

9 General Infrastructure**General Infrastructure Supporting Data**

The purpose of the General Infrastructure Element is to ensure adequate provision of public facilities and services required to meet the future needs of the University, including the following:

- Ensure provision of adequate stormwater management capacity to protect the welfare of both the University's and host community's residents and prevent water damage to public and private property;
- Ensure provision of sufficient potable water to meet anticipated University needs;
- Ensure provision of adequate sanitary sewer and treatment capacity to meet anticipated University needs; and
- Ensure provision of adequate solid waste handling and disposal capacity to meet anticipated University needs.

STORMWATER MANAGEMENT SUB-ELEMENT**1. Inventory and Analysis of Existing Conditions**

The outline format and numbering system for the Drainage Sub-Element differ from the Guidelines. Topics listed in the Guidelines are addressed in the following discussion.

1.a. Background and Existing Data

The purpose of this drainage narrative is to broadly identify the existing primary drainage systems and their components, locations, characteristics, limitations, and impacts on the existing developed Main Campus and the surrounding host community. The narrative will also address floodplains and their associated impacts. FSU Main Campus Base Maps, Project Title: Utilities/Infrastructure Improvements Post Master Plan Utilities Study For Florida State University, dated October 16, 1998, includes stormwater utilities overlays. G.R.G. Vanderweil Engineers, Inc. and Berryman & Henigar prepared these maps jointly. Although the maps are the best record available, they are not totally current and accurate. Additional data on storm drainage and stormwater management systems were obtained from available Moore Bass Consulting, Inc. and Post Buckley Schuh & Jernigan, Inc. files from other previous work within the basin.

1.b. General

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The FSU Main Campus is located in the Florida State University watershed of the Lake Munson Drainage Basin. The campus drains via the Central Drainage Ditch to the Munson Slough, which empties into Lake Munson. Campus drainage is divided into four sub-basins, each associated with a discrete primary conveyance system (see **Figure 9.1.1**). The northwest sub-basin drains to the Call Street Tributary. The north central sub-basin drains to the FSU Branch. The extreme northeast portion of the campus drains northward toward Frenchtown; however, runoff never makes its way to the Frenchtown pond located at Carter-Howell-Strong Park. This drainage is intercepted by street drainage systems and is conveyed to the FSU Branch by the storm sewer within Virginia Street. The southeast portion drains to the City of Tallahassee's Downtown Stormwater Outfall that runs parallel to Madison Street and connects to box culverts at the south side parking lot of the University Center complex near Stadium Drive. The southwest portion of the campus drains to the enclosed portion of the Central Drainage Ditch.

Regulatory jurisdiction of FSU stormwater issues is by the Florida Department of Environmental Protection (FDEP), the City of Tallahassee and the federal Environmental Protection Agency (EPA). At this time both the FDEP and the federal Environmental Protection Agency (EPA) have jurisdiction for National Pollutant Discharge Elimination System (NPDES) permitting. The EPA is in the process of delegating NPDES permitting authority to the FDEP. This transfer of jurisdiction will occur once the EPA approves the FDEP program. Limited review of stormwater runoff rate and quantity are required by the City in accordance with a development agreement between the City and FSU.

The City and FSU entered into a development agreement (*Campus Development Agreement Between the Board of Regents and the City of Tallahassee*) on December 11, 1998. This document established that the joint FSU/City Regional Stormwater Facility (a.k.a., Elberta Crate Site or "RSF") would serve the proposed FSU improvements outlined in the Campus Master Plan, effective September 27, 1996, and also identified in Exhibit "A" of the agreement. It was agreed that City stormwater review and development approval would not be required for those projects provided the RSF was complete. However, FSU project plans must be submitted to the City and stormwater capacity accounting records updated based on the project plans.

Projects built prior to completion of the RSF required interim stormwater facilities and City review of it. Additionally, projects not identified in the Campus Master Plan will require stormwater management and City permitting.

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The Northwest Florida Water Management District has been delegated Management and Storage of Surface Water permitting by the State of Florida. Projects tripping MSSW permit thresholds require review by the District.

1.c. Existing System

The Call Street Tributary sub-basin is relatively flat except for the northern most quarter of the basin that rapidly rises to Tennessee Street. Much of the flat southeastern part is in the 100-year floodplain as noted on **Figure 9.1.1**. Most of this floodplain is currently used as parking, practice and the circus. The northern end of the basin is higher in elevation and contains the present FSU Developmental Research School (Florida High), the track and field facility, and academic and research buildings west of Antarctic Way. The Basin is bisected north/south by large storm pipes and east/west by the box culverts and by the Call Street Tributary. The major stormwater collectors in this basin are primarily capacity constrained by backwater conditions in the Central Drainage Ditch south of the campus. The floodplain is the result of constraint by limited Central Drainage Ditch conveyance capacity.

The FSU Branch Basin is relatively flat in the northwest quadrant. The topography rises rapidly to the east- southeast. The extreme southwest corner of the basin along the FSU Branch is in the 100-year floodplain. This floodplain is influenced in the same way as cited above for the Call Street Tributary Basin. Except for the floodplain, this basin is heavily developed with most of the campus core academic and administrative facilities. These facilities are served mostly by smaller diameter pipe but are effectively drained due to significant topographic slopes. The lower elevations and floodplain drainage systems are constrained by the FSU Branch backwater conditions produced by limited FSU Branch and Central Drainage Ditch capacity.

The Downtown Stormwater Outfall Branch Basin is in the southern portion of the Campus. This basin drains to the Central Drainage Ditch via an 8-ft x 6-ft concrete box culvert. The basin contains some floodplain in the extreme west end, which is used primarily as light industrial and warehouses. The basin topography rises significantly to the north and northeast.

The Central Drainage Ditch Basin is in the southwest portion of the Campus. Stormwater drains directly to the enclosed sections of Central Drainage Ditch. Most of this basin is in the 100-year floodplain and is used as the FSU football stadium with associated parking. The floodplain is in a significantly altered natural floodplain area and is maintained by the Central Drainage Ditch conveyance constriction. The basin is generally flat except for the extreme northwest corner of the basin. The relatively low elevation of the floodplain and high flow stages in the Central Drainage Ditch inhibit effective stormwater drainage from this area.

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There are no known wetlands on the FSU Main Campus. The 100-year floodplains delineated on **Figure 9.1.1** and addressed above are as extracted from Exhibit “C” of the *FSU Stormwater Master Plan*, dated October 1998 prepared by Post Buckley Schuh and Jernigan, Inc. Another PBS&J study prepared in 2000 and titled *FSU Central Drainage Ditch Conveyance Improvements Phase 1 – Stormwater Conveyance Alternatives Analysis Feasibility Study* analyzes the impact that several Central Drainage Ditch improvement options has on the flood elevation throughout campus and south to the Regional Stormwater Facility.

1.e. Hydrology

The most current source of campus hydrology can also be found in the 1998 *FSU Stormwater Master Plan*.

1.f. Stormwater Facilities

- **Seven Stormwater Management Facilities** are shown on **Figure 9.1.2** and **Figure 9.1.3**. The capacities and functions (quality or attenuation) and the extent to which the facilities meet current requirements was not available. Except for the joint FSU/City of Tallahassee Regional Stormwater Facility, there are no community stormwater management facilities shared by FSU.
- **Primary and Secondary Stormwater Drainage** facilities are indicated on **Figure 9.1.2** and **9.1.3**.

1.g. Stormwater Systems Level of Service

The Tallahassee - Leon County 2010 Comprehensive Plan (TLCCP) sets forth interim level of service standards to be updated by a comprehensive stormwater management plan at a later date. The TLCCP adopted the following level of service standards:

- **Design and Water Quality Standards** as set forth in the Florida Administrative Code Chapters 62-3 and 62-25 as amended from time to time.
- **Flood Control** levels of service associated with the frequency of the storm event as follows:

100-Year Storm Event:

- No floodwater in new buildings or existing buildings.
- Overland flow capacities available for all flow in excess of capacity of underground and open channel conveyance systems.

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- No floodwater more than six inches deep in LOCAL roads, parking lots, or other non-street vehicular use areas.
- No floodwater in one driving lane each direction of COLLECTOR streets.
- No floodwater in two driving lanes each direction on ARTERIAL streets.
- Open channel conveyance capacity available for all flow in excess of capacity of underground conveyance system, or for full twenty-five year storm flow if no underground system exists.
- The rate of off-site discharge shall not exceed the predevelopment rate of discharge.

10-Year or Less Storm Event:

- No floodwater in one driving lane of LOCAL roads.
- No floodwater in the driving lanes of ANY ROAD other than a LOCAL road.
- Underground conveyances not overflowing in business and commercial districts.

5-Year or Less Storm Event:

- No floodwater in the driving lanes of ANY ROADWAYS.
- Underground conveyances not overflowing in residential districts.

Per the TLCCP, these levels of service are to be used as the basis for determining the availability of capacity and the system demand generated by development. In instances, where off-site deficiency exists, such deficiency is not to be increased as the result of any development or land use changes.

Table 9.1.1, Major Roadway Classifications, classifies Campus roadways for application of the above level of service criteria.

The Flood Insurance Rate Maps produced by the Federal Emergency Management Agency provide classifications based on the depth of flood and flood hazard factors. Further consideration of these classifications and how they might be applied to FSU facilities may be desirable.

1.h. PROBLEM AREAS

Problem areas were addressed under each sub-basin above. Generally there are three constrictions on the major conveyances and a substantial floodplain in the southwestern part of the campus, which present difficulties to further development. The majority of the problems could potentially be resolved with improvements to the conveyance capacity of

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that portion of the Central Drainage Ditch between the campus and the Regional Stormwater Facility along with appropriate storage. This should be further evaluated.

Table 9.1.1 Major Roadway Classifications – Main Campus

Roadway	Existing and (2010 Update) Designation	Planned Improvements
Tennessee Street	Prin. Arterial	
Pensacola Street	Prin. Arterial	
Gaines Street	Minor Arterial	
Copeland Street	Minor Arterial	
Macomb Street	Urban Collector (Minor Arterial)	Four Lanes
St. Augustine St.	Prin. Arterial	
Woodward Avenue	Undesignated Four Lanes (Minor Arterial)	

Source: Roadway Functional Classification per the city of Tallahassee’s Comprehensive Plan

Existing Stormwater Management Facilities – Main Campus (See **Figure 9.1.4** for location):

1. Alumni Center
2. Tennis Courts Facility
3. Dodd Hall Facility
4. SE Parking Lot Facility
5. Askew Student Life Facility
6. McCollum Hall Pervious Surface Parking Lot
7. FSU / COT Regional SWMF

POTABLE WATER SUB-ELEMENT

1. Inventory and Analysis of Existing Conditions

1.a. Inventory of System

Generate a GIS based map of all domestic water lines on campus. Update the map on a continuing basis as new lines are installed. A current copy of the map is available from the campus utilities department. The principal water mains that serve the campus are

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interconnected with and also serve the City.

Florida State University maintains an inventory of the potable water systems that serve the Main Campus, Southwest Campus, and Panama City Campus. Persons interested in knowing more about these systems should contact the Utilities and Engineering Services Section of the Facilities Department at (850) 644-6754.

1.b. Source of Potable Water

The City of Tallahassee's domestic water department is the source of all of the FSU potable water. The University does not have any plant or wells.

The Florida State University main campus water distribution system is actually an integral part of the City of Tallahassee's system. It is very difficult, virtually impossible, to evaluate and analyze the FSU system isolated from the City. Water mains serving the FSU Campus are also serving surrounding areas of the City and convey water to and through the campus.

Source of all potable water is from the City of Tallahassee. The City's source is the Floridian Aquifer, a very abundant source. City of Tallahassee engineers state that there is no quantity problem of potable water with the Floridian Aquifer. The aquifer extends under most of Leon County and wells are 200 to 400 feet deep.

There is no treatment plant. Water from wells is chlorinated and fluoridated and pumped to system.

Specifically, the primary source for the University is the City's wells 5, 9, and 1. These wells are located North and East of the campus and each well is rated at 1500 GPM. Other City sources, however, would be available also to the University through the citywide distribution network.

Level of Service – Currently, supply, capacity and pressure are more than adequate according to the Bishop Consulting Engineers report of May 1990, the personnel of the University Physical Plant and City Engineering personnel. Water supply is adequate and new wells will be added by the City of Tallahassee as growth demands according to Mr. Tom Printy, city of Tallahassee Water and Sewer Department .

1.c. Allocation to the University

No information on water quantity allocated to the University by the city is available.

Note above the City wells that primarily serve the campus.

The FSU Main Campus is, in a utility sense, an inner-city campus, surrounded by urban

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development and by the City's water distribution network.

The campus is considered part of the City's distribution system and demand.

1.d. Regulatory Agencies and Regulations

The local County Health Departments and the State Department of Health and Rehabilitative Services regulate public Water Supply Systems.

Florida's Planning Act, Chapter 163, Florida Statutes, Section 163.3180, established Concurrency requirements for water and sewer; these facilities must be in-place for the issuance of certificate of occupancy; local governments may also have concurrency requirements.

The Northwest Florida Water Management District in Havana regulates the use of and withdrawal of quantities of ground water (wells).

Because the City is the source and supplier of the domestic water, the majority of regulatory compliance would be its responsibility.

1.e. University's Needs in Local Government's Plan

The comprehensive Plan by Tallahassee makes no reference to FSU nor does it specify any actions, needs, or issues related to FSU water demands.

SANITARY SEWER SUB-ELEMENT**1. Inventory and Analysis of Existing Conditions****1.a. Inventory of System**

Complete new GIS based sanitary sewer maps. These maps are updated as new lines are installed. Copies of current maps are available from the campus utility department.

The Florida State University Main Campus sewage collection system actually is part of the City of Tallahassee's larger system.

Gravity lines serve the major portion of the campus. The areas served by pumping stations are the Doak Campbell Stadium Athletic Complex, and the area served by the 18-inch gravity trunk line running parallel to and just west of Stadium Drive and Learning Way. All of these pumped areas are in the western part of the Main Campus. There are 2 sewage pumping stations on the campus, not including sump pumps in buildings. The largest pump station located south of the University Center southern parking lot and immediately north of the stadium and is owned and maintained by the City.

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The Main Campus is located down gradient from many, adjacent portions of the City. The main gravity trunk lines serving the campus also serve significant areas of the City outside the limits of the campus, and are carrying off-site sewage through the campus.

All sewage treatment and disposal is by the City of Tallahassee. The University does not treat nor re-use any of the wastewater generated on campus. The primary treatment plant is south of the campus on Lake Bradford Road.

As noted above, the main gravity trunk lines that serve the campus also serve other areas of the City and carry City generated sewage through the campus. Therefore, the total capacity of these trunk lines is not available to serve the University. Conversations with both the City and FSU personnel indicate that no sewage flow data is being monitored at the critical manholes along the gravity trunk lines or at strategic manhole locations near the perimeter of campus. Flow measurements should be initiated as a joint effort between the City and the University.

Three City trunk lines enter the campus with sewage collected off-site. These trunks also collect most of the flow generated on campus, join into one main while still on campus and leave the campus as one main at Gaines Street and Lake Bradford Road, flowing south to the City of Tallahassee treatment plant.

- Florida State University maintains an inventory of the sanitary sewer systems that serve the Main Campus, Southwest Campus, and Panama City Campus. Persons interested in knowing more about these systems should contact the Utilities and Engineering Services Section of the Facilities Department at (850) 644-6754.

1.b. Treatment Facility

The sewage treatment facility serving the FSU main campus is the City of Tallahassee's plant on Lake Bradford Road. This plant is just a short distance south of the main campus.

A second treatment plant also available to serve the University is the City's Thomas E. Smith plant; this plant is south of the main campus a considerable distance.

The Lake Bradford Road plant has a treatment capacity of 5.0 MGD (million gallons per day) and is currently treating 4.0 MGD; the plant is constructed and designed to provide quick and easy expansion to 6.0 MGD capacity.

The Thomas E. Smith plant, which is connected hydraulically to the Lake Bradford Road Plant, has a treatment capacity of 27.5 MGD. The Thomas E. Smith plant currently is handling 15 to 18 MGD.

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The City of Tallahassee's service area is all of the Tallahassee Metropolitan area, parts of Wakulla County and parts of Leon County.

1.c. Existing Volume of Sanitary Waste

There are no data available on volume of sewage waste generated by the University. The gravity sewage lines are not metered. Flows could probably be estimated from the City's main pump stations.

The City of Tallahassee has very sophisticated equipment for measuring flows in gravity sewer lines. The University should initiate a joint program and the City to measure flows in main gravity line, at their points of entrance and exit of the campus.

1.d. Capacity Allotment; Agreements

No information relative to City allotments of capacity to the University or agreements by the City for provision of sewerage facilities has been identified. It is doubtful that such allotments or agreements exist.

The FSU Main campus is, in a utility sense, an inner-city campus, surrounded by urban development and by the City's sewage collection system.

Sewage mains flow into and out of the campus carrying city sewage through the campus and collecting campus-generated sewage.

The campus is an integral part of the City's service area.

1.e. Governmental Regulations

Sewerage facilities, sewage treatment, collection systems, effluent disposal, operation and maintenance are subject to the State Department of Environmental Regulation, Count and local environmental agencies, and the State Health Department.

Florida's Planning Act, Chapter 163, Florida Statutes, Section 16.3180, establishes concurrency requirements for water and sewer; these facilities must be in-place for the issuance of certificate of occupancy; local governments may also have concurrency requirements.

Since the University is just a customer of the City's sewage system, regulatory compliance is the City's responsibility.

1.f. Local Government's Comprehensive Plan

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The Comprehensive Plan of Tallahassee makes no reference to FSU nor does it specify any action, problems, or issues relative to FSU sanitary sewage requirements. Refer to Item 1.d. above.

2. Future Needs/Requirements**2.a. Projected Flows**

Reliable data on existing flows are not available. It is therefore very difficult to project future flows. A unit of approximately 30 gallons of sewage per campus person per day is logical for estimating future sewage flows. Water consumption figures indicate 35 gallons of water per campus person per day. A method of determining the quantity of campus generated sewage needs to be implemented.

Many sewer lines, particularly in the older eastern section of the campus, are old with deteriorated joints allowing ground water infiltration. Also, stormwater catch basins are incorrectly connected to sewer lines in certain areas.

Stormwater connections should be eliminated; leaking joints should be fixed. All this will reduce sewage flow. A program to inspect gravity sewer lines by television should be implemented to identify all leaks allowing ground water infiltration.

Low water volume plumbing fixtures in all buildings will reduce sewage flow as will elimination of flush valves.

2.b. Pending of Anticipated Changes in Regulations

No changes in regulation are pending nor anticipated. If any, they would be the City's responsibility. The University is a customer of the City's sewer service.

2.c. Opportunities to Reduce Impacts of Sewage Generation (Refer to 2.a.)

- Eliminate flush valves from all building plumbing.
- Utilize low water volume plumbing fixtures.
- Implement a leak detection and repair program – television inspection.
- Eliminate stormwater, swimming pool and other illegal connections.
- Holding tanks to reduce peak flows.
- Pump stations and force mains to by-pass “bottleneck” gravity mains.

2.d. Terms of Agreement

Refer to Item 1.d. above.

SOLID WASTE SUB-ELEMENT

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The Solid Waste and Recycling divisions of FSU's Grounds Department empties trash receptacles, empties garbage dumpsters, collects office paper for recycling, removes debris from loading docks, delivers and picks up trash cans and sweeps streets on campus. The Grounds Department also recycles paper, cardboard, glass, metal, electronic components, wood and office furniture. . Special medical science wastes are handled through private enterprise contracts. The University does not have any disposal or incinerating facilities.

The FSU Grounds Department maintains a fleet of waste hauling vehicles in which waste is both collected and dumped at Leon County waste facilities, delivered to local recycling companies or composted.

Dumpsters are predominately owned by the University or rented from the City. They are placed at strategic locations determined by the University (see **Figure 3.5** for location). Generally, there is at least one dumpster per building. The University has specific requirements on dumpster locations and orientation to accommodate their vehicles. New building plans must have dumpster pad details and locations approved by the FSU Grounds Department.

The frequency of scheduled pick-ups varies with each building. The University composts most of their landscaping refuse (branches, leaves, cuttings, etc.). The composting is at the University nursery at the Southwest Campus and refuse is delivered to the nursery by FSU vehicles and personnel.

The FSU Grounds Department disposes of construction solid waste at Leon County's landfill site, and all other non-recyclable waste at the Gum Road Transfer Station. FSU pays the County a fee for solid waste disposal. The county has a long-term contract with Waste Management Corporation to dispose of solid waste at their Jackson County landfill facility.

The beginning and end of semesters when students are checking in and out creates an overload of waste. This requires an accelerated pick-up schedule, which is accommodated by strategically placed roll-off dumpsters, near Residence Halls for domestic solid waste and cardboard recycling. Normally,

Recyclable materials, including cardboard, office paper, shredded paper, newspaper, scrap metal, plastic bottles, aluminum cans and electronic components, are collected by the University. Recycled materials are sorted and assembled at the FSU Grounds Solid Waste

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and Recycling Center, 818 Madison Street at the Main Campus. The University receives a small fee from private contractors for marketable recycled materials.

1.b. Amount of Waste

In the Academic year 2005-2006, FSU's Main and Southwest Campuses generated 3,004.6 tons of non-recyclable waste. Also 419.81 tons of yard waste was taken to the landfill.

1.c. Description of Facilities

FSU is currently taking construction waste and yard waste to the landfill at 7550 Apalachee Parkway. According to Leon County, the current projection is that the landfill will reach capacity in 2015. Leon County's business plan calls for the facility to continue receiving Class III waste at this site for processing, recycling and transfer to a regional landfill, for the foreseeable future. (Class III waste means yard trash, construction and demolition debris, processed tires, asbestos, carpet, cardboard, paper, glass, plastic furniture other than appliances or other materials that are not expected to produce leachate.)

All other non-recyclable waste items are taken to the Gum Road Transfer Station near the intersection of Capital Circle Southwest and Gum Road. From this facility waste is dumped, inspected, separated, compacted then loaded onto tractor-trailers. The tractor-trailers drive approximately 85 miles west of Tallahassee, to the Springhill Regional Landfill in the town of Cambelton, Florida (Jackson County). Waste Management, Inc. (WMI) operates both the landfill and the tractor-trailers. Leon County's agreement with WMI for hauling and disposal is good through March 2013. The contract has open-ended renewal provisions provided both parties wish to continue.

1.d. The FSU Grounds Department has responsibility for maintaining a collection facility for recyclable items and vehicles for transport of waste to Leon County waste disposal facilities from the Main Campus and the Southwest Campus. The size of the waste collection facilities is adequate for existing and future campus needs. Level of service is adequate and meets the needs of the University's academic year schedules.

1.e. No current information available.

2. Future Needs/ Requirements

2.a. Solid waste is expected to increase proportionally with the expected growth of the campuses. Existing waste is quantified in item 1.b. above.

The University is totally dependent on the Leon County for end disposal of its non-recyclable solid wastes.

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Re-cycling should be emphasized and implemented to the maximum.

- 2.b.** Collection of solid waste is by University personnel and is considered adequate

The capacity of the county's landfill, transfer station and regional landfill in Jackson County is considered adequate and is described in 1.c. above.

- 2.c.** The University is a customer in the County's waste disposal service area. Development of University facilities would have no more effect than any other growth in the total service area.

- 2.d.** Re-cycling should be continued, emphasized and increased. Composting of vegetation refuse should be continued and maximized. Other re-uses of solid waste are not identified. The University does not want to be involved in its own incineration and/or land filling.

- 2.e.** The University will continue to seek ways to recycle and reuse and minimize amount of waste taken to the landfills. In the academic year the following quantities of waste were recycled by local companies: 189.79 tons of cardboard, 189.24 tons of office paper, 39.39 tons of shredded paper, 77.34 tons of scrap metal, 9.66 tons of plastic bottles and 1.53 tons of aluminum cans. Glass bottles, newspaper and electronic components were also recycled, but there is no data regarding the quantity. Among the electronic components recycled are: microwave ovens, VCRs, TVs, computer monitors, printers, scanners, copiers, keyboards, motherboards, stereo receivers, telephones and tape players. An unspecified amount off yard waste is directly composted by University personnel at the Nursery site on Lake Bradford Road.

- 2.f. Agreements and Allotments**

See section 1.a. above.

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