area will utilize the transfer station? Options include a County Ordinance, contracts with municipalities, or franchises for the private haulers. This would be particularly important in light of the feasibility studies' cost projections.
3. Other Services – Will the County want to consider providing other disposal services at the transfer station, such as recycling drop-off, household hazardous waste collection, white goods, batteries, etc. This feasibility analysis assumed a "no frills" facility, and these extra services would increase operating and capital costs and require a larger site, but might provide added benefits that would justify the additional costs.
4. Capital Cost Financing – The study assumes a typical bank loan financing at 8% for 20 years for the facility construction, but other financing options might be available.
5. Operational Responsibility – Should the facility be publicly or privately operated?

Ultimately, this feasibility study is intended to provide only sufficient data and information upon which reasonable decisions can be made to either continue further consideration of developing a transfer station for Northern Pinellas County, or to abandon the project. This report is intended to provide the information necessary to make that determination.