INITIAL SITE ASSESSMENT
FLORIDA TIRE RECYCLING, INC.
DRAFT - 7/24/92

INITIAL ASSESSMENT

OF THE

FLORIDA TIRE RECYCLING INC WASTE TIRE SITE

Prepared for

The Florida Department of Environmental Regulation

by

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TAG Resource Recovery

July, 1992

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INITIAL WASTE TIRE SITE ASSESSMENT

FLORIDA TIRE RECYCLING, INC.

SITE: The site is currently an operating waste tire processing facility conducting business under the name of Florida Tire Recycling, Inc. The total facility occupies approximately 9 acres on the west side of Range Line Road in St. Lucie County. The site is accessible by entering a driveway bordering the main office building at the front of the property.

OPERATOR: The waste tires and shreds have been, and are continuing to be, accumulated by Florida Tire Recycling, Inc. as part of their ongoing operations. Their address is 10151 Range Line Road, Port St. Lucie, Florida 34987 and their telephone number is (407) 465-0477. At the time of our visit on June 29-30, 1992, tires were being received and shredded at the site. Scattered whole tires were also being organized into stacked or laced piles. Since this is an operating site, it is likely that site conditions will change as a result of continuing receipt, shredding and storage operations.

OWNERS: Trinity Holding Co.,Inc., 27 South River Drive, Stuart, Florida 34996, Attention: Mr. Jack Wilson.

SITE CHARACTERISTICS

MAP LOCATION: The site is located at 10151 Range Line Road just South of its intersection with State Highway 709 (approximately 8 miles southwest of Interstate Highway 95).

LEGAL PROPERTY DESCRIPTION: Part of NE Corner of Section 1 Township 37, South Range 38 East, St. Lucie County, Florida (per permit application).

SCHEMATIC PLOT PLAN: A schematic plot plan of the site is provided in Appendix A. As illustrated, the site is irregularly shaped, resembling a rectangle with a triangular attachment at its northwestern corner. A stabilized access roadway roughly bisects the eastern portion of the property. The southeastern section of the site is undeveloped land with an area along the access roadway serving as a staging and storage area for trailers.

The southwestern section contains a series of organized whole tire storage piles that have generally been segregated according to tire size. The owner indicated that the organized piles were 100 feet by 100 feet, but actual dimensions ranged from 95 to 125 feet with all seven of the organized piles (designated T-2 through T-8 in Appendix A) occupying more than 10,000 square feet of surface area. Truck tires were being moved from other random pile locations and stacked in pile T-10 (as designated in Appendix A) during our visit. Most of the entire southern portion of the property was submerged in standing water up to two feet deep during our visit.

The northeastern section contained a processing area, including two independent shredders and piles of tires and shreds associated with processing operations. The northwestern section (including the triangular property extension) contained a large pile of coarsely shredded tires occupying approximately 110,000 square feet of surface area as well as miscellaneous smaller piles of whole and shredded tires.

The large shred pile extends within approximately 50 feet (at ground level) of high voltage electrical transmission lines along the diagonal portion of the northwestern property line. The shred pile also comes within about 30 feet of a railroad spur at the western perimeter of the Miami Tank facility. Railroad tank cars containing hazard warnings associated with chlorinated chemicals were sitting on this spur at the time of our visit. Chemical storage tanks were also located on the Miami Tank property within about 100 feet of the shred pile.

The Florida Tire Recycling site is bordered by Range Line Road on the eastern perimeter, open land on the southern and western perimeter, power lines above open land along the northwestern diagonal, and the Miami Tank facility along the remainder of the northern perimeter. Two fiberglass water storage tanks with a total capacity of about 25,000 gallons were installed in the central section of the site at the request of the local fire department, but this quantity of water would not have any material impact upon extinguishing, or even containing, a fire in the tire piles or shred piles at the site.

PILE CHARACTERISTICS: At the time of our visit, the site contained piles of whole and shredded tires with distinct characteristics as briefly described below. Organized piles containing passenger tires (designated T-2, T-4, T-5, and T-6) were tightly laced to a height of approximately 7 feet. Similar piles containing truck tires (designated T-3, T-7, T-8, and T-10A) were uniformly stacked 9 tires high to a height of about 7 feet. Other piles (designated T-1, T-9, T-11, T-12, T-13, T-15, and T-16) contained mostly large,

randomly-deposited truck and off-road tires with pile heights ranging from 4 to 10 feet. Pile T-14 contained a mixture of shreds, off-road, and stacked truck tires with an estimated average height of 7 feet.

The shred piles consist primarily of coarsely shredded tires typical of single-pass shredding operations. Pieces significantly larger than one eighth of a tire (including some pieces approaching half of a tire) were observed on pile surfaces and photographically documented. Such large pieces generally result from the use of inadequately maintained shredding equipment and/or use of wide knife spacing that increases productivity but does not allow adequate cutting frequency.

Under existing regulations of The Florida Department of Environmental Regulation, passenger and truck tires must be shredded into pieces smaller than one eighth of a tire prior to storage or landfill disposal. This size regulation was established to: (1) minimize containment of stagnant water that can serve as a breeding ground for mosquitoes, including species capable of serving as carriers of potentially fatal diseases; and (2) optimize utilization of landfill space by increasing compacted density. Shredded tires must meet even more stringent size specifications to be suitable for use as landfill daily cover. Non-uniform coarse shreds like those present at this site have historically not proven to be a useful product because the large particles tend to intertwine to form large clumps, thereby creating severe handling problems when reintroduced into metering systems or other subsequent processing machinery.

Some finer shreds were visible in pile segments, but surface observation indicated only a limited quantity. Based on short-term observation of shredding operations during our visit, the operator appeared to be attempting to make a smaller shred size. However, pieces larger than one eighth of a tire were still observed in product streams exiting both shredders. Shredder #2 had a large hole in the classifying trammel that allowed large particles to exit with the product without recycling for further size reduction. Ongoing processing operations did not allow safe examination of shredder # 1's internal condition to define reasons for its poor performance.

During our visit, shreds were being transported up a ramped portion of the main pile and dumped on top of the existing pile. This material was then pushed and leveled by other heavy equipment to create a higher plateau on top of the existing shred pile. The ramp and upper surface had been significantly compacted by repeated movement of heavy equipment across the tire shreds as indicated by

pile stability and absence of resiliency. The combination of large shred size, depth and density will promote formation of pyrolysis oils if this pile is ignited. These factors will also make it extremely difficult, if not impossible, to rapidly break the shred pile into smaller segregated segments if a fire occurs.

PILE QUANTITY ESTIMATE: The whole tire piles present on the site as of June 30, 1992 have been estimated to contain approximately 596,000 passenger tire equivalents. The basis of this estimate is provided in Appendix B and discussed briefly below. The estimate is based on a combination of aerial photographs taken on June 30, 1992, on-site observation of pile characteristics and extensive experience. Pile surface area was obtained from aerial photographs. Scale was established from ground measurement of defined distances and objects taken during the site visit. Pile heights were based on actual measurements and comparative estimates to allow calculation of pile volume.

Pile density was based on observation of pile characteristics. Laced passenger tire pile density ranges from 13-16 passenger tire equivalents/cubic yard depending on height, size and lacing technique. A density of 15 PTE/cubic yard was applied to passenger tire piles at this site. Truck tire piles uniformly contained 9 stacked truck tires (each weighing an average of 100 pounds or 5 PTE) in a surface area of 40 inches by 40 inches with a height of 7 feet, resulting in a density of 18 passenger tire equivalents/ cubic yard. Off-road tire pile density is more difficult to estimate because ply thickness can result in significant tire weight differences, but an average density of 18 PTE/cubic yard was applied for initial estimating purposes. Quantity estimates were calculated by multiplying pile volume times density. All estimates were stated in passenger tire equivalents with one passenger tire equivalent equalling 20 pounds (100 PTE/ton).

The shredded tire piles were estimated to contain approximately 2,489,000 passenger tire equivalents (or 24,890 tons) based on calculations included in Appendix B. Pile surface areas were obtained from scaled aerial photographs. Heights of various pile segments were measured or comparatively estimated during the site visit.

The density of shredded tire piles can vary from 25-50 pounds per cubic foot depending on shred size, pile height, and the degree of compaction resulting from a combination of weight and frequency of heavy vehicle traffic on their surfaces. As a result, the main shred pile was broken into defined segments of similar height and surface vehicle traffic pattern. Densities were then estimated for

each segment based on experienced correlation of observed pile characteristics with similar known densities at other sites. Estimated densities for each pile segment are provided in Appendix B. Applied densities ranged from 25 pounds per cubic foot for a shallow loose pile to 42 pounds per cubic foot for the main access ramp that had been severely compacted by repeated heavy vehicle traffic. The quantity of waste tire shreds contained in each segment was then calculated, using an average passenger tire equivalent weight of 20 pounds.

The total quantity of waste tires and shreds on the site as of June 30, 1992 was estimated to be 3,085,000 passenger tire equivalents representing 30,850 tons.

TIRE TYPE PERCENTAGES: The estimated composition of individual whole tire piles has been provided in previous discussions of pile characteristics. Based on surface observation, the average tire size percentages appear to be about 35% truck, 30% off-road, and the remainder are passenger and light truck tires. This site contains the highest percentage of off-road tires of any site examined to date. Several of the smaller piles contained a high percentage of truck and off-road tires that were still mounted on rims, representing an additional obstacle to proper disposal of these tires during stabilization and abatement activities.

CURRENT PILE ACTIVITY OR GROWTH: Based upon DER records, the waste tires and shreds at this site have been accumulated since the facility began operating as a waste tire processing facility in late August, 1989. In addition to the estimated 3,085,000 passenger tire equivalents accumulated on-site during this period, County Landfill records indicate that over _____ tons of shreds (representing _____ passenger tire equivalents) were taken to the nearby St. Lucie County Landfill under a favorable contractual agreement that expired in _____, 1992. Therefore, an estimated _____ passenger tire equivalents were collected in a period of ____ months, resulting in average collection rate of _____ passenger tire equivalents/month. Current accumulation rates may be even greater if business growth has continued to accelerate during this period. On-site accumulation of whole and shredded tires will continue to increase by the quantity difference between waste tires entering the site and tires/shreds removed for shipment to permitted markets or disposal sites. If the operator is prohibited from bringing waste tires onto the site, the site will remain vulnerable to additional unauthorized dumping unless access through the driveway and navigable perimeter areas is secured by a fence and locked gate with adequate security monitoring.

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SURROUNDING ENVIRONMENTAL FACTORS: The site is located in a rural area containing scattered commercial, industrial, and agricultural properties. The Miami Tank Manufacturing facility directly adjacent to the site contains chemical storage tanks and rail cars that could reasonably be affected by heat generated from a fire at in nearby whole or shredded tire piles. Depending on the flammability and chemical characteristics of materials contained in these vessels, they could significantly impact the personnel safety and environmental impact of a fire at the site.

The site is less than 10 miles west of Port St. Lucie and within 20 miles of Fort Pierce and Lake Okeechobee. In addition, United States Geological Survey maps identify a flowing water well about 1/2 mile west of the site.

GROUND SURFACE CHARACTERISTICS: The site is relatively flat but slopes gradually to the south and east within the property boundary. The entire site is located within a designated flood prone area. Most of the southern half of the property, including the area containing piles of whole tires, was submerged in water up to 2 feet deep during our visit. An additional large area of standing water, possibly a water control pond, is located about 50 feet from the western property line.

The predominant soil is Pineda sand. It is a poorly drained soil that typically has a water table depth of less than 10 inches for 1 to 6 months and 10-40 inches for most of the rest of the year. In a few areas, the soil is covered with shallow standing water for 1 week to 6 months per year. The water table is below a depth of 40 inches only for short periods in dry seasons.

The surface layer is typically 6 inches thick with very dark grayish brown sand in the upper 3 inches and dark brown sand in the lower 3 inches. It requires stabilization even for light applications such as playground use. The upper part of the subsoil extends to a depth of 34 inches and contains yellowish brown sand in the upper 6 inches, strong brown sand in the next 9 inches, and pale brown sand in the lower 13 inches. A layer of light gray sand 4 inches thick separates the upper and lower parts of the subsoil. The lower subsoil is olive gray sandy loam that extends to a depth of 52 inches. The upper 4 inches has intrusions of white sand. The substratum is gray loamy sand to a depth of 80 inches or more. Permeability is classified as rapid in the surface and subsurface layers, slow to very slow in the subsoil, and moderately rapid to rapid in the substratum.

SITE OBSERVATIONS: The site is observable from the road and accessible by pedestrians from all directions. Vehicle access at the main entrance is controlled by a gate that can be pulled across the access roadway. Truck access from perimeter areas is limited primarily by soil conditions during wet periods.

ENVIRONMENTAL CONSIDERATIONS

Tires and coarse shreds containing stagnant water are generally recognized as excellent breeding grounds for the aedes albopictus mosquito and other species capable of serving as carriers of diseases that are potentially fatal to humans. As a result, such breeding grounds become a threat to human life if sources of diseases carried by these mosquitos are present in the area.

In addition, any accumulation of this size represents a potentially significant source of air and water pollution in the event of a fire. Combustion of the large tire and shred piles would be virtually impossible to extinguish and would be expected to generate large quantities of dense black smoke and pyrolytic oils (containing partially combusted hydrocarbons and heavy metals) for an extended period of time. Under proper conditions, the smoke plume could potentially affect ambient air quality as far away as Fort Pierce or Lake Okeechobee and could result in fallout of fine zinc particulate matter within this area. If pyrolytic oils and heavy metals penetrate the surface soil, the resulting water table contamination could create a hazardous waste site requiring substantial remediation costs. The site should be stabilized, and preferably abated, as rapidly as possible to control the magnitude of consequences associated with a potential fire.

TECHNOLOGY APPLICATION

This site represents a significant potential public health and environmental hazard, especially if any of the major pile segments are ignited. Proven technologies should be used to stabilize the site as rapidly as possible. Unproven or innovative technologies should only be applied to site stabilization if they can be implemented promptly and proceed at a rate comparable to the most rapid proven alternatives. Once the site has been properly stabilized, any delay in complete site abatement proportionately increases exposure to potential consequences associated with a fire.

PRELIMINARY STABILIZATION/ABATEMENT TIME ESTIMATE

Initial site stabilization would require removal or relocation of approximately 25% of the whole tires (passenger tire equivalents) to broaden fire lanes to 50 feet and remove tire piles T-11, T-12, T-13, T-14, T-15, and T-16. This will bring the whole tire piles into conformance with the surface area, height and separation requirements of existing regulations, but the piles will not be in complete conformance because they are 100 feet square rather than 50 by 200 feet as required. Most of these tires are off-road tires that may require rim removal and slitting prior to landfill disposal. If 15,000 passenger tire equivalents (150 tons) are removed each week, stabilization of whole tires at the site will require about 10 weeks. If the remaining truck and passenger tires were processed by two efficient mobil shredders at the combined rate of 50,000 passenger tire equivalents/week, whole tire pile abatement would require 9 to 10 weeks.

Over 60% of the shreds (approximately 15,000 tons) must be removed or relocated to bring the shreds piles into conformance with size requirements of 50 feet by 200 feet and maximum height of 15 feet. If two efficient mobil shredding operations were used to reprocess shreds to meet landfill cover specifications at the rate of roughly 60,000 passenger tire equivalents (600 tons) per week, site stabilization and abatement would be achieved within an additional 25 and 40 weeks, respectively. However, the actual quantity, time and cost must be determined by analysis of available options in future stabilization and abatement plans.

APPENDIX A

FLORIDA TIRE RECYCLING INC.

SCHEMATIC PLOT PLAN

ANDY WILL INSERT PLOT PLAN FROM QUANTITY ESTIMATE, LABELING IT APPENDIX A

APPENDIX B

FLORIDA TIRE RECYCLING INC

WASTE TIRE QUANTITY CALCULATION SUMMARY

Whole Tire Piles

Pile Number	Dimensions (feet) L	W	Area	H	Volume	Pile Type	Tire Type	Density PTE/yd³	Est Quant (PTE)
T-1	125	75	9375	8	75,000	OTR	Loose	18	50,000
T-2	95	125	11875	7	83,125	Pass	Laced	15	46,000
T-3	120	100	12000	7	84,000	Truck	Stack	18	56,000
T-4	95	130	12335	7	86,450	Pass	Laced	15	48,000
T-5	100	105	10500	7	73,500	Pass	Laced	15	41,000
T-6	95	125	11875	7	83,125	Pass	Laced	15	46,000
T-7	115	125	14375	7	100,625	Truck	Stack	18	67,000
T-8	110	115	12650	7	88,550	Truck	Stack	18	59,000
T-9	Irregular		1500	6	9,000	OTR	Loose	18	6,000
T-10A	40	100	4000	7	28,000	Truck	Stack	18	19,000
10B	20	100	2000	7	14,000	Truck	Loose	13	7,000
T-11	Irregular		11000	5	11,000	OTR	Loose	18	37,000
T-12	Irregular		3000	6	18,000	OTR	Loose	18	12,000
T-13	Irregular		4000	7	28,000	OTR	Loose	18	19,000
T-14	Irregular		8000	7	56,000	Mixed	Mixed	22	46,000
T-15	Irregular		7000	6	42,000	OTR	Loose	18	28,000
T-16	Irregular		2000	7	14,000	OTR	Loose	18	9,000
						TOTAL WHOLE TIRES (PTE)			596,000

APPENDIX B (continued)

FLORIDA TIRE RECYCLING INC

WASTE TIRE QUANTITY CALCULATION SUMMARY

Shredded Tire Piles

Pile Number	Dimensions (feet)			Pile Characteristics			Estimated Quantity (PTE)
	Area	Height	Volume	Shred Type	Pile Compaction	Density, (lbs/ft^3)	
S-1	13000	15	195,000	Coarse	Moderate	30	217,000
S-2	24000	15	360,000	Coarse	Moderate	30	400,000
S-3	5000	10	50,000	Mixed	Loose	25	46,000
S-4	45000	15	675,000	Coarse	Moderate	30	750,000
S-5	4000	10	40,000	Coarse	Slight	27	40,000
S-6	5000	30	150,000	Coarse	Deep/ramped	40	222,000
S-7	6000	12	72,000	Coarse	Main ramp	42	112,000
S-8	21000	22	462,000	Coarse	Packed	38	650,000
S-9	3000	8	24,000	Coarse	Slight	27	24,000
S-10	3000	8	24,000	Fine	Loose	32	28,000
					TOTAL SHREDS		2,489,000
					TOTAL ESTIMATED WASTE TIRES (PTE)		3,085,000