April 2005

City of Prescott, Arizona

Transfer Station/Solid Waste Complex
City of Prescott

MASTER PLAN
Basis of Design Memorandum

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1.0 Executive Summary

The following summarizes the recently completed Master Plan for the City of Prescott Transfer Station/Solid Waste Complex. The Master Plan is the first step in expanding the existing Transfer Station and adding additional services to the Solid Waste Complex. The Master Plan was completed by City staff and the Consulting firms of HDR Engineering, Inc., and J.R. Miller & Associates, Inc. (JRMA). Upon City Council Approval, the concepts included in the Master Plan will be incorporated into the Final Design, and then construction will proceed.

In keeping with the City's plans for future growth in Prescott and the surrounding area, the Master Plan was initiated in October of 2004. The Goals of the Plan were to expand the capacity of the transfer station, improve safety and traffic flow, improve service to the commercial and residential customers, and to expand the services provided at the solid waste complex. These goals have all been met and are described within the Master Plan.

The key elements within the Master Plan are; expansion of the transfer station to handle future solid waste volumes, improvement of traffic flow on the site (improved safety), segregation of residential traffic from the commercial and transfer truck traffic, addition of an employee break area, addition of a Household Hazardous Waste Facility.

The Master Plan outlines the anticipated waste volumes and types of vehicles that will have to be accommodated at the facility over the next 20 years. Utilizing a projected 2025 population of 78,000, it is estimated that the volumes of commercial and self-haul waste will almost double in the next 20 years, nearing a peak daily tonnage of 820 tons/day (not including recyclables), with a peak daily commercial and self-haul traffic volume of approximately 800 vehicles/day.

As presented to the Council in January 2005, City staff and the Design Consultants looked at two options to expand the Transfer Station capacity. The first option was to expand the existing 13 year old transfer station. The second option was to build a new transfer station, with the old transfer station being retrofitted to become a recycling center and Household Hazardous Waste facility. Because the construction of a new facility will ensure that the long term needs of the City are met, and because the existing facility can be used for other purposes, the Council recommended that the preferred option was the construction of a new transfer station.

The selected option, as shown in the figure following this Executive Summary, includes the following elements:

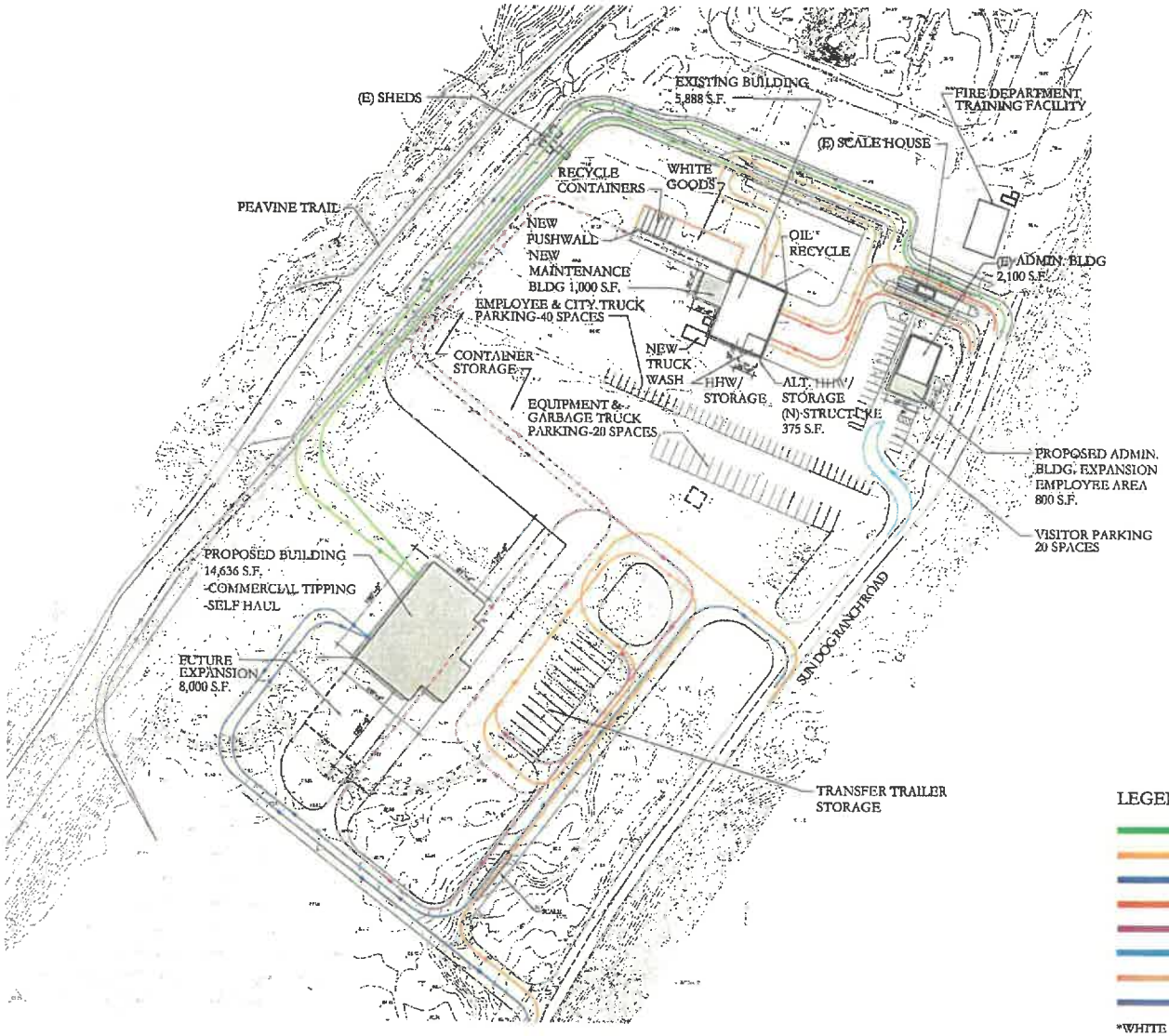
- New 14,500 SF transfer station, with 2 load out tunnels
- An 800 SF addition to the existing Administration Building to accommodate the Employee Break area.
- Retrofit of the existing transfer station to provide a location for recycling, Household Hazardous Waste, and storage.
- Addition of a 1000 SF Maintenance garage (to be constructed by City staff).
- New Fuel tank and dispenser.
- Expansion of the paving around the truck wash and recycling areas.
- Utilities, fencing, and paving to accommodate the new transfer station.

The opinion of probable construction cost of the improvements included in the Master Plan is estimated to range from $3.02 Million to $4.02 Million. Because of funding limitations, approximately $300,000 to $400,000 of the desired improvements will be included in the project as Bid Alternates. If the bids are favorable, some or all of the Bid Alternates may be included in the project.

The following items have been identified as Bid Alternates:

- Employee Building
- Household Hazardous Waste Area Retro-Fit (including plumbing and electrical retro-fits)
- Fences and Gates
- Replacement of the existing on-site fuel tank

Upon Council Approval the project will proceed into the Design Phase, which would run from May, 2005 to December, 2005. Construction would start in early 2006, and be complete in late 2006.



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PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

FINAL SITE PLAN

5 APRIL 2005

JRM J.R. MILLER & ASSOCIATES ARCHITECTS & ENGINEERS

JOB # 3416
CITY OF PRESCOTT
HDR HDR Engineering, Inc.

2.0 Operating and Sizing Criteria

2.1 General

The City of Prescott Transfer Station/Solid Waste Complex design is based on the following waste projections and assumptions included in Appendix D of this memorandum.

Waste Characteristics/Traffic Volumes	Current (2004) **Population = 40,000***	Based on 2025 Population = **78,000 Design (20 Years)**
• Commercial Tonnage/Vehicles.		
– Peak Daily Tonnage.	295 (10/11/04)	575
– Average Daily (Weekday) Tonnage.	210	410
– Peak Hour Tonnage.	**59 (20%)**	115
– Peak Vehicles/Day.	50 **(6 Tons/Vehicle)**	98
– Number of Vehicles/Peak Hour.	10	20
• Self-Haul		
– Peak Daily Tons.	125 tons (7/26/04)	244
– Average Daily Tonnage.	45 tons	88
– Peak Daily Vehicles.	360	702
– Peak Hour Vehicles.	70	136
– Number of Unloading Bays.	6	10
– Unloading Time.	**20** minutes	**20** minutes
– Number of Vehicles Unloaded/Hour.	**18** vehicles	**30** vehicles
– Queuing Distance	100 feet	**800** feet
– **Number of Vehicles Queued On-Site**	4	**32**
• Recyclables		
– Average Daily Tonnage	**12****	20

* *City of Prescott Population, Including Service Areas*
** *Includes residential and commercial (trial program).*

2.2 Transfer Station/Solid Waste Complex Operations

Operating Schedule

The Transfer Station/Solid Waste Complex will receive and transfer waste based on the following schedule, excluding select holidays.

Operating Schedule	Days/Week	Hours
• Transfer Station	6	8 AM – 4 PM
• Self-Haul	6	8 AM – 4 PM
• Inert Landfill	6	8 AM – 4 PM
• Tire Recycling	Tues/Thurs	8 AM – 4 PM
• HHW Facility	2 Days/Week	8 AM – 4 PM
• Recycling	6	Late Afternoon/1 Hour
• Glass Crusher	1	8 AM – 4 PM
• Transfer Vehicles (distance to landfill) – 28 Miles. (Store 10 vehicles on-site)	6 Days/Week	7 AM – 2 PM

Staffing

Presented in **Table 2-1** are the approximate number and type of employees needed during operation.

Table 2-1
City of Prescott Transfer Station/Solid Waste Complex
Personnel Requirements

POSITION	TOTAL
Superintendent	1
Supervisor	1
Shift Leader	1
Accountant	1
Senior Operator – Transfer Station	3
Senior Operator - Commercial	3
Equipment Operator	10
Scale House Attendant	1
Spotter	1
Total Employees	22

Equipment

Table 2-2 is a list of stationary and mobile equipment that will be used at the Transfer Station/Solid Waste Complex for operation (All equipment listed is preliminary and will be coordinated with the final system design). In all critical areas of the operation such as floor management of materials and waste loading, redundant equipment will be provided.

The facility will implement a comprehensive program of preventive maintenance and repair for equipment. Equipment replacement schedules will be established as needed to ensure reliability of equipment operation. The facility operation and maintenance plan will be based on industry standards and the recommendations of individual equipment suppliers.

The facility will make provisions for standby equipment in the event of breakdowns. These provisions will include pre-arranged agreements for replacement or rental equipment from predetermined sources of equipment supply.

Table 2-2
Equipment Requirements

	Quantity
STATIONARY EQUIPMENT	1
Existing Bi-Axle Scale in Tunnel	
Existing Platform Scales (scale house)	2
New Axle Scales (under load-out), 2 or 3 Per Scale (to be determined)	2
Commercial Platform Scale	1
MOBILE EQUIPMENT	0
Loaders	2

Traffic Access and Controls

The facility design and operation will minimize the impact on Sundog Ranch Road traffic and will provide a safe facility for all customers, visitors and employees. See Appendix B for the Programming Site Layout. All traffic will enter the facility through the two facility entrance drives as shown on the site layout drawing. The north entrance (existing) will accommodate self-haul customers, employees, and visitors. The south entrance will accommodate commercial customers and transfer trucks.

3.0 Site Development

3.1 General

The site is zoned industrial and has inherent flexibility for the expansion of the transfer station. The proposed site plan complies with the required building setbacks and other zoning requirements. The site plan positions the Transfer Station, Office, HHW and Recycling to provide the public convenient and easy access.

Parking at the Office Building includes 55 visitor and staff parking spaces (5-6 Handicapped accessible), which requires a zoning ordinance analysis to confirm the quantities. Additional parking is provided for 10 city vehicles and 20 collection trucks/equipment. The parking area for the collection trucks and equipment will be provided with electrical hook-ups for cold weather starting. Parking stalls for collection trucks will be 36' x 12'.

3.2 Site

A site survey has been provided by Kelly-Wise which located all property lines, existing site improvements, utilities and topographic information. This survey is included in Appendix B. The site is approximately 10 acres with the fire training center to the north, the Peavine trail/riparian area to the west, the open area/future development to the east, and the Prescott Lakes Parkway to the south.

1. On-site improvement plans will be developed per City requirements. Plans will include:

   a) On-site paving, grading & drainage plans, including horizontal control information.
   b) On-site sanitary sewer plans.
   c) On-site water plan, including analysis of the existing water infrastructure, to provide a looped system for fire protection and pressure regulation
   d) Conduit plans for electrical, telephone, and IT systems.
   e) Fencing plans.
   f) Site lighting.

2. Site pavement (see Appendix B) will include concrete pavement where it is needed for strength and drainage, including in the tunnel, load-out area, one truck length in front of the scales, trailer parking, truck turning areas in front of transfer station, and for ramped areas. Asphaltic pavement will be considered for the remainder of the site according to the geotechnical engineer's recommendation.

   Parking drives and spaces are to be asphaltic concrete, but cast in place concrete for heavy truck traffic will be required. Striping will be provided for typical parking spaces. Special striping, logos, and signs at accessible spaces will be provided. The City will provide the required striping and signage throughout the site.

   Curbing to be vertical cast in place with expansion joints at 12'-0" o.c. for parking areas. Rolled curb to be used in truck turning areas and on areas of heavy traffic movements.

   Turning movements in the load-out port area should accommodate a 66' long vehicle (53' trailer) and 13.5' high.

3. Grading plans (see Appendix B) will:

   a) be developed in accordance with City of Prescott standards and the recommendations of the geotechnical engineer;
   b) indicate finished floor elevations, slab elevations, slope designs for both paved and unpaved areas, and existing contours;
   c) indicate top of curb, sidewalk, and pavement spot elevations;

d) indicate on-site erosion control measures required to manage stormwater run-off; and

e) include horizontal control developed with all necessary dimensions to locate all hardscape features and significant building corners. Horizontal geometry for the building pads will be shown on the plans and will include a table of bearings and distances and curve data adequate for construction. A table describing control points for the above will be included on the horizontal control plan.

4. Drainage plans (see Appendix B) will provide for on-site storm water management, including catch basin and connector pipe designs, NPDES water quality management, and ultimate routing to retention basins. Retention basins will be designed for a 50 year storm, using the 24-hour rainfall depth "D" as determined from the U. S. Weather Bureau. A storm water pump station will be constructed in the loadout area of the new Transfer Station.

5. The Sanitary Plan (see Appendix B) will provide for flows for the existing administration building, existing transfer station tunnel (by means of a sump pump), existing wash rack, and the flows for the new transfer station. Sanitary sewer service is also planned for a new fire department building approximately 300 feet north of the transfer station. A new pump station will replace the existing pump station, with flows being routed to the existing 3" force main on Sun Dog Ranch Road. An analysis will be made of the existing 3" force main to determine adequacy. If it is determined to be inadequately sized, a new force main will be designed.

6. The On-Site Water Plan (see Appendix B) will include fire hydrant locations and connection details. The proposed system will be connected to the existing system. The pressure at the pressure reducing valve on Sundog Ranch Road is set at 60 P.S.I. Fire flow requirements will be reviewed with the Prescott Fire Department. It is assumed that the off-site system will provide the project with the required flow and capacity as determined by the fire authority for the specific needs of this facility. Fire hydrants are to be spaced at no greater than 300 foot intervals.

   Off-site water service connections will be developed and include all water appurtenances including backflow prevention devices, double detector check valves, and domestic water meters necessary for the on-site system. The off-site water connections and on-site fire hydrant locations will be coordinated with City of Prescott Development Services Department and Prescott Fire Department. The fire line will not be metered.

7. The conduit plan (see Appendix B) will provide electrical, telephone, and information technology (I.T.) conduits where required. The new commercial scale will have conduit from the new card reader to the existing scale house. Conduit will be run to the tunnel scales for future use. Electrical service will be

coordinated with APS and the use of existing transformer (V11447) will be evaluated.

8. Fencing and gate locations are shown in Appendix B. Access gates will be manually operated with the ability to be locked at night. All gates will be manual gates (typically 24'), no card readers required. Fencing will be a combination of the newly installed fencing (10 foot slatted chain link), and 6 and 10 foot chain link fence. The slatted fencing will be used along the Peavine Trail; the 10 foot chain link will be used along the Fire Department property line and 6 foot chain link will be used everywhere else. Where possible, existing fencing will be re-used.

9. The Illuminating Engineering Society (IES) illumination level standards for exterior spaces where safety and security are a concern will be met. New poles and luminaires will match existing. Site lighting is shown in Appendix B noting building lights on the new Transfer Station, light poles by the two new entrances, new commercial scale, transfer truck parking lot, and three lights along the self-haul access road.

10. Government processing tasks will include:

    a) Identifying applicable local governmental requirements for development of the site and utilities, including applicable fee and development standards.

    b) Contacting and coordinating with the Development Services Department and the appropriate City and County Departments relative to plan processing and obtaining final approval of the project.

11. Site design will comply with the following codes:
    - Water – 2003 International Plumbing Code (IPC), and the Water Conservation Code
    - Sanitary – 2003 IPC.
    - Site Lighting – 2003 ICC & IES, City of Prescott Dark Sky Ordinance
    - Storm – City Guidelines

12. Scale Operations – the two existing entrance scales and the existing tunnel scale will be left as-is. The new commercial scale will be an above grade scale. The new tunnel load-out scales will be bi-axle or tri-axle scale (to be determined in final design). Performance based specifications will be written for commercial and tunnel load-out scales, and the contractor will solicit bids for each of them.

3.3 Site – Landscape Architecture

1. Landscape planting improvements will focus on the west and east boundaries of the property. Improvements will conform to City Standards and shall be coordinated with site architecture. Berming along Sun Dog Ranch Road to about 4-6 feet above existing grade is anticipated with large trees to screen the operation.

2. Landscape architecture will include the coordination with drainage and topographic design issues.

3. Irrigation will be used where required to support the landscaping.

3.4 Site – Geotechnical

Two geotechnical investigations have been performed on the site, the first taking place on January 6, 2005, consisting of 4 auger borings, to 20 foot depth, or refusal, including sampling, laboratory analysis, and an exploration report. A geotechnical report documenting the findings, and a location map for the borings is included in Appendix C. In general, the findings were as follows:

- Fairly soft layered clayey / sandy material found in all 4 boring locations
- No area investigated was significantly better than another
- No organic material encountered at the boring located within the inert debris landfill area

The second geotechnical investigation was conducted on February 23, 2005, consisting of 6 test pits in strategic locations applicable to the Option 6 Site Plan. A geotechnical report documenting the findings and recommendations, as well as a location map for the test pits, is included in Appendix C.

4.0 Architecture/Buildings

Provide buildings totaling approximately 16,000 square feet. The structures are:

- Transfer Station, at approximately 12,000 square feet, plus two load-out ports.
- Household Hazardous Waste and Storage at 1,800 square feet (Remodel).
- Addition to administrative building at 800 square feet.
- Maintenance building (pre-engineered metal building (PEMB) @1,000 square feet) to be provided by the City.

4.1 Building Codes

The facility design will include the requirements of the following codes and permits:

- Structural Code – 2003 IBC
- Plumbing Code – 2003 IPC
- Mechanical Code – 2003 International Mechanical Code (IMC)
- Electrical Code – 2003 IMC
- Fire/Life Safety Code – 2003 International Fire Code (IFC) & National Fire Protection Agency (NFPA) 70-02 (Based on National Electrical Code (NEC) 2002)
- Accessibility Code
- Energy Code (as applicable)
- American Society of Mechanical Engineers (ASME) as recommended by the plumbing and mechanical codes.
- American Society of Heating, Refrigeration, and Air-Conditioning Engineer (ASHRAE) as specified in the mechanical codes.
- United Laboratories (UL) listings where required by the building codes.

4.2 Transfer Station - Architectural

1. Architectural drawings for the Tipping Area, Processing Area and Residual Waste Load-Out Area, including Floor Plans and Enlarged Floor Plans, Exterior Elevations, Building and Wall Sections, Details, and Schedules will be developed as necessary to define the scope of construction and obtain agency approvals.

2. Design drawings will be based on utilizing a pre-engineered structure, as necessary. Columns will be located adjacent to walls and clear from tipping and traffic areas.

3. The proposed buildings will be sized and designed to meet current and future requirements. Building floor areas will be sized in general conformance with the following requirements not including ramps and drive-thru tunnels:

Operational Area	Approximate Floor Area, SF
Main Tipping Floor and Waste Transfer	12,000
Load-out Ports	2,500
Total	14,500

4. Roof plan will provide smoke vents, access hatches, and support exhaust fans to serve the ventilation system needs.

5. Exterior finishes for the building will consist of accent metal panel wall with an architectural treatment. The roof will be a metal standing seam system with no insulation.

6. The proposed building will be designed with an interior clear minimum height of 30'. The exterior height of the building may vary through an irregular roof design or through aesthetic enhancements or attachments to the roof. Egress and ingress doors will be properly located and sized to allow for packer and roll-off trucks with 20' clear width and 24' clear height on the doors. Double wide doors will be considered for the self-haul portion of the facility. All doors and columns will be protected with concrete-filled 8" diameter steel bollards.

7. A layout plan will be developed for pushwalls in the tipping area. Wall heights, materials, and plating will be suitable for the use in the specific areas. Primary pushwalls (10' high) will consist of reinforced concrete with steel plate facing.

8. Due to the nature of the facility use, the proposed building design will be provided with specific detailing features necessary to provide low housekeeping and maintenance.

9. Loadout area will have a minimum ceiling clearance of 20'.

10. Loadout tunnel will be fully enclosed and provided with roll-up doors at both ends of the tunnel. Doors will be approximately 14 feet wide and 14 feet high. Tunnel will have a minimum ceiling clearance height of 14'.

11. See Mechanical Engineering, Section 4.4, for scale information.

12. The following features will be incorporated as Health and Safety provisions:

    - Appropriate safety and instructional signage for both employees and customers.
    - Provision of adequate space for tipping.
    - Careful consideration of traffic flow patterns to reduce cross-traffic and mixing.
    - Site housekeeping.
    - Eye wash stations located on the tipping floor.
    - Fire extinguishers.
    - Illuminated exit signs.

13. South exterior walls will be designed to allow and facilitate future expansion of the facility if pursued by the Owner.

4.3 Structural Engineering – Transfer Station

General

1. The structural engineering design will include drawings and details necessary to define the scope of construction. These plans will include the following:

    a) Foundation and anchor bolt embedment design and preparation of plans, including coordination with Soils Engineer to select foundation type.
    b) Pre-Engineered Metal Building (PEMB) criteria design and metal panel walls.
    c) Roof-framing system for building steel design.
    d) The commercial and self-haul tipping areas will both have 30' inside clearance.

Tipping Area

1. Structural engineering design will include plans with the following:
    a) Tipping floor loading will be reviewed and incorporated into the design of the concrete floor slab. The City will use a loader on the floor to compact the waste.
    b) Axle scale pit design in the tunnel of the load-out area.
    c) Concrete push wall design with steel facing, which will be coordinated with the design of the PEMB vendors.
    d) Cast-in-place concrete building retaining walls will be used for the load-out tunnel area.
    e) Load-out port system, including lid design.

4.4 Mechanical Engineering – Heating, Ventilation, and Air Conditioning – Transfer Station

General

1. Plans and specifications will be developed for Building Department approval.

2. Building ventilation will be designed specifically for the transfer station operations.

3. Plumbing system design will include:

    a) Cold water system from the meter through a back flow preventor to the building.
    b) Sewer system to 5' outside of building(s) footprint. Provide coordination with the Civil Engineer.
    c) Plumbing fixtures on potable and non-potable systems.

d) Industrial waste (IW) drainage system for the transfer station.

4. Building will be provided with a fully automatic fire sprinkler system in conformance with the N.F.P.A. 13. A fire protection performance specification and design criteria drawings will be provided. Specifications will be provided as part of the design documents for the design-build responsibility of the selected General Contractor. The selected fire protection vendor will submit sealed sprinkler drawings to the City Fire Department for approval.

5. Bid and construction specifications will be provided for related plumbing divisions.

6. Responses to Building Department comments will be provided.

7. Portable restrooms will be available on-site for customers.

Scales

1. Axle scales will be specified with electronic 'scoreboards' located on the load-out floor level visible to loader operators. A scale totalizer will be located such that it is visible to the transfer truck driver. Scales will not be connected to electronic recording systems. Only weights from the commercial scale will be electronically transmitted to the scale house.

Tipping Area

1. Emergency eyewash units will be provided throughout the facility.

2. Hose reels will be provided for wash-down operations.

3. An industrial wastewater collection and pumping system will be provided for the building area (Transfer Station tipping floor and load-out ports).

4. The storm water system for building drainage (i.e. tunnel and ramp trench drains, roof drainage, etc.) will be included.

5. Floor drains will be provided as necessary.

6. Trench drains will be provided to facilitate wash-down operations.

Dust and Odor Control

1. The following design features and operational practices are recommended to address control of dust and odors:

- Specification of enclosed, air-conditioned rolling stock.
- Provision of wash-down reels to selectively spray dusty loads and to support general housekeeping.
- Doors at all vehicle entrances/exits and loading ports. Minimum two exit doors at remote locations with the anticipated occupant load. Operating practice of closing all doors when not in use.
- No formal dust suppression or odor control systems will be provided at this time.

4.5 Electrical Engineering

General

1. Plans and specifications will be developed for Building Department approval.

2. Electrical demand requirements will be established for the proposed facility.

3. Design will include the primary power systems for the building, interior and exterior lighting, general and heating/ventilation/air conditioning (HVAC) power.

4. Design specifications will be developed for the raceways for the fire alarm and security system.

5. Phone-boards will be located adjacent to the main switchgear in electrical room.

6. Interior and exterior lighting systems will be designed for the proposed buildings. New exterior poles and luminaries will match existing.

7. Telephone and I.T. demand requirements will be developed for the proposed facility by the City and design criteria will be provided to the Engineer. Raceways will be provided to meet the criteria.

8. Bid and construction specifications will be developed for related electrical divisions.

9. All electrical services will be designed to minimize exposure to damage and will be dust and water tight in waste handling areas.

10. Lighting will be designed to provide high levels of lighting in ramp, unloading and vehicle maneuvering areas. Lighting must take into consideration that motorists will be leaving bright sunlight to enter the building and safety will be an issue.

11. Special attention will be given to incorporate City requirements.

Site

1. An electrical site plan will be provided, including detailing of electrical connections to all required structures on the site. On-site electrical service demands will be designed to be connected to a service transformer provided by Arizona Public Service (APS). On-site service point to be provided from an existing source as identified by the City. Site lighting will be designed to match the existing Transfer Station/Solid Waste Complex and meet all City requirements. Special attention will be given to shielding areas adjacent to future residential areas and minimizing lighting spillage and levels at the site boundary.

2. Connection to the existing on-site service source (if feasible based on the electrical load) will be indicated on the plans, as identified by the City.

3. Power and dedicated data conduit will be provided as shown in Appendix B.

4. Telephone requirements will be established from the local service provider.

5. A site lighting plan will be prepared. The photometric plan design will be based on night operations in designated areas. A photometric plan design will be developed for the remaining project site area based on foot-candles appropriate for security purposes and minimum IES lighting levels. High-pressure sodium fixtures will be used, if there is a significant energy savings, otherwise metal halide fixtures will be used as they provide a truer color. Compliance with the City of Prescott Dark Sky Ordinance will be reviewed and included in this phase.

Tipping Area

1. Basic electrical requirements will be established to meet estimated requirements.

2. Interconnection requirements will be designed for scale, 'scoreboard' and control devices.

3. Digital weight indicators will be located in the lower level of the load-out, so truck drivers can see what their load is. Truck drivers can contact equipment operators by radio.

4. Radios will be used for communication to/from the Transfer Station/Solid Waste Complex tipping and load-out areas.

4.6 Household Hazardous Waste (HHW) and Recycle Building (Remodel)

General

1. The existing transfer station will be remodeled after the new transfer station is operational. The two north bays will be used to process recyclables which will be loaded by using the existing tunnel. The south bay will be remodeled to include a HHW and storage area.

Structural

1. A masonry wall will be built to separate the HHW and recycle areas. A new push wall will be built to protect the masonry wall.
2. A new roll-up door on the south bay will be added. At the south end of this area, 2 entry doors will be installed.

Mechanical

1. The existing fire protection system will be modified to meet new space use, and a performance-based specification will be written as required.
2. Plumbing fixtures will be provided for new space use.

Electrical

1. Appropriate lighting and power will be provided for the area of service.
2. Security conduits will be coordinated based on City requirements.

4.7 Maintenance Building

A 1,000 S.F. Maintenance Building located west of the existing transfer station will be constructed by the City to include utilities to the building and the concrete pad around the building.

4.8 Washdown Area

The existing washrack will be upgraded to accommodate large trucks. Portable catwalks will be added to both sides to allow the truck drivers to use pressure hoses to clean their trucks.

4.9 Administration Building

An employee break area and locker rooms will be added to the south side of the existing administration building. The addition will be approximately 800 S.F.

Architectural

The exterior building finishes of the addition will be compatible with the existing administration building in type and color. Materials will include a masonry wainscot as well as metal wall and roof panels to match the existing panel profiles. The addition will

include new windows similar in size and shape to the existing. Vinyl composition tile and rubber base will be used for flooring in the break area.

Mechanical

1. A supplementary HVAC system will be provided to serve the locker room and employee break areas.
2. Plumbing fixtures will be specified and included to serve the new addition.

Electrical

1. Communications, power, and lighting systems will be coordinated with and connected to the existing Administration building.

2. Verification will be made that the existing electrical service to the Administration building is sufficient for new supplementary HVAC equipment.

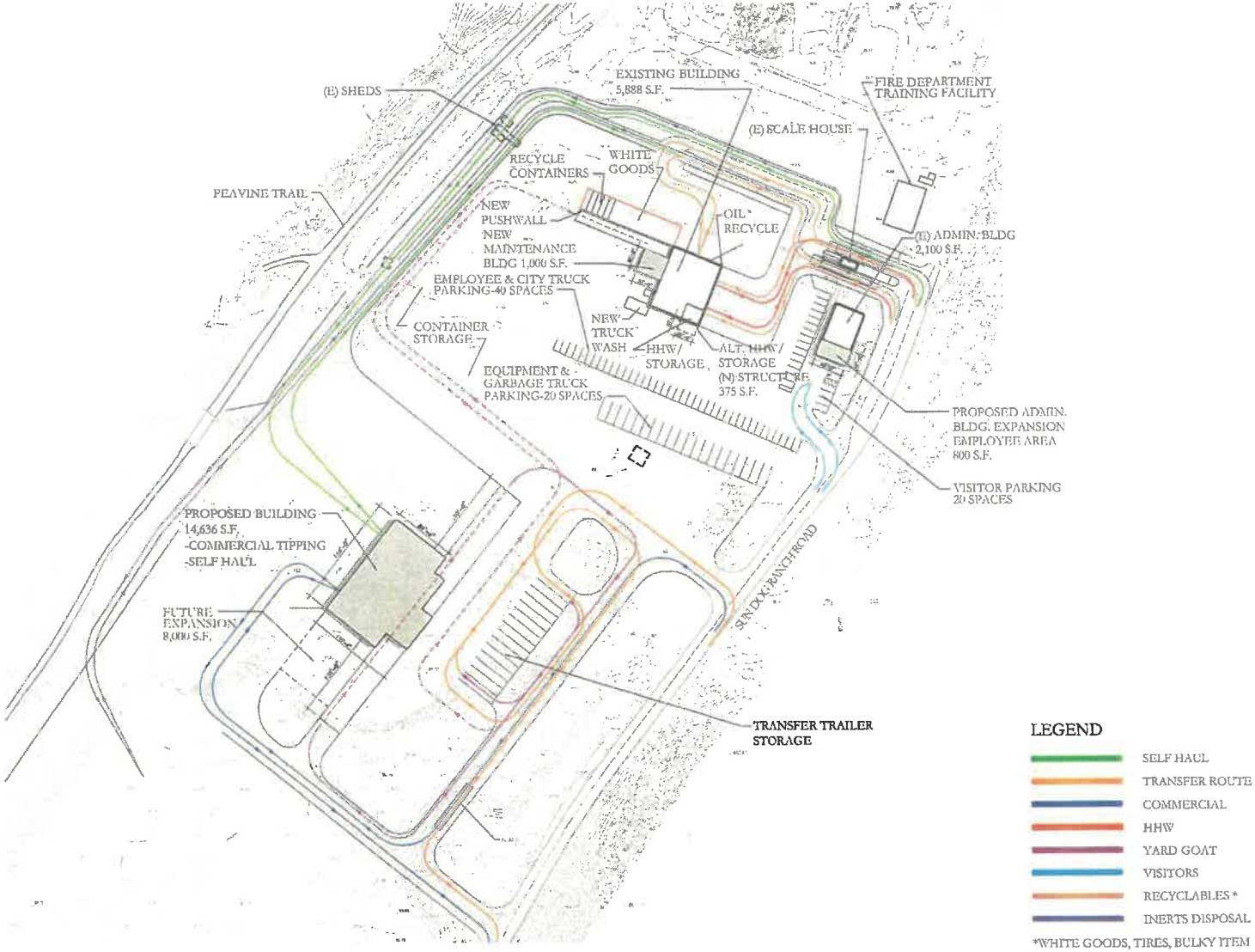
5.0 Cost Estimate

The Master Plan Cost Estimate is included in Appendix E of this memorandum.

6.0 Schedule

The Project Schedule is included in Appendix F.

Appendix A – Master Plan



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PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

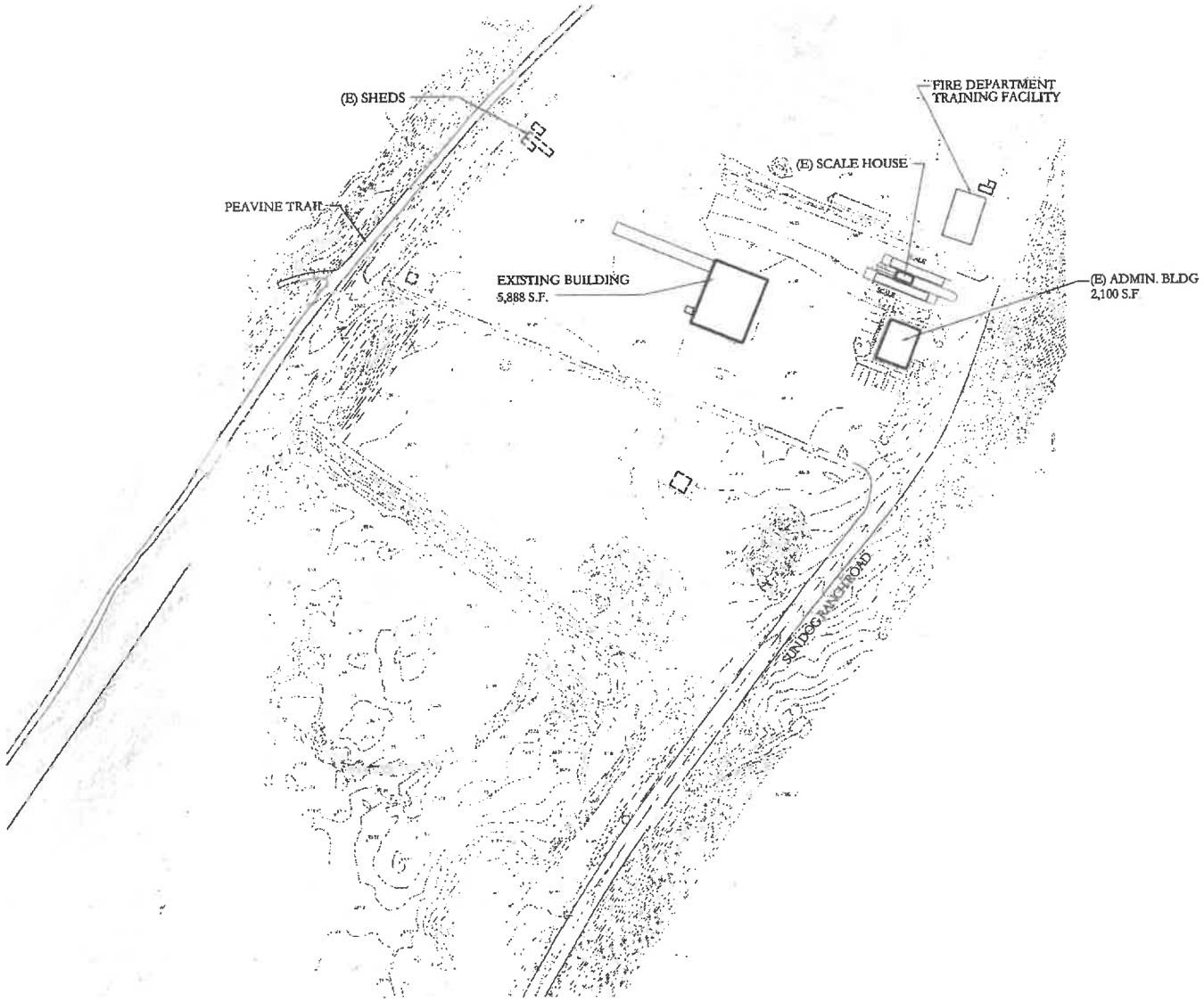
FINAL SITE PLAN

5 APRIL 2005

JR MILLER & ASSOCIATES
ARCHITECTS & ENGINEERS
HDR Engineering, Inc.
JOB # 3416
CITY OF PRESCOTT

Appendix B – Programming Site and Building Plans

- EXISTING SITE PLAN
- TRANSFER STATION FLOOR PLAN - NEW
- SANITARY SEWER AND WATER SITE PLAN
- DRAINAGE SITE PLAN
- PAVING PLAN
- CONDUIT AND SITE LIGHTING PLAN
- FENCING PLAN



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PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

EXISTING SITE PLAN

8 MARCH 2005

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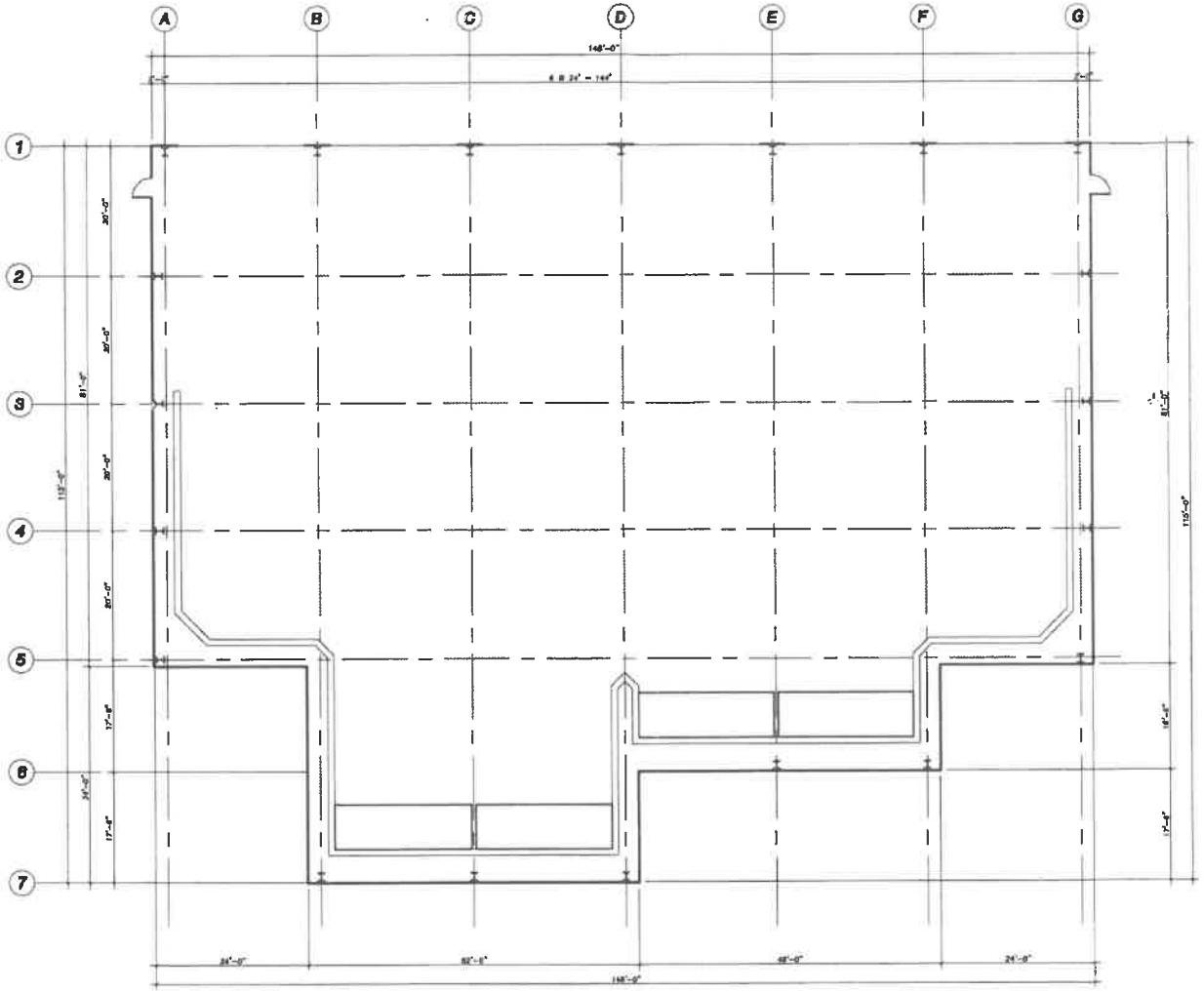


PRESCOTT TRANSFER STATION

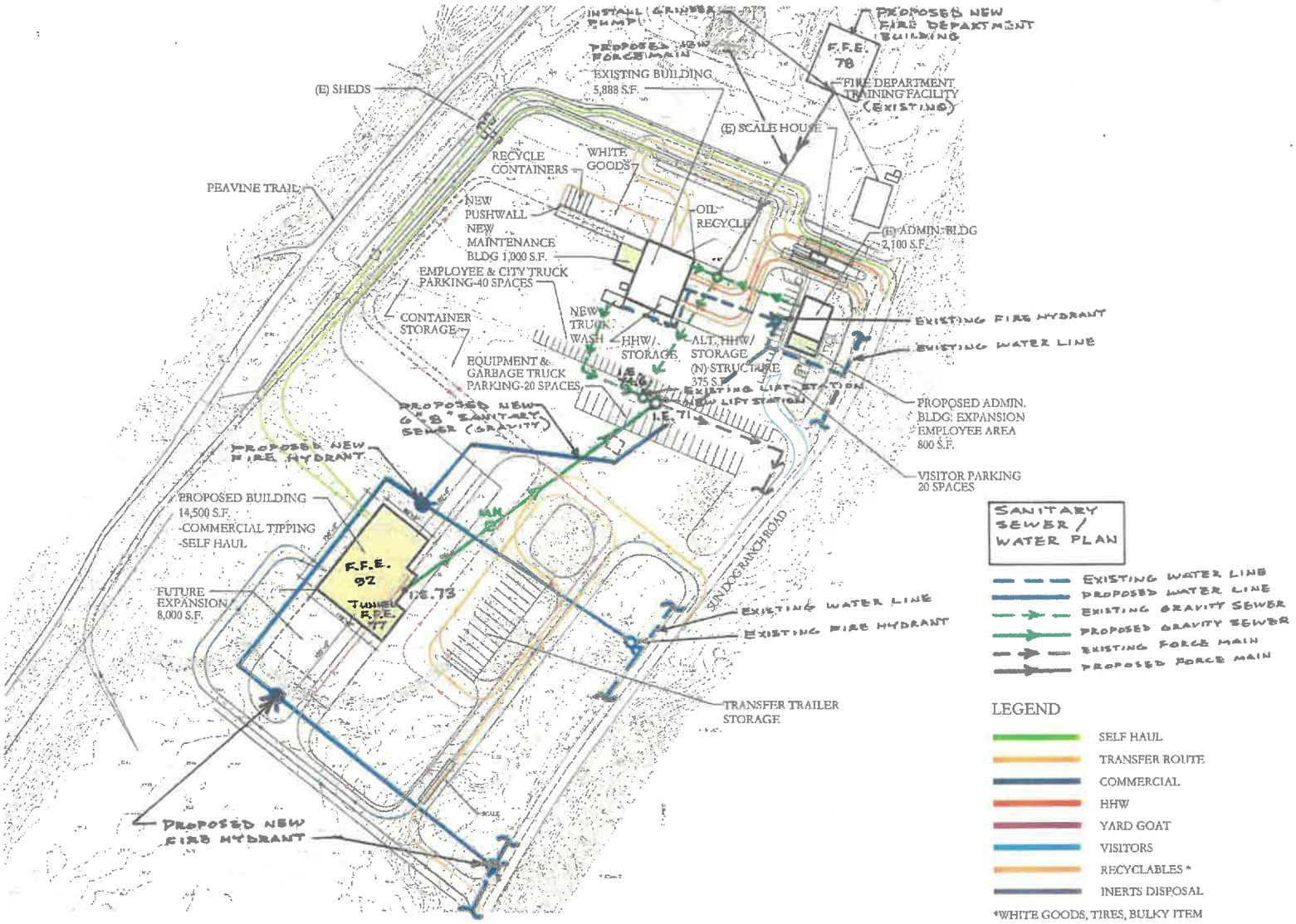
SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

FLOOR PLAN OPTION 6

1 MARCH 2005

IRMA J.R. MILLER & ASSOCIATES ARCHITECTS & ENGINEERS
 JOB # 3416
CITY OF PRESCOTT

HDR HDR Engineering, Inc



PRESCOTT TRANSFER STATION

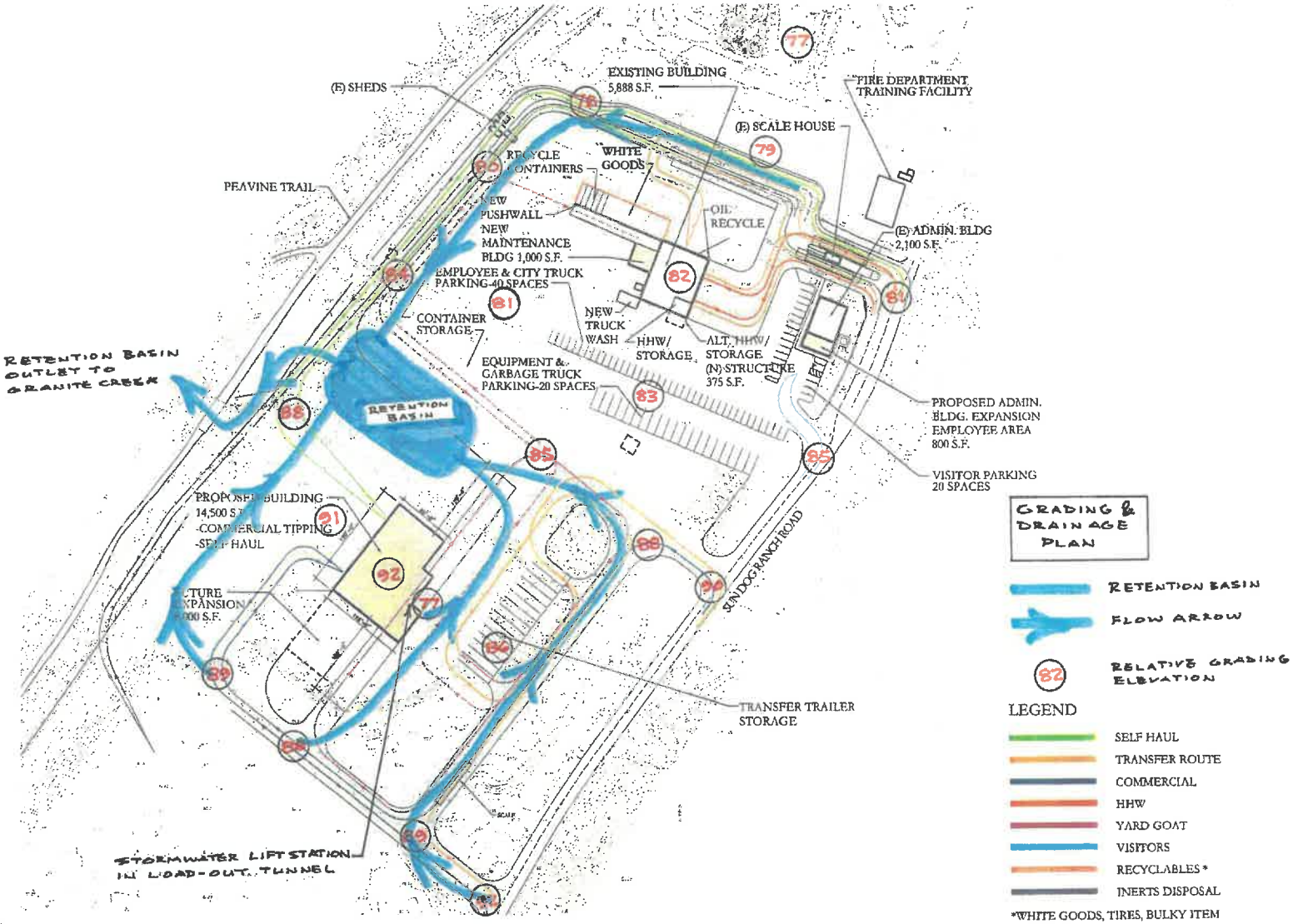
SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

SITE PLAN

APRIL 2005

JRMA J.R. MILLER & ASSOCIATES ARCHITECTS & ENGINEERS

JOB # 3416
CITY OF PRESCOTT
HDR HDR Engineering, Inc.



PRESCOTT TRANSFER STATION

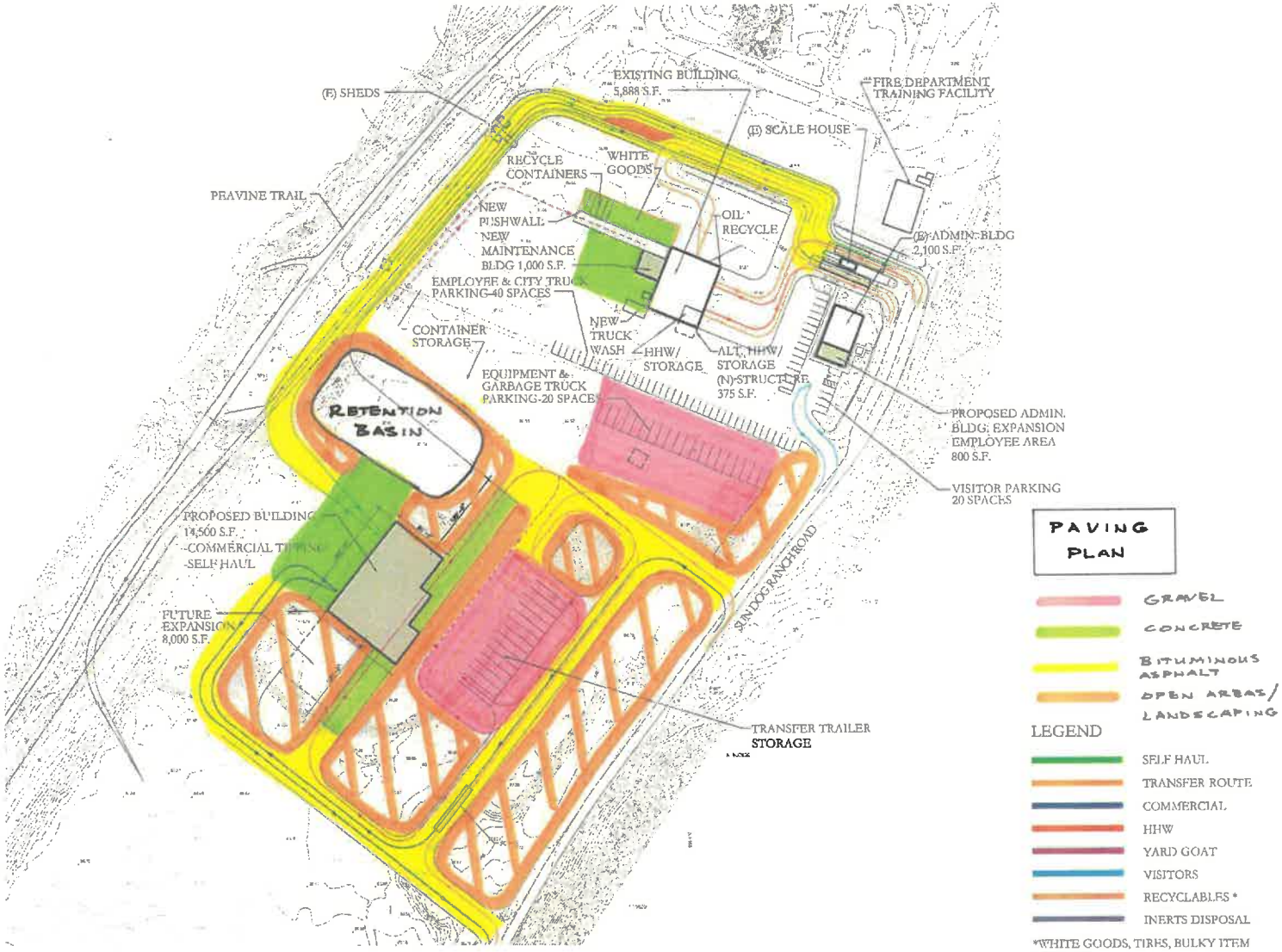
SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

SITE PLAN

APRIL 2005

JR MILLER & ASSOCIATES ARCHITECTS & ENGINEERS

JOB # 3416
CITY OF PRESCOTT
HDR Engineering Inc



PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

SITE PLAN

APRIL 2005

IRMA J.R. MILLER & ASSOCIATES ARCHITECTS & ENGINEERS
 JOB # 3416
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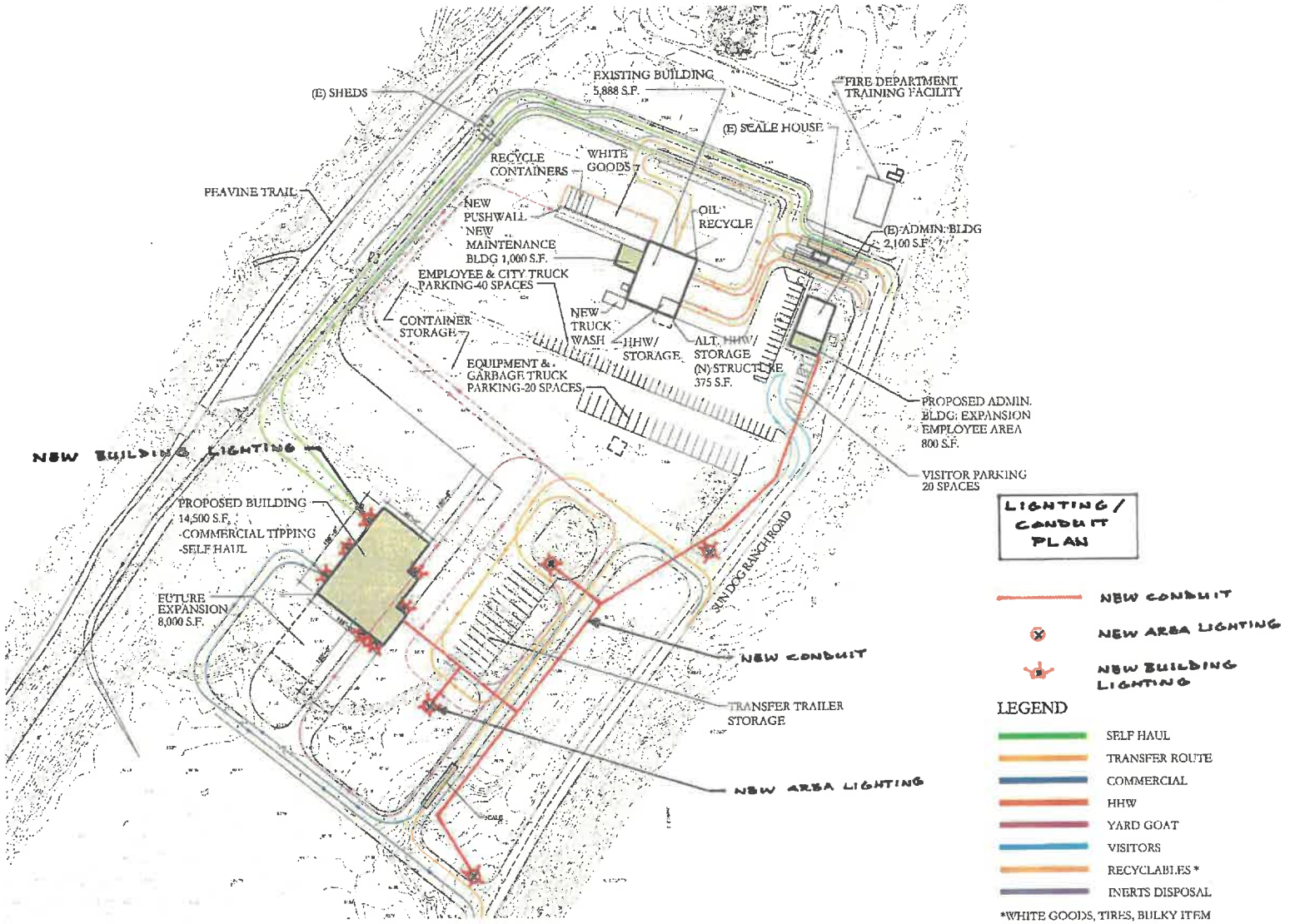


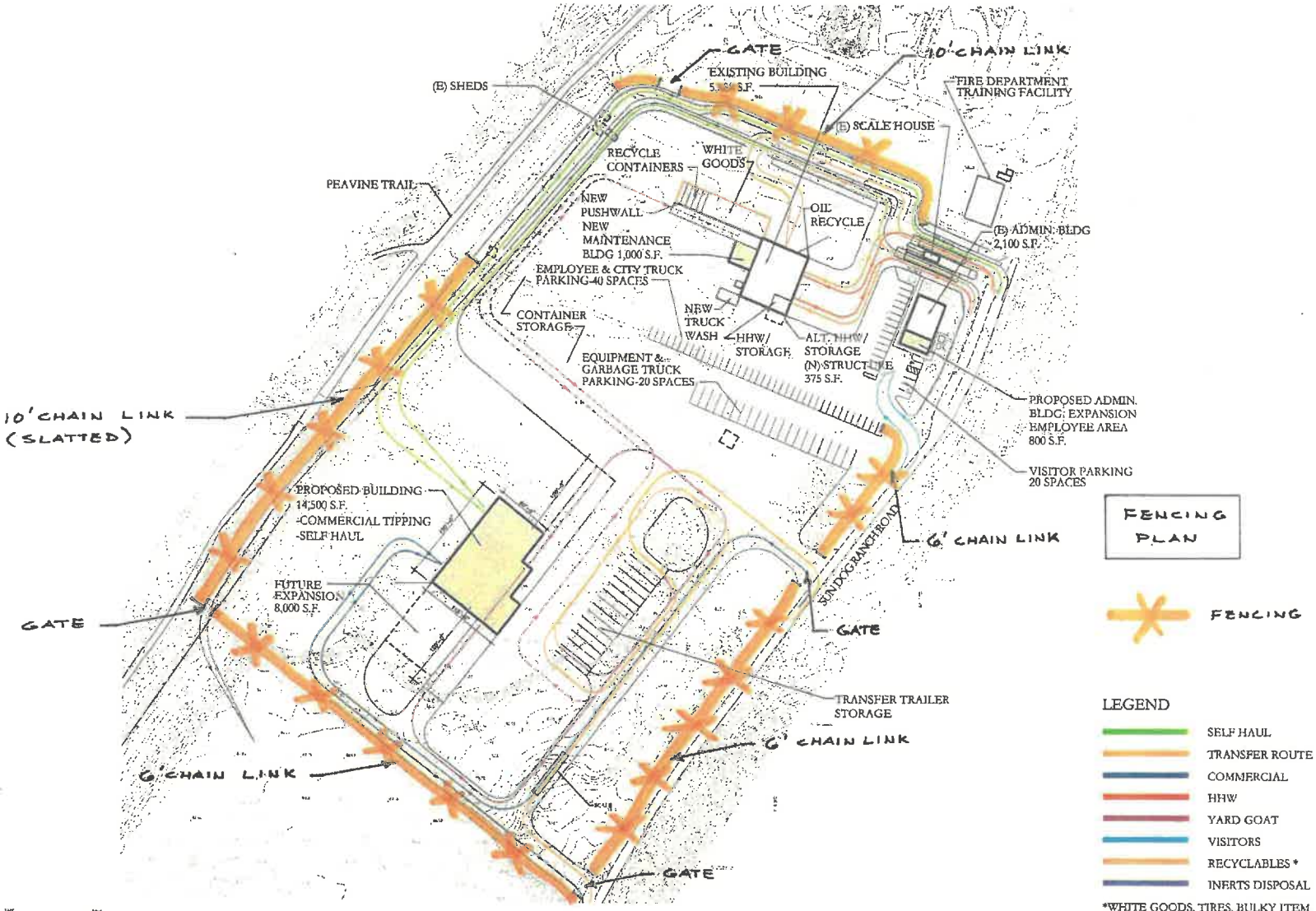
PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

SITE PLAN

APRIL 2005

JR MILLER & ASSOCIATES ARCHITECTS & ENGINEERS
JOB # 3416
HDR Engineering, Inc.
CITY OF PRESCOTT



PRESCOTT TRANSFER STATION

SUN DOG RANCH ROAD
PRESCOTT, ARIZONA

SITE PLAN

APRIL 2005

JRMA J.R. MILLER & ASSOCIATES ARCHITECTS & ENGINEERS
 JOB # 3414
CITY OF PRESCOTT
HDR HDR Engineering, Inc.

Appendix C – Geotechnical Report

ENGINEERING & TESTING CONSULTANTS, INC.

March 11, 2005

Mr. Shane R. Womack, P.E.
HDR Engineering, Inc.
3200 E. Camelback Road, Ste. 350
Phoenix, AZ 85018-2311

SUBJECT: PRELIMINARY GEOTECHNICAL OBSERVATION FOR PRESCOTT WASTE TRANSFER STATION, PRESCOTT, ARIZONA

Dear Mr. Womack:

As requested, Engineering & Testing Consultants, Inc., (ETC) has prepared this letter to provide our preliminary conclusions for the subject project.

ETC has performed one boring and three test pits in the area of the proposed transfer station building. Additional borings and test pits have been performed at other areas in the development for additional elements of the project.

The proposed transfer station is located on an inert landfill operated by the City. Throughout the last several years, material has been placed in the area and moved around with a D9 dozer.

The subsurface conditions encountered consist of approximately 9 to 10 feet of loose, granular, fill material with a significant amount of various construction debris. The fill is underlain by layers of soft sandy clay (USCS classification CL), and loose, fine to medium-grained sand (SP). The existing soils are similar throughout the development.

A water table was encountered at a depth of approximately 20 feet below existing grade in the landfill area. Water was also encountered at higher elevations within the layers of sand. ETC understands that the bottom of the scale pits will be 20 feet below finished floor elevation.

ETC understands that the design team desires conventional, spread foundations for support of building elements. Therefore, over-excavation and replacement of the soft soils along with ground water mitigation are the key elements in our current design approach.

417 NORTH ARIZONA STREET
PRESCOTT, ARIZONA 86301
928-778-9001 • FAX 928-778-4866

440 SOUTH 7TH STREET
COTTONWOOD, ARIZONA 86326
928-639-3553 • FAX 928-639-1552

Removal and replacement of the existing fill to a depth of at least 5 feet below bottom of footing elevations should be sufficient for the main portion of the transfer station. The inert fill may be used for backfill provided that it is adequately screened to remove over-sized pieces.

The fills and soft existing soils are not suitable for direct support of foundations or floor slabs. Therefore, for the pit we are currently looking at over-excavating below the bottom of the scale pits to install a thick gravel drainage layer with perforated drain lines. Geogrid and fabric will also be used to help stabilize foundation soils and prevent fines from entering the drainage layer.

In the area of the pit, large volume pumps, drainage trenches, or a combination of both will be required to dewater the deep pit excavation during construction. Maximum allowable footing pressures will be on the order of 1,500 to 2,000 psf.

For adequate support of pavement structures, ETC anticipates that the existing soils shall removed and compacted to a depth of at least 18 inches below finished subgrade elevation. Also, a biaxial geogrid should be used in areas with unstable subgrade.

For your use. If you have any questions or concerns, please contact us at (928) 778-9001.

Sincerely,

ENGINEERING & TESTING CONSULTANTS, INC.

Richard G. Kelley, P.E.
Project Manager

Attachments: Field Exploration Logs and photographs

cc: ETC File No. 4801

GENERAL NOTES

DESCRIPTIVE SOIL CLASSIFICATION:

Soil Classification is based on the Unified Soil Classification System and ASTM Designations D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: Clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

N-Blows/ft.	Consistency
0-2	Very Soft
3-4	Soft
5-8	Medium
9-16	Stiff
17-32	Very Stiff
33+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft.	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL:

Description Term(s) (of Components Also Present in Sampling)	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY:

Major Component of Sampling	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES:

Description Term(s) (of Components Also Present in Sampling)	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

UNIFIED SOIL CLASSIFICATION SYSTEM*

				Soil Classification	
				Group Symbol	Group Name [B]
COARSE-GRAINED SOILS More than 50 % retained on No. 200 sieve	Gravels More than 50 % of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5 % fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]	GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]	GP	Poorly graded gravel[F]
		Gravels with Fines More than 12 % fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H,]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50 % or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5 % fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]	SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]	SP	Poorly graded sand[I]
		Sands with Fines More than 12 % fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
FINE-GRAINED SOILS 50 % or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12 % fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D] Sands with 5 to 12 % fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15 % sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15 % gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.

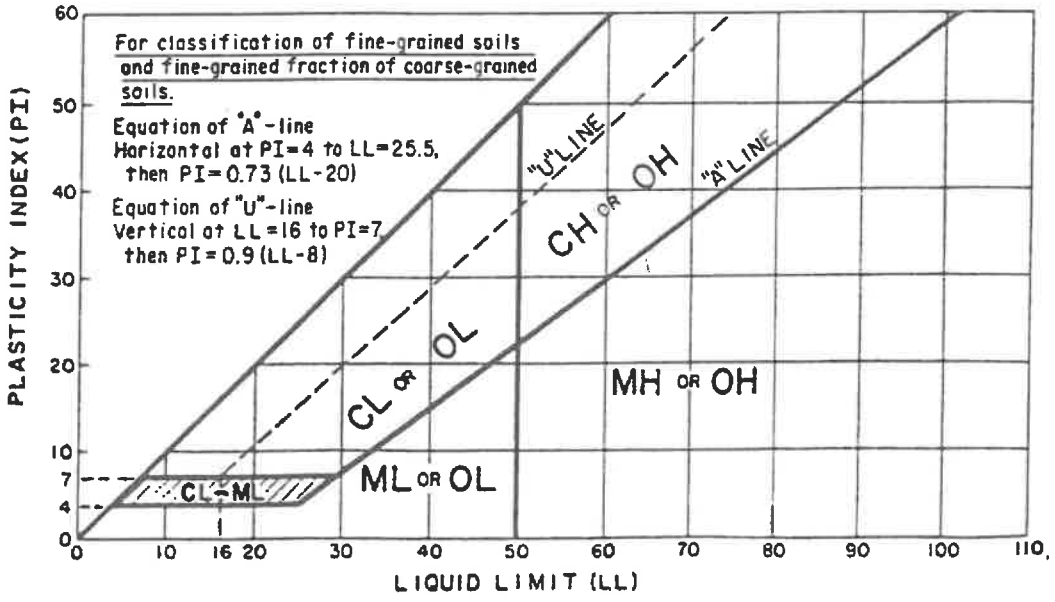
[M] If soil contains ≥ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



* ASTM 1996

LOG OF BORING NO. B-1

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station | PROJECT NO.: 4801
CLIENT: HDR Engineering, Inc. | DATE: 01/05/2005
LOCATION: See Boring Location Map | ELEVATION: ---
DRILLER: EDI | LOGGED BY: MW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS: Plastic Limit — Liquid Limit; Water Content –; Penetration – (10 20 30 40 50)	Remarks
	BASE COURSE MATERIAL	ABC				
	SILTY CLAYEY SAND, dark brown, moist, loose	SM-SC				6 blows for 12"
	CLAYEY SAND, brown, moist, loose	SM				
4						
	SAND, brown, moist, loose	SP				5 blows for 12", unrecoverable
8	CLAYEY SAND, dark brown, moist, high clay fines	SC				with thin layers of clean fine sand
						SPT=2/2/2
12	very moist to moist					
	SAND WITH GRAVEL, coarse sand, saturated.	SP				SPT=4/4/3
16						
20						SPT=4/5/2
	with some cobbles and larger gravel					
24						
	SAND, coarse, saturated	SP				SPT=1/1/2
	with thin layers of grey clay					
28						

LOG OF BORING NO. B-1

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station
CLIENT: HDR Engineering, Inc.
LOCATION: See Boring Location Map
DRILLER: EDI
DRILLING METHOD: Continuous Flight Auger

PROJECT NO.: 4801
DATE: 01/05/2005
ELEVATION: ---
LOGGED BY: MW

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
						SPT=6/9/15
32	Boring terminated at 31.5' depth.					
36						
40						
44						
48						
52						
56						
60						

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF BORING NO. B-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station | PROJECT NO.: 4801
CLIENT: HDR Engineering, Inc. | DATE: 01/05/2005
LOCATION: See Boring Location Map | ELEVATION: ---
DRILLER: EDI | LOGGED BY: MW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
	ASPHALTIC CONCRETE	AC				
	BASE COURSE MATERIAL	ABC				
	CLAYEY SAND, dark brown, moist, loose	SC				
4	with layers of fine sand, very loose					4 blows for 12"
8	very loose					SPT=2/1/2
12						
16	CLAYEY SAND, dark brown, saturated, very loose, with layers of fine sand	SC				SPT=1/2/1
20	SAND, brown, very fine, saturated	SP				SPT=0, weight of hammer/rods
24						
	SAND, brown, some gravel, fine to med. coarse	SP				SPT=3/3/10, tube packed full
	with thin layers of grey clay					
28						

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF BORING NO. B-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station
CLIENT: HDR Engineering, Inc.
LOCATION: See Boring Location Map
DRILLER: EDI
DRILLING METHOD: Continuous Flight Auger

PROJECT NO.: 4801
DATE: 01/05/2005
ELEVATION: ---
LOGGED BY: MW

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
						SPT=3/6/8, tube packed full
32	Boring terminated at 31.5' depth.					
36						
40						
44						
48						
52						
56						
60						

LOG OF BORING NO. B-3

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station		PROJECT NO.:	4801
CLIENT: HDR Engineering, Inc.		DATE:	01/05/2005
LOCATION: See Boring Location Map		ELEVATION:	---
DRILLER: EDI		LOGGED BY:	MW
DRILLING METHOD: Continuous Flight Auger			

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS: Plastic Limit — Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50	Remarks
	SILTY CLAYEY SAND, brown, moist, loose	SM-SC				
	CLAYEY SAND, dark brown, moist, with layers of sand, loose	SC				
4	very loose					7 blows for 12"
8	SAND, brown, fine to medium coarse, moist	SP				SPT=2/1/2
12	CLAYEY SAND, dark brown, high clayey fines, moist to very moist, loose	SC				
16	LAYERS OF CLAYEY SAND AND SAND	SC				SPT=1/3/7
	SAND, brown, very moist, some gravel	SP				
20 ▽	SAND WITH GRAVEL, brown, coarse, saturated	SP				SPT=3/12/12
24						SPT=4/5/6
28	Boring terminated at 26.5' depth.					

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF BORING NO. B-4

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station — PROJECT NO.: 4801
CLIENT: HDR Engineering, Inc. — DATE: 01/05/2005
LOCATION: See Boring Location Map — ELEVATION: ---
DRILLER: EDI — LOGGED BY: MW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content –●–; Penetration ▨; 10 20 30 40 50)	Remarks
	CLAYEY SAND, brown/dk brown, medium dense, damp to moist, some gravel	SC				
4	moist, increased clay fines					28 blows for 12"
8	SILTY SAND, brown, damp, very loose	SM				SPT=1/2/1
12	with layers of clean sand and gravel					SPT=3/2/2
16	SANDY CLAY, dark brown, very moist, soft	CL				
20 ▽	LAYERS OF SILTY SAND, CLAY, CLAYEY SAND, moist to very moist	SC				SPT=2/1/2
	SANDY CLAY, dark brown, very moist	CL				
24	SAND, fine to medium coarse, some gravel, damp to moist	SP				SPT=6/6/4
28	Boring terminated at 26.5' depth.					

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF TEST PIT NO. TP-1

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT:	Waste Transfer Station	PROJECT NO.:	4801
CLIENT:	HDR Engineering, Inc.	DATE:	02/23/2005
LOCATION:	See Boring Location Map	ELEVATION:	---
EXCAVATOR:	EDI	LOGGED BY:	MW
EXCAVATION METHOD:	Continuous Flight Auger		

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
	FILL – loose with AC, concrete, pipe, brick, etc.	FILL				
10	SAND, moist, loose to medium dense	SP				
12	SANDY CLAY, brown, saturated	CL				
	Test pit terminated at 13' depth.					
14						

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF TEST PIT NO. TP-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station
CLIENT: HDR Engineering, Inc.
LOCATION: See Boring Location Map
EXCAVATOR: EDI
EXCAVATION METHOD: Continuous Flight Auger

PROJECT NO.: 4801
DATE: 02/23/2005
ELEVATION: ---
LOGGED BY: MW

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS: Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50	Remarks
	FILL – loose with AC, concrete, pipe, brick, etc.	FILL				
10	SANDY CLAY, brown, medium stiff to stiff, very moist	CL				
14	SAND, moist, loose to medium dense	SP				

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF TEST PIT NO. TP-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station
CLIENT: HDR Engineering, Inc.
LOCATION: See Boring Location Map
EXCAVATOR: EDI
EXCAVATION METHOD: Continuous Flight Auger

PROJECT NO.: 4801
DATE: 02/23/2005
ELEVATION: ---
LOGGED BY: MW

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content –●; Penetration –▨; 10 20 30 40 50)	Remarks
	Test pit terminated at 15' depth.					
16						
18						
20 ▽						
22						
24						
26						
28						
30						

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF TEST PIT NO. TP-3

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT:	Waste Transfer Station	PROJECT NO.:	4801
CLIENT:	HDR Engineering, Inc.	DATE:	02/23/2005
LOCATION:	See Boring Location Map	ELEVATION:	---
EXCAVATOR:	EDI	LOGGED BY:	MW
EXCAVATION METHOD:	Continuous Flight Auger		

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
0	FILL – loose with AC, concrete, pipe, brick, metal, etc.	FILL				
8	Test pit terminated at 8' depth.					Test pit caved in.

This information pertains only to this boring and should not be interpreted as being indicative of the site.

LOG OF TEST PIT NO. TP-4

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT:	Waste Transfer Station	PROJECT NO.:	4801
CLIENT:	HDR Engineering, Inc.	DATE:	02/23/2005
LOCATION:	See Boring Location Map	ELEVATION:	---
EXCAVATOR:	EDI	LOGGED BY:	MW
EXCAVATION METHOD:	Continuous Flight Auger		

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢—⊣ Liquid Limit; Water Content – ●; Penetration – ▨; 10 20 30 40 50)	Remarks
	FILL – loose with various debris	FILL				
2	SAND, brown, saturated	SP				
4	SANDY CLAY, brown, soft to medium stiff, with thin layers of sand	CL				
6						
8	SILTY SAND, brown, damp, fine grained,	SM				
10						
12	Test pit terminated at 11' depth.					
14						

LOG OF TEST PIT NO. TP-5

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: Waste Transfer Station
CLIENT: HDR Engineering, Inc.
LOCATION: See Boring Location Map
EXCAVATOR: EDI
EXCAVATION METHOD: Continuous Flight Auger

PROJECT NO.: 4801
DATE: 02/23/2005
ELEVATION: ---
LOGGED BY: MW

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content –●–; Penetration ▨; 10 20 30 40 50)	Remarks
	SILTY CLAYEY SAND, dark brown, moist, loose	SM-SC				
2						
4	SAND, brown, moist, loose	SP				
6						
8	Test pit terminated at 8' depth.					
10						
12						
14						

LOG OF TEST PIT NO. TP-6

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT:	Waste Transfer Station	PROJECT NO.:	4801
CLIENT:	HDR Engineering, Inc.	DATE:	02/23/2005
LOCATION:	See Boring Location Map	ELEVATION:	---
EXCAVATOR:	EDI	LOGGED BY:	MW
EXCAVATION METHOD:	Continuous Flight Auger		

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS	Remarks
	SANDY CLAY, brown, very moist, soft to medium stiff	CL			Plastic Limit — Liquid Limit; Water Content –; Penetration –; 10 20 30 40 50	
6	SAND, brown, moist, loose to medium dense	SP				
8	Test pit terminated at 8' depth.					

This ... nation ... this ... and should not be interpreted as being indicative of the site.

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Aggregate base course
	Poorly graded clayey silty sand
	Silty sand
	Poorly graded sand
	Clayey sand
	Paving
	Low plasticity clay
	Fill
Misc. Symbols	
	Water table during drilling
Soil Samplers	
	Bulk sample taken from 8 in. auger
	Ring Sampler 3"O.D.

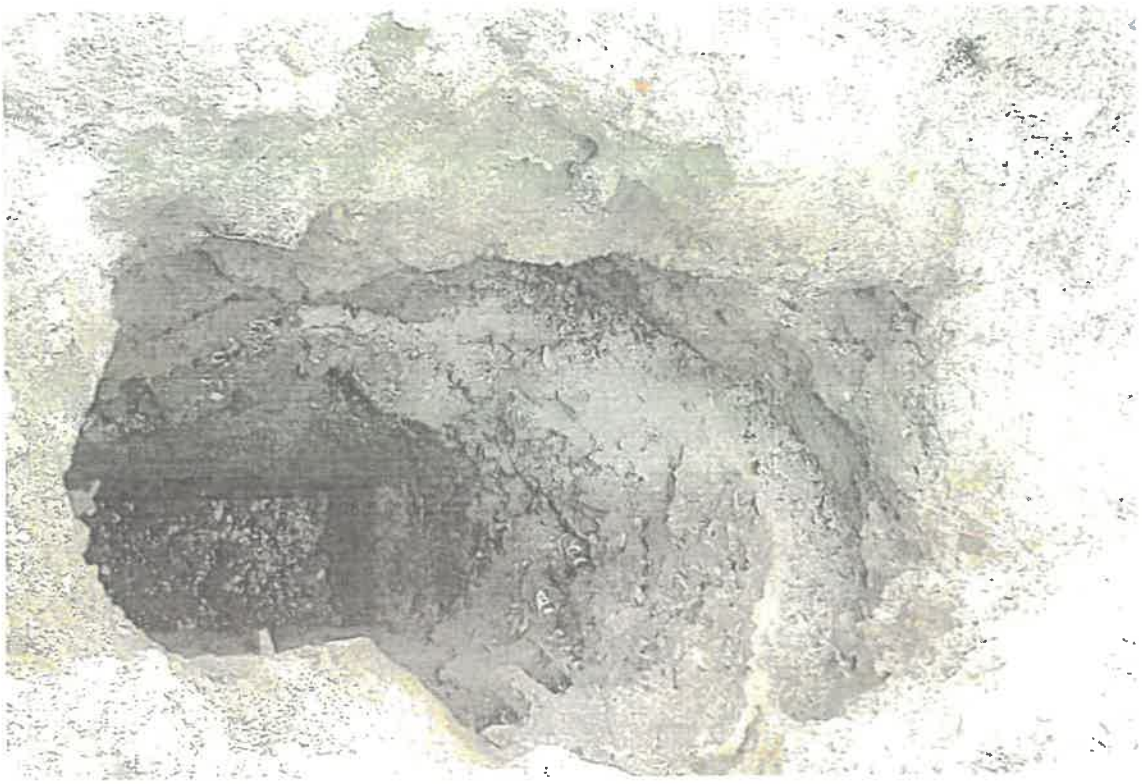
Symbol	Description
	Standard penetration test

Notes:

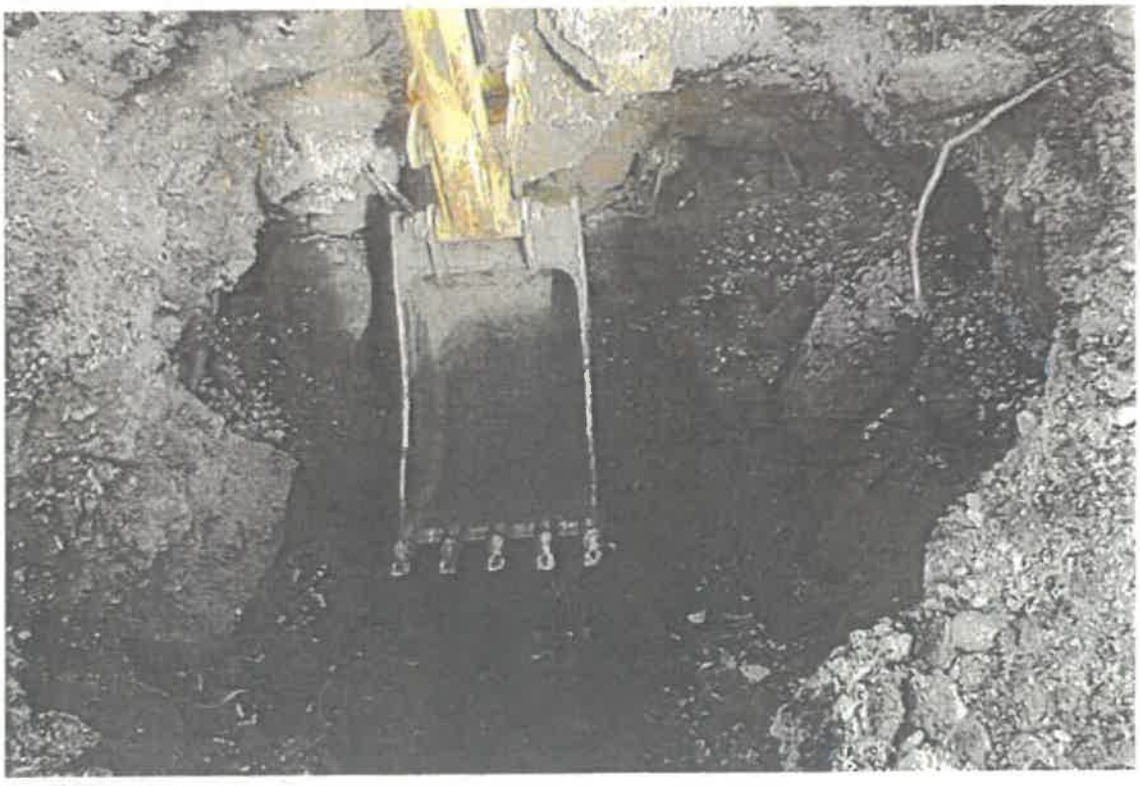
1. Exploratory borings were drilled on 02/23/2005 using 8-inch diameter hollow-stem auger.
2. A water table was encountered in the borings as noted on the logs.
3. Borings were located by measuring distances and right angles from a preliminary site plan.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.

INERT DEBRIS LANDFILL LOOKING WEST 2/23/05

TEST PIT NO. 1



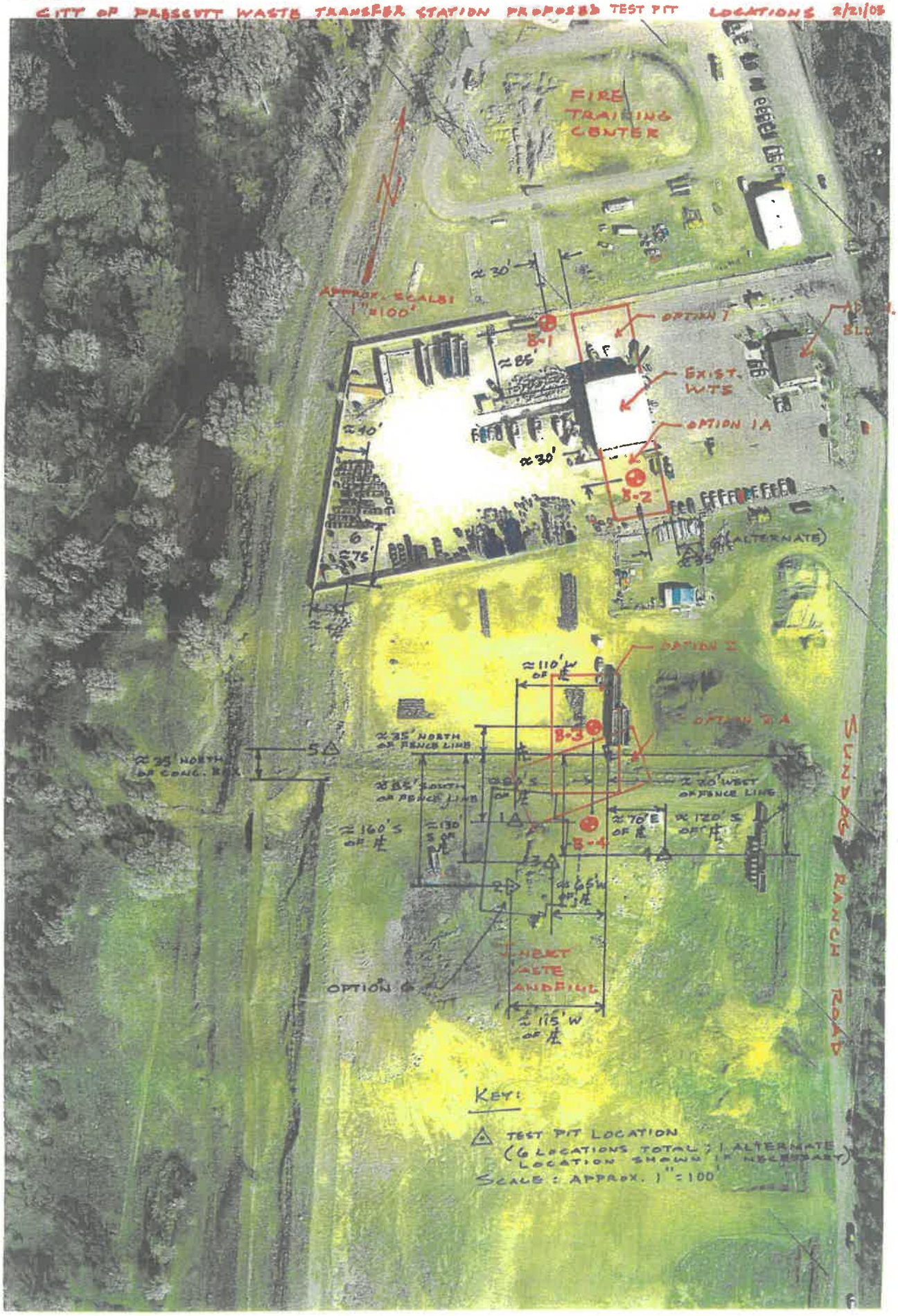
TEST PIT NO.2



TEST PIT NO.3

CITY OF PRESCOTT WASTE TRANSFER STATION PROPOSED BORING LOCATIONS 12/20/0

CITY OF PRESCOTT WASTE TRANSFER STATION PROPOSED TEST PIT LOCATIONS 2/21/05



Appendix D – Programming Sizing Calculations & Assumptions

Basis of Design Memorandum

City of Prescott
Transfer Station/Solid Waste Facilities
Assumptions Developed During Master Planning

Date: 2/18/05
Revision: 3/31/05

1. Operating Schedule

	Days/Week	Hours
• Transfer Station	6	8 AM – 4 PM
• Self-Haul	6	8 AM – 4 PM
• Inert Landfill	6	8 AM – 4 PM
• Tire Recycling	Tues/Thurs	8 AM – 4 PM
• HHW Facility	2 Days/Week	8 AM – 4 PM
• Recycling	6	Late Afternoon/1 Hour
• Glass Crusher	1	8 AM – 4 PM
• Transfer Vehicles (distance to landfill) – 28 Miles. (Store 10 vehicles on-site)	6 Days/Week	7 AM – 2 PM

2. Waste Characteristics/Traffic Volumes

	Current (2004) Population = 40,000*	Based on 2025 Population = 78,000 Design (20 Years)
• Commercial Tonnage/Vehicles.		
– Peak Daily Tonnage.	295 (10/11/04)	575
– Average Daily (Weekday) Tonnage.	210	410
– Peak Hour Tonnage.	59 (20%)	115
– Peak Vehicles/Day.	50 (6 Tons/Vehicle)	98
– Number of Vehicles/Peak Hour.	10	20
• Self-Haul		
– Peak Daily Tons.	125 tons (7/26/04)	244
– Average Daily Tonnage.	45 tons	88
– Peak Daily Vehicles.	360	702
– Peak Hour Vehicles.	70	136
– Number of Unloading Bays.	6	10
– Unloading Time.	20 minutes	20 minutes
– Number of Vehicles Unloaded/Hour.	18 vehicles	30 vehicles
– Queuing Distance	100 feet	800 feet
– Number of Vehicles Queued On-Site	4	32
• Recyclables		
– Average Daily Tonnage	12**	20

* *City of Prescott Population, Including Service Areas*
** *Includes residential and commercial (trial program).*

3. Transfer Station (Initial Assumptions)

- Exterior Maneuvering will be provided.
- Floor Storage of Waste will be provided (half-day)
- Self-Haul customers will unload inside.
- Packer trucks and roll-offs need to be accommodated.
- Does the City want a hot load/unloading pad outside the building prior to entering the building? No.
- What provisions should be made on the tipping floor for manual recovery of selective materials?
- Transfer Technology Option.
  - Waste from piles on tipping floor through floor openings into open top trailers.
- Transfer Port Configuration Option (2 Ports Provided) – Identify Options.
  - Offset loadout ports with separate transfer vehicle drive through lane for each port.
  - Separate tunnels.

- Scales Under Transfer Ports.
  - Axle scales (Because yard jockey is used, the totalizer is not needed).
  - Anticipate 2 scales.
  - Provide easy access/maintenance.
- Prevailing Winds – Consider type of doors and placement of doors.
- Method of filling transfer trailers. Tractor trailers traveling directly to disposal site.
- Provide lockers/showers in addition to administration building.
- Consider lighting in Transfer Station (Daylight to interior).
- Reinforced concrete or steel push/containment walls? Concrete with steel plate preferred.
- Tipping Floor (concrete types) Options? City currently uses Anvil Top. City is open to options.
- Video monitors on-site? Yes
- Ventilation and Odor Control Options
  - Natural ventilation with no mechanical equipment.
  - Roof exhaust fans.
  - Neutralizing agent spray for odor control? No.
  - Water spray for dust control? No.
- Ceiling clearance – 30 feet at commercial.
- Design should address number and arrangement of load-out ports, prevention of trash spilling, maintenance of load-out scales, size of transfer trailers, and time to shuttle transfer trailers.
  - Segregate Self Haul from Commercial Traffic.

4. **Entry / Exit Scale Facility – Keep existing scales (2)**
   - All vehicles are weighed in-bound and out-bound, except certain commercial trucks.
   - Does the City have a preference for handling transactions? Scale House attendance, plus card reader for City trucks.
   - What customers does the City envision outbound weighing? All vehicles.
   - How long is a typical transaction at the City's existing scale facilities? (30-60 Seconds)
   - What type of space needs to be provided in the scale house? Adequate as-is.
   - Are low profile, above ground, pit-less scales acceptable for scale house operations? Yes. (No changes at this time)
   - Construct bypass lane to avoid scales? Already exists.
   - Install traffic lights at scale? Already exists.
   - Scale software to be upgraded by City.
5. **Administration Building**
   - An 800 S.F. addition to the south of the existing Administration Building will be planned. This will house an employee area and a public restroom (with outside access only).
6. **HHW Facility**
   - Type of Materials? Paint/pesticides/batteries/household cleaners (minimize flammables).
   - Storage Only?
   - Types of Processing? Batching.
   - Resale?
   - Staffing? 1½
   - The south bay of the existing Transfer Station will be used for HHW. A roll-up door will be added to the east wall and 2 entry doors will be added to the south wall.
   - Consider operating HHW 2 days/week.
7. **Employee and Visitor Parking Lot(s)**
   - Number of employees to accommodate? 25 spots.
   - Number of visitors to accommodate? 30 spots.
   - Other City vehicles? 10.
   - Garbage Trucks/Equipment – 20 (Desire outlets for truck engineer block heaters in parking lot).
8. **Transfer Trailer Parking**
   - Number of trucks/trailers? 5 trucks/15 trailers.
   - Concrete or bituminous? Bituminous except for turning areas.
9. **Scrap Metal Area**
   - Size required? 100' x 100' (maybe 150' x 150').

10. **Glass Crusher**
    - Size required for Operation?
    - Location limitations?
    - 3 phase power required (44V dedicated line).
    - At 11/29 meeting it was decided that glass operation would not be relocated to Transfer Station site.
11. **Tire Recycling**
    - Size required for operation? 5 – 7 acres.
    - Location Limitations? None.
    - Consider moving tire recycling to south end of inert landfill.
12. **Inert Landfill**
    - Limits of fill? As shown on aerial.
    - Depth of Fill? About 10 feet.
    - Filling Rate? Have filled about 2 acres in 8 years.
    - Air Burner? Will be relocated near the inert landfill. Burning may be discontinued in the future.
13. **Recycle Bins**
    - Type of Materials? Cardboard, aluminum, paper.
    - Number/Size of Bins? 4.
    - Repair of Bins? At transfer site.
    - Location Limitations? Keep close to maintenance area.
14. **Oil Recycle**
    - Number/Size? Install 300 gallon tank – keep close to HHW.
15. **Vehicle Maintenance Building**
    - Types of Service?
    - Keep close to Tipping Floor?
    - At 1/31/05 meeting, it was decided to add a 1,000 S.F. metal building west of the existing Transfer Station to serve as a maintenance building. The City will build this facility.
16. **Truck Wash**
    - Drive Through? Yes, add catwalks to allow drivers access to wash trucks.
    - Power Washer? Yes.
17. **Fueling Station**
    - Types of Fuel? Diesel.
    - Amount of Fuel? 2,500 gallons.
18. **Stockpiles** – will be eliminated from site.
19. **Utilities**
    - Storm – Collection/Transport/Retention? SWPP required.
    - Sanitary – Collection/Pumping? Existing Lift Station on-site.
    - Water – Distribution?
    - Fire – Fire Lines/Hydrants/Sprinklers? 2 existing hydrants on-site.
    - Irrigation – City does not use reclaimed water.
    - Power? APS (Rot-phase currently; will need 3-phase power).
    - I.T.? Fiber optics already on-site (to Administration Building).
20. **Site Roadways & Signage**
    - Concrete roadways for heavy truck traffic.
    - Use bituminous except where turning movements (6" over 12").
    - Curb and gutter? Yes.
    - Minimize crossings? Yes.
    - Maximize separation of Self-Haul traffic from truck traffic? Yes.
    - Maximum roadway grades of 8% for collection and transfer trucks? Yes.
21. **Site Security Fence**
    - Use 10' chain link-slatted fence along Peavine Trail. Use 10' chain link fence along fire department property. Use 8' chain link fence along Sun Dog Ranch Road.

22. **Pedestrian Pathways**
    - Walks/Striped Walkways? None on-site.
    - Lighting? Place in parking lots and near Transfer Station.
    - Protective Walls/Bollards? Use 8" bollards.
    - Signage? Yes, signs desired, as well as striping/pavement markings for directional control.
23. **Site Restriction**
    - Height Restrictions?
    - Set-back Restrictions?
    - Noise Restrictions?
    - Odor Restrictions?
24. **Priorities of Construction Phasing**
    - Transfer Station? 1
    - Recyclables? 2
    - HHW? 3
25. **Landscape**
    - Visual Screening to West & East? Yes.
26. **Contracts/IGA's**
    - Identify requirements of current contracts for hauling and recyclables. City has hauling contract with T&H, disposal contract (WMI), and IGA with Flagstaff for recyclables.
27. **Staffing**
    - Identify existing and future staffing.

Appendix E – Cost Estimate

	Prescott Waste Transfer Station Master Plan - Opinion of Probable Cost [1]				
Item No.	Description	Quantity	Unit	Cost / Unit	Item Total
1	**Buildings**				
1.01	New Transfer Station Building	14,500	SF	$53.00	$768,500.00
1.02	Tunnels / Loadout Ports / Ramps / Retaining Walls / Push Walls [2]	2	L.S.	$682,503.00	$682,503.00
1.03	Truck Wash Area Retro-fit and Catwalks (By Owner)	1	L.S.	$10,000.00	$10,000.00
1.04	Building Pads [3]	2,000	CY	$15.00	$30,000.00
2	**Mechanical Systems (New Building - HVAC, Plumbing, Fire Sprinkler) @ 17% of Item 1.01**	1	L.S.	$130,645.00	$130,645.00
2.01	Commercial Scale and Card Reader	1	L.S.	$85,000.00	$85,000.00
2.02	Tunnel Scale, Card Readers, and Scoreboards	2	L.S.	$95,000.00	$190,000.00
3	**Electrical Systems (New Building - Info. Tech. Systems / Security) @ 15% of Item 1.01**	1	L.S.	$115,275.00	$115,275.00
4	**Sitework**				
4.01	Surveying	1	L.S.	$40,000.00	$40,000.00
4.02	Geotechnical / Materials Testing	1	L.S.	$40,000.00	$40,000.00
4.03	Earthwork	25,000	CY	$8.00	$200,000.00
4.04	Site Utilities				
4.04.1	Sanitary Sewer	500	LF	$35.00	$17,500.00
4.04.2	Sanitary Sewer Lift Station (Approx. 18 Feet Deep)	1	L.S.	$60,000.00	$60,000.00
4.04.3	Sanitary Sewer Manhole (10-12 Feet Deep)	1	L.S.	$6,000.00	$6,000.00
4.04.4	New Fire Department Building Grinder Pump System	1	L.S.	$10,000.00	$10,000.00
4.04.5	New Fire Department Building Force Main (Assume 3" PVC)	350	LF	$4.50	$1,575.00
4.04.6	Water (4" Ductile Iron Pipe (DIP) + Appurtenances)	500	LF	$30.00	$15,000.00
4.04.7	Fire System (6" (DIP) + Appurtenances)	1,750	LF	$40.00	$70,000.00
4.04.8	Fire Hydrants & Appurtenances	5	L.S.	$1,750.00	$8,750.00
4.04.9	Stormwater	1	L.S.	$10,000.00	$10,000.00
4.04.10	Stormwater Lift Station	1	L.S.	$20,000.00	$20,000.00
4.05	Asphalt Paving	41,500	SF	$2.50	$103,750.00
4.06	Concrete Paving	61,000	SF	$4.50	$274,500.00
4.07	Gravel Areas & Roads	5,350	SY	$9.00	$48,150.00
4.08	Landscaping / Irrigation	1	L.S.	$50,000.00	$50,000.00
4.09	Retaining Walls	1	L.S.	$10,000.00	$10,000.00
4.10	Guardrails & Bollards	1	L.S.	$20,000.00	$20,000.00
4.11	Conduit	1,700	LF	$3.50	$5,950.00
4.12	Site Lighting	1	L.S.	$20,000.00	$20,000.00
	Subtotal Items 1-4				$3,043,098.00
5	**Permits, Taxes, & Performance Bonds (All @ 10% of Items 1-4 Subtotal)**				$304,309.80
Total					$3,347,407.80
Total Opinion of Probable Cost Range (@-10% Low to +20% High)			**$3,012,667.02**	**to**	**$4,016,889.36**

Notes:

[1] This Opinion of Probable Cost does not include the widening of Sun Dog Ranch Road, replacement of the existing 3-inch force main (if necessary), replacement of the existing 6-inch water line on Sun Dog Ranch Road (if necessary), or signing and striping of the site

[2] This cost does not include the costs of waterproofing within the tunnel areas; the need for waterproofing will be confirmed during more detailed geotechnical investigation of the proposed transfer station building location during the Design phase; This cost does include costs for two tunnels

[3] Building pads are assumed to be 3 feet in thickness based on the recommendations within the Geotechnical Report; See Appendix C

	Bid Alternate Items				
Item No.	Description	Quantity	Unit	Cost / Unit	Item Total
1	**Buildings**				
1.05	Employee Building Addition (onto Existing Administration Building)	800	SF	$125.00	$100,000.00
1.06	Household Hazardous Waste Area Retro-fit	1	L.S.	$50,000.00	$50,000.00
2	**Mechanical Systems (Existing T.S. Building) @ 22% of Items 1.05 / 1.06**				
2.03	Plumbing System Retro-fit for HHW & Employee Building	1	L.S.	$33,000.00	$33,000.00
3	**Electrical Systems (Existing T.S. Building) @ 20% of Items 1.05 / 1.06**				
3.01	Retro-fit for HHW & Employee Building Addition	1	L.S.	$30,000.00	$30,000.00
4	**Sitework**				
4.13	Fences and Gates (Approx. 1550 LF @ $20/LF & 4 Gates @ $8K / Gate)	1	L.S.	$63,000.00	$63,000.00
4.14	On-site Fuel Tank (Replace Existing)	1	L.S.	$20,000.00	$20,000.00
	Subtotal Bid Alternate Items 1-4				$296,000.00
5	**Permits, Taxes, & Performance Bonds (All @ 10% of Items 1-4 Subtotal)**				$29,600.00
Total					$325,600.00
Total Opinion of Probable Cost Range (@-10% Low to +20% High)			**$293,040.00**	**to**	**$390,720.00**