

PROPOSED FACILITY UPGRADES AND IMPROVEMENTS

Based on the review of the facility's waste stream and the evaluation of the current facility operations and procedures the following discussions will address the major aspects of the services provided by the County to the citizens of Henderson County.

STONEY MOUNTAIN ROAD LANDFILL FACILITY

Transfer Station:

Presently approximately 260 – 270 vehicles per day utilize the two facilities with 130 - 140 of those loads attributable to weighed loads (loads paid for by net weight). Of the 130 – 140 weighed loads, approximately 60% are municipal waste and the remaining 40% are construction and demolition debris. The remaining 120 – 130 loads, on average, are attributable to citizens bringing a few bags of their own personal household waste material (flat fee loads) for disposal. In addition to the vehicles accessing the transfer station, approximately 430± vehicles per day pass in front of the transfer station on their way to the recycling/convenience center. Traffic congestion is the primary hindrance to the overall efficient operation of the transfer station facilities. The high volume of traffic in and around the transfer station creates safety concerns for the citizens and customers as well as the County's staff. Removing the flat fee loads from the traffic stream accessing the transfer station would greatly enhance the operation of the transfer stations. In addition, rerouting and/or removing the traffic to recycling/convenience center would significantly reduce the level of traffic congestion in the vicinity of the transfer station.

Based on the tonnage projections for Henderson County, the present transfer station operation has adequate capacity to meet the County's needs beyond the study period ending in 2030. This assumption is based on the fact that for calendar year 2008, the facility processed for disposal off site approximately 74,180 tons of commingled municipal type waste and construction and demolition debris. The prediction is for the waste stream to hold relatively steady at between approximately 71,000 to 73,000 tons per year through 2011 before beginning to rise. This reduction in the waste stream is generally assumed to be attributable to the overall downturn in the nation's economy. When the waste stream does begin to rise, it is predicted to increase in the range of 1.3% to 1.6% per annum through the study period. With this in mind, the projected tonnage assumed to be processed by the facility in 2030 is approximately 95,940 tons per year. With each bay of the transfer station capable of processing in excess of 200 tons per day, provided empty transfer trailers and processing equipment are available when needed, the present transfer station should have more than adequate capacity to meet the County's disposal needs through the year 2030.

At the present time, the larger bay (newer building) appears to handle the larger volume of waste as it is the facility handling the majority of the commercial hauler traffic. Citizens and small weighed loads tend to use the smaller bay (older building). To facilitate the waste handling/disposal operation, the County may need to acquire an additional loader in the near future. The loader should be similar in size and capability to the present Caterpillar 930 or IT28F. Attachments should be compatible between equipment. At the present time the County operates only one loader to manage the incoming waste load. This loader splits time operating

between the two buildings in order to keep the tipping floor clear for incoming loads. The acquisition of an additional loader would allow a loader to basically be dedicated to each building's operation. The additional loader would also provide backup should one loader be temporarily down for maintenance or repairs. Also, the additional loader could be used to manage other provided services when not in use at the transfer station.

The present method of unloading excess waste material from the occasionally overloaded transfer trailers is inefficient and creates a litter problem that generally must be cleaned up by hand. The waste must be handled several times as it is removed from the transfer trailer, loaded in a roll-off box and then redeposited on the tipping floor by a roll-off truck. Ideally the overloaded trailers should be repositioned back under the transfer station and the excess waste removed and stacked on the floor for placement as the initial load in the next available transfer trailer. One option would be to acquire a hydraulically operated grapple/orange peel or clamshell type attachment that could be adapted as a quick connect to the existing rubber tired loaders. These loaders are equipped with the necessary hydraulics to operate such an attachment. The other option would be to acquire a rubber tired type backhoe equipped with a quick connect and hydraulically operated grapple. This type of backhoe has the same general configuration as a track type backhoe except it is equipped with rubber tires and hydraulically operated stabilizers rather than tracks. The rubber tires would allow the backhoe to operate inside the transfer stations without damaging the tipping floor. Even under the present method of removing waste from the overloaded transfer trailers, the use of the aforementioned attachments would increase the efficiency of the operation and should substantially reduce the amount of waste material that is inadvertently spilled on the ground.

Even though the waste stream projections, included as a part of this report, indicate the present transfer station facilities have adequate capacity to meet the County's needs through calendar year 2030, there may at some point in the future be a need or desire to construct an additional station or stations should the waste stream increase at a rate faster than predicted. One option is to construct this facility within the existing site in close proximity to the existing transfer station buildings. This proposed facility could be dedicated exclusively to construction and demolition type debris thereby leaving the two existing buildings to handle all other waste transported off site for disposal. However, due to site constraints, this facility would probably not be connected or directly adjacent to the existing buildings. One possibility is to locate the building just east of the present transfer station operation more or less using the same exit ramp from the existing transfer operations. The other option is to locate a new facility at a separate location within the County. Ideally this location should have convenient access to a major highway such as Interstate 26 or one of the other major routes bisecting the County. A two bay facility could be constructed to handle construction and demolition debris as well as municipal waste. The existing site could then be converted to a split operation such that municipal waste and construction and demolition waste would be processed separately for disposal in appropriately regulated facilities. A major advantage to a new site could be a reduction of the volume of traffic accessing the present facilities. The disadvantage is that a separate site would require an additional full time staff as well as waste handling equipment.

At the existing site, the County presently commingles the municipal waste with the construction and demolition debris for shipment off site for disposal. From a disposal cost standpoint, it could be advantageous to separate the two waste streams and send the construction and demolition debris to a dedicated C&D type landfill. This split flow option would generally require dedicating one of the transfer station buildings to construction and demolition debris and use the other building for all other waste requiring disposal in a municipal type landfill. Presently, the construction and demolition waste stream tonnage accounts for approximately 29% of the waste stream that is processed for off site disposal. This equates to approximately 2,088 tons per month or 80 tons per day. All other waste processed for off site disposal accounts for the remaining 71% of the waste stream or approximately 5,161 tons per month or 197 tons per day. Under the present waste stream tonnage breakdown, the split flow scenario could be possible. However, for this scenario to work, the citizen traffic presently accessing the transfer station would need to be eliminated as well as the traffic congestion resulting from the citizens accessing the recycling/convenience center. Even then, the transfer station building handling the municipal type waste is at or near its capability to efficiently process the present volume of waste. An increase of 20 -30 tons of municipal waste per day could hinder the single transfer building's capability to efficiently process the waste load.

A possible way for the split flow scenario to work would be to restrict the acceptance of construction and demolition type debris except during certain hours of the day. This way one of the transfer station buildings (older building) could split its time between construction and demolition debris and all other wastes. However, the disadvantage to this type scenario is that presently construction and demolition debris is generally received throughout the day and for some haulers, this is the primary focus of their business. They would then be restricted to working only certain hours of each day which could affect the viability of their business. Even for the split flow operation to work the congestion in and around the transfer station would need to be substantially reduced or eliminated. Basically, the citizens accessing the transfer station under the flat fee program and those utilizing the recycle/convenience center would need to be routed to a different disposal/collection area. Facilities with which to do this are presently not available.

Due to the general wear associated with the processing of waste through a transfer station type operation, the County will need to periodically address various maintenance issues. The push wall at the end of the older transfer station is constructed of concrete and is beginning to show signs of wear. The bottom edge of the wall has become somewhat ragged over time and repairs should be initiated to prevent its further deterioration. Also, the condition of the floor openings in both buildings are beginning to show the affects or age as they are becoming rounded by the abrasion of the waste being pushed into the transfer trailers by the loader. These areas need to be monitored carefully and repaired before the rebar becomes exposed or the edges begin to break off. Once the rebar becomes exposed, the nature of the waste material will only serve to accelerate the corrosion of the reinforcing. This will further accelerate the deterioration of the concrete floor. The surface of the concrete tipping floor, in each building, is beginning to show some signs of wear and deterioration. While this is a normal occurrence in a transfer station operation, the floor condition should be regularly monitored and tracked. Repairs to and/or resurfacing of the floors will need to be considered in the near future. The trench grate drains at the entrance to the transfer stations do not appear to be functioning as intended. This

situation should be monitored carefully and maintained on an ongoing basis to ensure the drains function properly. Repairs and/or modifications may be required to upgrade the drain system to keep it functioning properly.

In summary, the present transfer station facility should adequately meet the County's off site disposal needs through the study period ending in 2030 at the projected annual waste stream growth rate. Prior to that date, the County needs to begin development of an additional transfer station on the present site or construct a two bay facility at a separate location. The new location should have convenient access to Interstate 26 or one of the other major highways bisecting the County. In order to operate the existing facility in an efficient manner, the present volume of traffic accessing or operating in and around the existing transfer stations will need to be reduced substantially. This could be done by constructing a citizen's convenience center with the capability to handle the present recycling needs of the County as well as the flat fee type loads of municipal waste and yard trash. The County may wish to consider splitting the municipal waste and the construction and demolition waste for disposal in appropriate off site landfills. However, in order to do so, some restrictions on the hours of acceptance for the construction and demolition waste would need to be implemented to facilitate the processing of municipal waste.

Citizen's Convenience Center:

As noted in prior sections of this report, traffic congestion within the present facility is a major hindrance to the operating efficiency of the entire waste collection/disposal operation. This is especially true due to the number of vehicles (430± per day) accessing the present recycling/convenience center plus the flat fee customers (120± per day) bring waste to the transfer station. These two waste/vehicle classifications account for approximately 550± vehicles per day operating within close proximity of the transfer stations. In addition to the number of vehicles, safety concerns for the citizens traversing through the facility to the disposal/collection centers are of primary importance. Basically, the general citizen population should not be interfacing with the commercial traffic nor be in and around the equipment operating as a part of the transfer station operation. The general citizen population desiring to utilize the County's waste disposal/recycling services should be routed to a convenience/collection center separate from the commercial haulers and the waste loads large enough to require individual weighing. The convenience/collection facility should have its own ingress and egress with a queuing lane of sufficient length to reduce and/or eliminate traffic blockage on Stoney Mountain Road. Ideally, the trucks servicing the collection boxes should not have to travel on Stoney Mountain Road to access the site. Also, from a safety standpoint, the trucks servicing the collection boxes should not interface with the citizens or citizen traffic. Traffic patterns within the site should be controlled relative to the direction of flow while still providing access to the available disposal options. An attendant's booth at the end of the queuing lane could control the volume of traffic accessing the disposal bays at any given time as well as collect any applicable disposal or processing fees.

Services provided at a convenience/collection center should continue to include the presently provided recycling services (recyclable materials, waste oil and antifreeze) with added collection services for such items as batteries, electronics, and waste paint. In addition, disposal bays should be dedicated to the flat fee customers bringing their own municipal waste and yard trash for disposal. Services should also include an area for the collection of citizen delivered white goods and scrap metal. White goods containing refrigerant would be periodically collected by County staff and transported to a processing area for removal of the refrigerant. The products would then be placed in the scrap metal pile or processed for removal from the site. General scrap metal could be collected in a roll-off type container for periodic removal and disposal in the scrap metal pile. A collection station for the citizens to dispose of scrap tires would need to be a part of any type convenience center. Tires would be dropped off by the citizens and properly placed in a trailer by County staff or a subcontractor to the County. A scrap tire drop off center should continue to be maintained within close proximity to the transfer station operation for those commercial customers desiring to dispose of a load of tires. A household hazardous waste (HHW) collection facility could also be included within the site for the County's periodic collection of this type product or waste.

A possible site for a new convenience center is the triangular shaped property (County Parcel No. 0114999) just east of the present landfill property adjacent to Stoney Mountain Road. This site became a much more feasible location with the recent acquisition of additional property (County Parcel No. 0113332) adjoining the property located immediately to the east. Citizen traffic would be able to access the site off Stoney Mountain Road with good site visibility to the east and west. Truck traffic servicing the collection containers could access the site from the north without the need to travel on Stoney Mountain Road or interface with the citizen traffic. A conceptual layout of a new convenience center is shown on Drawing C-102 in Appendix F.

Existing Entrance / Scale House Operation:

The present entrance and scale house operation is inadequate to handle and process the present vehicle count coming into the disposal/collection facilities. The traffic congestion on busy days results in backups on Stoney Mountain Road. The first priority should be the elimination of the citizen traffic accessing the site for the disposal of their household municipal waste as well as those citizens accessing the recycling/convenience center. This could be readily done by constructing the citizen's convenience center noted in the prior discussion. The elimination of this traffic alone would reduce the average daily traffic count through the present entrance facility by approximately 550± vehicles per day. The remaining traffic, which accounts for approximately 130 – 140 vehicles per day, is comprised mainly of commercial haulers and those loads large enough to require individual weight tickets. With the elimination of the citizen traffic, the primary delay associated with the processing of inbound traffic would be the need to weigh an outbound vehicle. Even with this delay, the traffic congestion along Stoney Mountain Road should be greatly reduced except under the most adverse conditions. Basically the vehicles requiring weight tickets could continue to use this entrance until such time as a new entrance facility with inbound and outbound scales could be constructed.

Options were reviewed relative to possible modifications of the existing entrance/scale house facility to include the addition of an outbound scale. However, the configuration of the present entrance (skew angle off Stoney Mountain Road) and the close proximity to the transfer station operations do not make this a viable option. Very little additional queuing room would be acquired by realigning or moving the scales further to the north. The addition of an outbound scale, which must be staggered to the north, would only serve to interfere with the staging of transfer trailers under the transfer station.

The County would be better served to construct a new entrance for the commercial vehicles and the other vehicles requiring weight tickets further to the west, on property located between the new Animal Control facility and the Henderson County School Bus Maintenance Facility. This entrance could be constructed perpendicular to Stoney Mountain Road thereby enhancing visibility primarily for those vehicles exiting the facility. Sight distance along Stoney Mountain Road appears adequate for this type of commercial entrance. Vehicles would turn off Stoney Mountain Road and travel in a northerly direction paralleling the school bus maintenance facility, turning right across an area that was once the location of the old animal control center. A scale house facility would be constructed in the general vicinity of the old animal center building and would include inbound and outbound scales. From the scale house area; the vehicles would proceed to the transfer station. From this location the scale house operator could observe the ongoing operations at the transfer station and could control the traffic flow to minimize congestion in the area. Temporary delays to the inbound traffic should not cause any problems along Stoney Mountain Road as this proposed configuration provides for approximately 800+ feet of queuing room for incoming traffic. A conceptual layout of a proposed access road further to the west is shown on Drawing C-103 in Appendix F. In addition, controlled access bypass lanes around the scales could be constructed to allow traffic not requiring weight tickets quicker access around the scales. The present entrance would be partially removed along Stoney Mountain Road to prevent access to the site. The existing scales could remain in place and be refurbished for use in weighing transfer trailer loads to check for total or axle weight prior to staging for subsequent shipment off site. The present transfer trailer staging area could be expanded and enhanced to facilitate future staging of loaded transfer trailers.

Commercial haulers and other loads requiring weight tickets would enter the site by means of the proposed access road, cross the scales and either proceed to the transfer station to discharge the load of waste or access other services available only to weighed load customers. General citizen traffic would not be allowed access to the service area. General citizen traffic would be basically limited to the proposed convenience center. Transfer trailer handling would generally take place to the south southwest of the transfer station area (existing scale area). Interaction between the transfer trailers and the commercial traffic accessing the transfer station would occur on a limited basis. One interaction would be when the loaded transfer trailers are pulled from below the transfer station and hauled to the proposed holding area for check weighing and staging. The other interaction would be when the loaded transfer trailers are pulled by the contract hauler for transport off site for disposal.

In general, all commercial haulers and other loads requiring weight tickets would operate separately from the general citizen traffic. For safety reasons, citizen traffic does not need to interact with the larger haulers and the operational equipment within the facility's operating area as they are generally not aware of the hazards associated with this type of operation or traffic. Also, citizens do not generally need access to the yard trash/wood waste disposal area nor the scrap metal pile except under specific conditions. The overall reduction in the amount of traffic operating in and around the transfer station facilities would greatly enhance the overall efficiency of that operation.

Recycle Transfer Area:

This facility is utilized by the County to consolidate individual recycle container loads from the citizen's recycle/convenience center into a larger load for transport off site to a recycling processing center. Presently, the site meets the County's needs; however, certain repairs and/or upgrades would enhance the operational efficiency of the facility. One problem appears to be the landing/staging area for the transfer trailers. Presently this area is constructed of soil and has relatively poor drainage resulting in a consistently muddy site with no real containment to capture material spilled during the tipping of the individual containers into the transfer trailers. The recommendation would be to construct a hard surfaced landing/staging area with a small containment wall around the back and the side. Preferably the surface should be asphalt or concrete paved and the containment wall either concrete filled block or cast-in-place concrete. This would facilitate the cleanup of any spilled material with available on site equipment. This would also reduce the soil contamination of the spilled material whereby it could be placed back in the transfer trailer rather than require disposal through the transfer station. As a part of the construction of the upgraded landing/staging area, a backstop or other type load directing structure should be constructed to facilitate the direct dumping of the recycle containers into the transfer trailer. This type of structure would help direct the load into the transfer trailer and reduce the present amount of spillage and/or wind blown litter resulting from the dumping operation. Repairs to the existing vertical wall and the small concrete pad at the top of the wall would help ensure the safety and usability of the site for years to come. The construction of additional maneuvering room for the roll-off trucks delivering the recycle containers to the site would also increase safety and improve the efficiency of the operation. In addition, the County may wish to consider the construction of an additional transfer trailer staging area. This would allow the County to consolidate two types of recyclable material simultaneously rather than a single type as is presently done. This could enhance the collection availability of the recycle containers at the recycle/convenience center. Another option would be to dedicate one of the trailers to the collection/consolidation of "blue bags" collected by the local permitted haulers for transport to an off site processor. However, enhancements to the site would be necessary prior to allowing access to persons other than County employees or County contracted employees or haulers. Basically this site needs certain enhancements to function and continue to function as a transfer facility for recyclable materials.

Other County Services:

Presently yard trash, wood waste and scrap metal/white goods are collected and processed in an area located in the northwest corner of the landfill facility. The collection and processing areas for these services presently meets the needs of the County and with controlled or limited access to these areas should continue to do so in the future. Controlled or limited access to these areas refers to the elimination and/or restricted use of these service areas by the general citizen traffic. Their yard trash, wood waste and scrap metal/white goods would be collected through the proposed convenience center and delivered to the particular site for stockpiling and/or processing by County staff or contracted hauler. Only those customers weighing across the scales would have access to the sites. The placement of the collected material could be more readily controlled thereby optimizing available space. This should minimize the time presently spent maintaining the stockpiles and access to the sites. In addition, the reduced traffic to these two sites should minimize the maintenance required on the gravel access road traversing the southern, western and northern slopes of the old landfill disposal cell.

Yard Trash and Wood Waste Processing Area:

The final segment of the primary access road to the disposal area needs to be graded to allow proper drainage and surfaced with gravel to enhance access to the site. As for the present disposal site, it is basically covered with a layer of mulch material which provides generally poor access for customers, especially during inclement weather. The mulch material is soft and has a tendency to retain moisture. Customers have the tendency to dump their material at or near the entrance which inhibits subsequent customers from gaining access to the inner areas of the site. As a result the waste material becomes somewhat mixed and must be frequently separated and consolidated by County personnel.

The County should consider constructing a new yard waste and wood processing area in closer proximity to the transfer station operation for better monitoring by County Staff. The proposed facility should be constructed with a reinforced concrete pad for the collection and processing of the yard trash and wood waste. The concrete pad should have a small concrete wall around the sides and back to facilitate consolidation and migration of the material as well as control drainage from the site. The concrete should be of sufficient thickness and strength to withstand the periodic grinding operation that presently takes place. A hard surfaced collection/processing area would facilitate all weather access to the site thereby allowing customers access to the specific disposal area (yard trash vs. wood waste). This in itself could facilitate the necessary segregation of the piles and enhance the overall processing operation. A conceptual layout for the proposed yard trash and wood waste processing facility is shown on Drawing C-106 in Appendix F.

White Goods and Scrap Metal Disposal Area:

As noted for the yard trash and wood waste processing area, the final segment of the primary access road to the disposal area needs to be graded to allow proper drainage and surfaced with gravel to enhance access to the site. As for the present site, it has a relatively hard surface that allows reasonable access during inclement weather conditions. However, the County should consider enhancing the surfacing of this area with a layer of compacted gravel to tie into the proposed upgrade of the final segment of the primary access road. This would enhance accessibility and workability of the site.

The County should consider constructing a new white goods and scrap metal disposal area in closer proximity to the transfer station operation for better monitoring by County staff. The proposed facility should be constructed with a reinforced concrete pad for the collection and storage of those white goods containing some form of refrigerant (refrigerators, air-conditioners, etc.). A dedicated storage area would allow for the orderly collection and storage of these items until such time as the refrigerant is removed and the appliances processed by a recycler contracted with the County for such services. At the present time, this type of appliance is generally placed in a random pattern along the western edge of the white goods and scrap metal disposal area by the customers. The stockpiled miscellaneous metals should also be on a concrete pad to minimize the present problem of soil contamination. A conceptual layout for the proposed white goods and scrap metal disposal area is shown on Drawing C-106 in Appendix F.

Construction Debris Processing Area:

The County has expressed a desire to process some construction debris waste products into reusable products thereby eliminating the need for disposal. Of particular interest is clean wood waste and broken concrete and/or other paving material. An area south of the present recycling transfer area could be cleared and utilized for such operation. Presently, this area is being used for the temporary storage of various types of roll-off boxes. However, this area is being proposed as a possible site for the relocation of the yard trash and wood waste area as well as the white goods and scrap metal area. Another possible location to be considered is an area northeast of the transfer station along the edge of the closed MSW landfill. This facility would include the construction of a concrete pad with containment walls around three sides for the storage of separated material prior to processing and a paved area for disposal and separation of the recyclable material. An example of material that could be processed would be clean wood waste, which could be processed into mulch and transported to the yard trash and wood waste area for incorporation into the processed mulch pile. In addition, scrap concrete and/or other road paving materials could be processed into an aggregate or road surfacing material for use by the facility or other County agencies. A conceptual layout for the proposed construction debris processing area is shown on Drawing C-106 in Appendix F.

Composting Operation:

The County has expressed a desire to possibly set up a future composting area for further processing of recyclable yard trash, wood waste and other biodegradable materials. An area south east of the present recycling transfer area could be cleared and possible utilized for such an operation. This area would be between the proposed site for the white goods and scrap metal area and the closed C&D Landfill. Presently, this area is more or less used as a "beneficial fill area". This area would include a paved surface with containment to facilitate consolidation of the material as well as minimize migration of the processed material. The facility would also include containment for storm water run-off. A conceptual layout for the proposed composting operation is shown on Drawing C-106 in Appendix F.

Single Stream Recyclable Material Collection/Consolidation Area:

The County has expressed a desire to explore the possibility of providing an area for the collection/consolidation of single stream recyclable material collected by permitted haulers operating within the County. Single stream collection refers to the co-mingled recyclable material generally placed by the edge of the street by households for subsequent collection by a permitted hauler operating on a scheduled collection route. Since this material is co-mingled, it must be further processed and/or sorted to separate the various products by individual classification for further consolidation before being transported to a purchaser.

Some permitted haulers, whose collection vehicles are so adapted, collect this recyclable material in conjunction with the collection of regular household waste. However, the capacity to collect each waste product is limited due to the need to keep recyclable material separate from regular household waste. The hauler must make a trip to the transfer station to discharge the household waste and then a trip to the materials recovery facility (MRF) to discharge the recyclable material before continuing the remainder of the collection route. A designated area, within the present landfill/transfer station facility, for the collection and consolidation of the single stream recyclable material for transport to a MRF could expedite the collection of household waste as well as facilitate the collection of recyclable material by the commercial haulers. This may be especially true for the smaller commercial hauling operations permitted to operate within the County.

The recycling transfer area could be periodically utilized for such operation. An empty trailer could be placed in the staging area and the single stream recyclable material dumped by the permitted haulers for consolidation prior to hauling off-site for processing. However, utilizing a single bay would require the single stream recyclable material discharge operation to be scheduled to ensure an empty trailer was available for such operation. The single stream recyclable material should not be mixed with other separated recyclable material. As mentioned in a prior paragraph, an additional collection bay could be constructed as a part of the recycle transfer area facility to accommodate an additional transfer trailer that could be used for this type operation in conjunction with and as a part of the collection and consolidation of other recyclable items. The single stream recyclable material could be directly discharged by the hauler into the larger transfer trailer for consolidation and transport to a recycle processing center. However,

the prior noted improvements should be initiated at the recycle transfer area prior to beginning this type of operation.

Another option would be to designate or construct an area for the collection of permitted hauler collected single stream recyclable material using roll-off type boxes. The full boxes could then be periodically transported by the County to the recycle transfer area for consolidation into larger loads in a transfer type trailer or hauled directly to a processing facility. An area for this type of operation could be constructed as a part of the proposed entrance facility improvements as shown on Drawing C-103 in Appendix F. Until such time as the proposed new entrance facility is constructed, the County could use the area presently being utilized to remove waste from overloaded transfer trailers operating under the transfer stations. Another such area could be the household waste collection station located as a part of the citizen's recycle/convenience center. However, this area may not be readily available until such time as the citizen's recycle/convenience center is relocated to a site separate from the transfer station operation.

The commercial haulers presently providing single stream recyclable material collection services are generally being compensated for collecting the material and transporting it to a MRF. Initiating this type of collection and processing service could save them considerable time and expense traveling to and from the MRF. Even though this type of service may facilitate the collection of recyclable material, the County should not be obligated to incur additional operating costs for doing so. Basically the County should consider an applicable fee to be charged to the permitted haulers for the consolidation and transportation of the single stream recyclable material to a MRF. The fee should be sufficient to cover the actual costs of the program and may need to be variable over time to coincide with fluctuations in the recycle material markets.

Old Solid Waste Division Office Building

The previous Solid Waste Division office building located between the transfer station and the present recycling collection center is being phased out of operation. The Solid Waste Division has moved its operations to a portion of the southern wing of the Parks and Recreation Department's building located on the site. While this building is small, it does have restroom facilities and could possibly be converted to a training/break room area for employees. It is relatively centrally located within the site with access to the various services presently in place. Once the present recycling center is relocated, an employee parking area could be established with access to this building. All employees could enter and exit the site through this building thereby keeping track of the hours worked. In addition, all privately owned vehicles would be parked in an area away from the ongoing operations. Ingress and egress could be provided through the Parks and Recreation Department's building's entrance or through the proposed new entrance road off Stoney Mountain Road.

HENDERSON COUNTY OWNED/OPERATED FACILITIES:

School Bus Maintenance Facility:

The Henderson County School Board presently owns the school bus maintenance facility fronting on Stoney Mountain Road between the transfer station facility and the new County owned Animal Shelter. This area should be considered as a site for the construction of a material recovery facility (MRF) at some point in the future. As it presently stands, the existing buildings, present site layout and entrance road are not conducive for use as a recyclable material processing area. However, by closing the existing entrance, removing the existing buildings and constructing a new access road tying into the transfer station infrastructure it is possible for this site to be used for a future MRF operation. A conceptual layout of an on-site materials recovery facility (MRF) is shown on Drawing C-105 in Appendix F.

Vehicles collecting recyclable material off site would enter the site by means of the proposed new access road and proceed to the scale house area to be weighed. Once weighed, the vehicles would leave the scale area, bearing to the right on an access road to the entrance road to the recycling processing area. Once the load is discharged, the vehicle would exit the recyclable material processing area, looping to the left in front of the transfer station facilities and enter the exit lane for outbound weighing. Once weighed the vehicle would proceed out the exit lane toward Stoney Mountain Road. Transport trucks arriving to collect the processed recyclable material would follow the same pattern.

Recyclable material collected through the convenience center would exit the center through an internal haul road, bypass the outbound scales, then loop around and cross the inbound scales and proceed to the recycle processing center. Once the load is discharged, the truck could proceed out of the recycle facility and go directly back to the convenience center by means of internal haul roads.

A building in the 36,000± square foot size could be constructed within the site and still provide reasonable access for the incoming and outgoing traffic. The disadvantage to this site is the increased traffic on Stoney Mountain Road due to the collection vehicles hauling material to the center and the transport trucks hauling the processed materials to a market.

Another option would be for the County to consider acquiring adequate space at an off site location with better access to the major highway network serving the area. Other considerations would include site accessibility, open floor space, accessible loading docks, ceiling height to accommodate dumping the recycling containers and adequate available utilities. There needs to be adequate electrical power to the site capable of operating the recycle processing equipment (pick line, baler, etc.).

Stoney Mountain Activity Center:

The Stoney Mountain Activity Center is operated by the County Parks and Recreation Department. The facility fronts on Stoney Mountain Road and is surrounded on three sides by solid waste processing facilities. While the activities conducted within this facility and its outdoor recreation area to the east seem out of place with the surrounding waste processing operations, it remains an integral part of the County's Parks and Recreation Department's park and activity system. This is especially true for this area of the County. The facility is relatively near Stoney Mountain Road making its future use as a waste processing area somewhat less desirable than areas located further within the landfill facility. The building has received some relatively recent upgrades (window replacement, electrical upgrades, etc.) and could continue to serve the County well as an office for the Solid Waste Division and its related services. Additional office space within the building could be used by other County services or agencies that are more aligned with the present use of the adjoining property.

OTHER HENDERSON COUNTY OWNED PROPERTY

Ideally, solid waste collection/processing facilities requiring some type of product to be brought in or shipped out should be located adjacent to or have relatively easy access to major transportation routes. Stoney Mountain Road does not qualify as a major transportation route nor does it have optimum access to a major transportation route. Vehicles delivering waste to or shipping waste out of the facility must traverse local County roads in order to gain access to the major highway system. Traffic congestion along the portion of Stoney Mountain Road adjacent to the landfill facility is already a concern. Constructing additional solid waste collection/processing facilities on County owned property in close proximity to the Stoney Mountain Road Solid Waste Facility may only serve to add additional truck traffic to an already congested situation. The proposed improvements to the Stoney Mountain Road Solid Waste Facility are intended to relieve some of the congestion along Stoney Mountain Road by providing upgraded access to the various service areas as well as adequate traffic queuing to minimize backups along that portion of the road. In addition, all trucks servicing the proposed internal improvements can do so without the need to access any portion of Stoney Mountain Road.

Waste collection and/or processing sites constructed on property not contiguous to the existing facility will require additional staff to operate the site as a stand alone type operation. Sites constructed contiguous to the present site should require only minimal additional staff depending on the type and extent of services provided. Basically, it is recommended that all waste collection/disposal operations be contained within one contiguous site with some of the present staff being shared by all operations.

The use of County owned property in the general vicinity of, but not contiguous to the Stoney Mountain Road Solid Waste Facility could be utilized to provide needed area services not related to or associated with solid waste collection and/or processing activities. One such example might be the relocation of the Stoney Mountain Activity Center and its associated playground area.

RECOMMENDATIONS

Based on the aforementioned review, it is recommended the County pursue certain capital improvement projects to improve the efficiency of the present operations/services as well as provide a safe environment for the citizens, commercial customers and the employees of the County. The recommended capital improvements are as follows:

- Construct a New Citizen's Convenience Center: Construct a new citizen's convenience center separate from but adjacent to the existing solid waste operations facility. the entrance, as proposed, would be east of the existing entrance and would provide adequate traffic queuing thereby minimizing traffic congestion along Stoney Mountain Road. Services at the proposed convenience center should include: facilities for the Household Hazardous Waste collection program, an electronic collection center, recyclable material collection stations, residential waste collection stations, stations for yard/wood waste and white goods and scrap metal, a station for the collection of scrap tires, and other waste products (i.e., waste oil, antifreeze, batteries, etc.). (Drawing C-102 in Appendix F)
- Construct a New Commercial Vehicle Entrance Complete with Inbound and Outbound Scales: Construct a new entrance to the west of the existing entrance to provide adequate queuing of commercial traffic thereby minimizing traffic congestion along Stoney Mountain Road. Construct inbound and outbound scales to facilitate the flow of traffic. Locate the scale house so as to provide visual observation of the transfer station operation as well as a general observation of the overall facility's traffic flow. (Drawing C-103 in Appendix F)
- Upgrade the Recycle Material Transfer Area: Construct upgrades to the existing recycle transfer area retaining wall and trailer staging area to facilitate the collection and consolidation of recyclable material. Upgrades would allow permitted haulers to begin using the facility to dispose of locally collected recyclable material without the need to haul the material out of the County for processing. (Drawing C-104 in Appendix F)
- Construct a Recycling Processing Center: Establish a Materials Recovery Facility (MRF) to begin the internal processing of recyclable material prior to sale on the recycle material market. Due to present site constraints, it is recommended the MFR be located at an offsite location with adequate utilities and convenient access to the major highway systems. An offsite location would provide the County the opportunity to enter the recyclable material processing business without the large capital investment associated with constructing a large free standing structure. Processing equipment could be moved to an onsite facility at some point in the future should the County desire to pursue construction of an onsite processing facility. (A conceptual layout for an on-site material recovery facility (MRF) is shown on Drawing C-105 in Appendix F.)

- Construction Debris Processing Area: Construct a hard surfaced facility with containment walls for collecting and processing various types of construction debris thereby removing them from the waste stream that must be transported offsite for disposal. Examples would be clean wood waste which could be ground into mulch and clean scrap concrete and/or other paving materials which could be processed into aggregate for use by the facility or other County agencies. (Drawing C-106 in Appendix F)
- Yard/Wood Waste and White Goods/Scrap Metal Disposal Area: Construct hard surfaced facilities with containment walls for the collection and processing of yard/wood waste and white goods/scrap metal. The facility should be in close proximity to the transfer station operation for better monitoring by County staff. The hard surfaced facilities would provide all weather access as well as reduce contamination of the processed material. (Drawing C-106 in Appendix F)
- Composting Area: Construct a hard surfaced facility with containment walls for processing yard/wood waste and other biodegradable materials into useable compost for use by the County, its citizens or for sale to an outside market. (Drawing C-106 in Appendix F)
- Transfer Station Facilities: Upgrade the existing floor drain system at the entrance to the two transfer station buildings. The floor systems and push walls in the buildings are beginning to show some signs of wear and deterioration and will require repair and/or resurfacing in the near future.
- Single Stream Recyclable Material Collection/Consolidation Area: Construct and/or dedicate an area for the collection and consolidation of single stream recyclable material for transport to a materials recovery facility (MRF). This facility could be utilized by the permitted haulers operating throughout the County to facilitate their collection of single stream recyclable material.