

WASTE NOT: PLANNING THE WASTE OUT OF WASTE TRANSFER

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ABSTRACT

This paper discusses the interactive approach used by the King County Solid Waste Division (KCSWD) to develop a Facility Master Plan (FMP) for replacement of their Factoria Transfer Station. The existing station is part of King County's network of facilities where garbage from commercial and self-haul customers is consolidated for transport to a distant disposal location. The existing 1960s-era facility is planned for replacement because its capacity has been exceeded and it does not meet several level of service (LOS) criteria established by KCSWD for their transfer stations. Implementation of the FMP also enables KCSWD to achieve several important goals including significantly increasing recycling opportunities, providing efficient waste handling and processing operations, and decreasing adverse environmental and neighborhood impacts.

In preparing the FMP, KCSWD considered more than 20 alternative site plans and vigorously engaged key stakeholders, including community members, facility users, and station operators. Input from the stakeholders was directly considered in the selection of the preferred concept for the new facility. KCSWD also developed a Web site (listed below) where interested parties could receive updates and provide comments throughout the project:

<http://your.kingcounty.gov/solidwaste/facilities/factoria-replacement-project.asp#top>

The interactive approach for developing the FMP included several notable activities to gain broad input including:

- Reviewing lessons learned from similar KCSWD projects,
- Holding design workshops with station operators,

- Completing an Eco-charette with KCSWD staff to identify sustainable features,
- Hosting a public open house,
- Meetings with commercial users, and
- Briefings to King County solid waste advisory groups.

This paper will discuss the above activities, project design goals/criteria, concept development process, resulting preferred design concept, and unique features of the project.

INTRODUCTION

"If you want to go fast go alone, if you want to go far go together" – African proverb

The above quote accurately reflects the approach taken by King County (Washington) Solid Waste Division (KCSWD) to prepare a Facility Master Plan (FMP) for replacement of their Factoria Transfer Station. KCSWD prepared the FMP to implement recommendations from the *Solid Waste Transfer and Waste Management Plan* (KCSWD, 2006) and *Final Comprehensive Solid Waste Management Plan* (KCSWD 2001). KCSWD is using the FMP as a guide to replace the Factoria Transfer Station with the new Factoria Recycling and Transfer Station (Factoria RTS)¹. The FMP for the Factoria RTS provides (1) background information regarding the project and project site, (2) development criteria considered for the project, (3) an overview of the process used to evaluate alternative concepts, and (4) a summary of the preferred concept.

¹ In this paper, the existing facility is referred to as the "Factoria Transfer Station". The proposed facility is referred to as the "Factoria RTS".

OVERVIEW OF THE KING COUNTY SOLID WASTE SYSTEM

KCSWD operates a system of eight transfer stations, two drop box facilities, and a regional landfill in King County, Washington. Waste collected throughout King County and from participating cities is hauled to the transfer stations and drop boxes, then transferred into large tractor-trailers and subsequently hauled to the Cedar Hills Regional Landfill (CHRLF) in Maple Valley, Washington. The transfer stations allow for cleaner, safer, and more environmentally friendly solid waste transport by reducing truck traffic on the region's roads. CHRLF is nearing capacity and KCSWD is considering several waste disposal options such as waste export to an out-of-county landfill or disposal in a waste-to-energy facility. Implementation of a future disposal option is a primary driver for KCSWD to upgrade their transfer stations.

FACILITY LOCATION AND BACKGROUND

The existing Factoria Transfer Station is an approximately 16,000-square-foot building located on 8.7 acres in a light industrial area in the City of Bellevue, Washington. The project setting is shown on Figure 1. Commercial haulers, businesses, and residential self-haul customers currently use the station which is open 362 days per year. The proposed Factoria RTS will use the existing 8.7 acre site and 6.9 acres of additional adjacent property owned by KCSWD resulting in a total project area of 15.6 acres.

Transfer Station Level of Service Standards

As shown in Table 1, the Factoria Transfer Station does not currently meet several level of service (LOS) criteria established by the KCSWD for their transfer stations. For instance, roof clearances are inadequate to allow for effective tipping of newer model garbage trucks, and opportunities to recycle items are non-existent with the exception of household hazardous waste (HHW) collection. The 1960s-era facility is also beyond its useful life and requires several improvements to address capacity, service, and operational needs. In addition, structural changes are necessary to improve emergency response and operational efficiency, as well as to meet desired safety goals and comply with current building codes.

While the Factoria Transfer Station requires improvement, the site it occupies has several positive attributes that led to the decision to replace the transfer station at its current location. For example, sufficient space is available at the

site for expansion, the site is already owned by KCSWD, and there is already an operating transfer station at the location. In addition, the new station will be compatible with other businesses located in this light industrial land use zoned area.

Existing and Future Conditions

The 3-year average of tonnages and transactions by customer type for the facility is presented in Table 2 along with a forecast for the year 2030, the 20-year planning period to meet LOS criteria. As seen in Table 2, KCSWD anticipates that by 2030 the facility will see a nearly 50% increase in the number of customers using the facility, along with a greater than 50% increase in tonnage handled.

TASK FORCE AND CHARTER

Prior to initiating the project, KCSWD established a Task Force whose purpose was to help establish development criteria, review conceptual site layouts and floor plans with the design team and recommend a preferred concept. The Task Force consisted of a diverse group of KCSWD staff including a transfer station operator, scale operator, supervisor, and truck driver as well as staff involved in maintenance, planning, engineering, recycling, HHW, public involvement, and outreach activities. The Task Force was guided by a Task Force Charter (Charter) and was engaged throughout the planning process in a series of workshops. The Charter detailed the scope of work and composition of the Task Force, roles and responsibilities, and the decision making authority and method.

FACILITY MASTER PLAN

The process of selecting a preferred development option for the Factoria RTS involved 3 overall phases:

- **Programming** – Site Observations, Orientation, Site Visit, Tour Local Facilities, Review lessons learned, Determine Site Constraints
- **Stakeholder Outreach** - Facility users, Host City, Community/Neighborhood, Regulators
- **Review of Concepts** - Develop broad concepts, Workshops to review, Refine/Narrow concepts, Select Preferred Plan

PROGRAMMING

Programming was the important first step in determining the desired features and requirements for the Factoria RTS project. For the Factoria FMP, programming involved working with the task force to prepare a list of everything that needed to be included and considered when developing general layouts for the facility.

Site Observations

Members of the design team observed one weekday and one weekend day of operations at the existing facility to better understand the following:

- Time customers are on site
- Transaction times
- Length of tipping floor queue
- Time from scale to tipping floor
- Number of trucks that can offload at one time
- Safety concerns
- Hours of operation
- Facility Staffing
- Types of customers and arrival patterns.

Orientation Meeting

Members of the KCSWD task force and design team participated in a project orientation meeting at the onset of the project. At the meeting, attendees discussed their individual backgrounds and expertise, roles and responsibilities on the project, and the project's overall goals, expectations, and schedule.

Site Visit

As part of the project kickoff, KCSWD task force and design team members visited the project site to assess existing features that would need to be considered in development of layouts for the Factoria RTS. The site visit was very informative for the design team due to the broad, unique perspectives of the various members of the task force. For example, one member of the task force was a truck driver who offered suggestions on transfer trailer maneuvering and site access. Another member, who operated a scale house, offered ideas to consider regarding customer access, parking, and access to the facility.

Tour Local Facilities

Members of the task force toured other solid waste transfer facilities in the Puget Sound area and viewed videos and floor plans of similar sized solid waste transfer operations across the country. Several types of transfer stations were reviewed including flat floor unloading then push to compactor system, grade separated unloading then push to compactor system, unloading into a push pit then pushed to a compactor system, and a system using direct unloading into open top trailers. The task force discussed the benefits and drawbacks for each transfer technology and concluded that the flat floor unloading then push to a

compactor system would be the best method for the Factoria RTS.

Determine Site Constraints

The task force and design team identified several significant project constraints for the Factoria RTS including:

- Steep slopes across site with large elevation change (approximately 120 feet)
- Wetlands/streams
- Site access (ingress/egress)
- Right-of-way and easements for utilities below and above ground including water and sewer main lines, electrical transmission and distribution lines, and compressed natural gas (CNG) transmission line
- Maintaining operation of the existing facility during construction of the new facility
- Regulatory and permit requirements
- Required construction completion schedule in relation to other KCSWD transfer station projects

An additional potential impact is an ongoing Land Use and Transportation Study by the City of Bellevue (City) for the project area, to update and refine the City's vision for the area. The study could result in recommendations for changes to the land use zoning code to improve long-term economic vitality for the project area, which is along a major traffic corridor (Interstate 90) into the City.

Lessons Learned

Prior to commencing the Factoria RTS project, KCSWD had recently completed another similar sized facility and was beginning construction of a second, larger sized project. Information from their experiences on these two projects was provided to the task force and design team. Lessons learned from these projects include:

- Finish the station construction early so that there is sufficient time for punch list items to be resolved prior to beginning operation,
- Provide adequate time and resources for staff training, and
- Consider long term maintenance of systems (cost, accessibility and assigned staff).

DEVELOPING THE CONCEPTS

Initially, five concepts were developed based on the information developed during programming and are shown

on Figure 2. The concepts were then reviewed with members of the KCSWD task force during a series of workshops. Some concepts were eliminated from further consideration while others were subsequently refined. Ultimately two concepts emerged from the process for presentation and consideration by stakeholders including KCSWD management, users, and the community.

Most concepts that were considered for the Factoria RTS would allow the existing station to remain open during construction. KCSWD considered options that would require complete closure of the existing station during construction of the Factoria RTS and found no substantial benefit in closing the facility. KCSWD also believes that closure of the station during construction would be a major inconvenience to the public, who would be forced to drive greater distances to an alternative station. In addition, the closest stations to the Factoria Transfer Station are already undersized and would be negatively affected by handling the additional traffic.

In addition to processing municipal solid waste (MSW) for transfer, the Factoria RTS will provide opportunities for recycling which are not currently available to customers. In particular, KCSWD will target materials which may not be collected in curbside programs including the following:

- Yard Waste
- Clean Wood
- Food/Compostable Paper
- Scrap Metal
- Appliances
- Plastic Film and Bags
- Carpet
- Textiles
- Asphalt Shingles
- Furniture/Mattresses
- Gypsum Wallboard
- Old Corrugated Cardboard (OCC)

The Factoria RTS will be designed with flexibility to process these materials to divert them from disposal. Figure 3 depicts the anticipated flow pathways for materials targeted for diversion at the Factoria RTS.

STAKEHOLDER OUTREACH

Vigorous stakeholder outreach efforts were undertaken during development of the FMP and selection of the preferred concept, including holding a public meeting, briefing key stakeholders, and soliciting design input from

regulators. Public involvement for the Factoria RTS is an ongoing process that provides an opportunity for customers, area residents, and other interested parties to learn about the facility replacement project and to offer comments on the planned improvements. KCSWD has developed the Web site listed below where interested parties can receive project updates and provide comments: <http://your.kingcounty.gov/solidwaste/facilities/factoria-replacement-project.asp#top>

City of Bellevue Engagement

The City of Bellevue was engaged early in the FMP process and discussions included the possibility of forming a citizen's advisory committee (CAC) for the project. It was determined through further discussions that a CAC was not the best way to obtain constructive feedback for the Factoria RTS due to the facility's location, existing land use and zoning, and type of facility. Meetings were held with city staff during development of the FMP, and City staff also attended a concept review workshop and the public meeting. During the meetings, City staff was briefed on the project, discussed previous efforts to replace the station, and provided direction and ideas for the transfer station replacement. Additionally, the City's critical area requirements, architectural requirements, mitigation preferences, Non-Project State Environmental Policy Act (SEPA) action, and conditional use permit process were also discussed.

Public Involvement

In development of the FMP, an Open House was held to provide information to the public and receive community feedback on two alternative concepts for the Factoria RTS. Feedback from the public meeting indicated that most concerns from the community were addressed in the conceptual plans and site layouts. Several follow-up meetings with interested stakeholders were held to provide updates on the project and address specific comments. For example, individual meetings were held with adjacent property and business owners and with representatives of Olympic Pipeline to discuss any concerns about the project.

Additional community involvement and feedback are anticipated at several future points during the project, including environmental review and land use permitting.

Advisory Groups

During development of the FMP for the Factoria RTS, the (King County) Solid Waste Advisory Committee (SWAC) and the Metropolitan Solid Waste Management Advisory Committee (MSWMAC) were briefed on the project. MSWMAC includes representation from a number of Eastside cities that are in facility's service area.

Commercial Haulers

Representatives from local commercial haulers – including Waste Management, Allied, and CleanScapes – attended a meeting to review and discuss proposed concepts. Feedback from the commercial haulers was positive with particular appreciation expressed for the proposed vehicle separation for commercial and self-haul customers. The commercial haulers believe that the new facility will help the efficiency of their operations and improve safety. The commercial haulers also provided feedback regarding traffic circulation, queuing lengths, and the flat tipping floor configuration. Feedback from the commercial haulers was incorporated into the preferred concept.

PREFERRED CONCEPT

The preferred concept was selected because it will result in lower construction costs, greater operational efficiencies, a safer traffic circulation pattern, larger container chassis parking area, and better orientation of the recycling/HHW area for self-haul customers. Figure 4 presents the preferred site layout with anticipated traffic circulation. Renderings of the proposed facilities are presented on Figure 5.

Recycling and Transfer Building

Key design criteria for the recycling and transfer station building include:

- No interior building columns on the tipping floor; clear span construction over the tipping floor
- Fully enclosed and unheated metal building
- Push walls of 12 feet in height to assist in directing waste to appropriate locations such as the compactor hopper openings
- Minimum interior clearance height of 25 feet
- Sufficient water capacity to allow up to three washdowns of the tipping floor per day
- Federal Emergency Management Agency (FEMA) Immediate Occupancy Seismic Standards

- Factory Occupancy classification (F-1) due to the type of equipment
- Flexibility to modify traffic patterns and floor space within the building on weekends to accommodate a greater number of self-haul customers
- Separate entrances and exits for commercial and self-haul (public) vehicles
- Opening in the tipping floor for one open top trailer to accept organic materials such as yard and wood wastes; also could be used for emergency top loading of waste
- Process an average weekday of 800 tons of waste and 555 vehicles.
- Provide a minimum of 11 unloading bays (stalls) for self-haul customers and a minimum of 3 unloading bays for commercial customers
- Provide emergency waste storage for 2,400 tons (three average days of volume in the year 2030 which is 20-year planning period); emergency waste storage may occur both outside the new transfer station within enclosed containers and inside the facility on the tipping floor.
- Up to two stationary preload compactors.
- Opportunities for screening of incoming waste materials for recyclables such as wood, scrap metal, and carpet.
- A 53,000 square foot, continuous flat floor (for both commercial and self-haul vehicles)

The continuous flat floor was selected for the Factoria RTS due to the following anticipated benefits:

- More operational flexibility
- Better waste screening capability
- Easier cleaning of the tipping floor
- Faster unloading for customers

A specialized barrier such as a row of moveable jersey barriers (k-rails) could be used to delineate the self-haul area from the other areas of the transfer station.

Recycling Area

A flexible recycling area will be provided next to the self-haul customer area inside the RTS building. The area will accommodate drop boxes, bins, and bunkers to allow self-haul customers free recycling of items such as cardboard and scrap metal. Recyclable materials may also be dumped on the tipping floor for processing.

The recycling area may include small (1-yard) mobile bins where the public can place recyclables. For collection and transport, the small bins could be loaded by the County into larger (20- to 40-yard) containers also located in the recycling area. Space for four to six large recycling containers will be provided for commodities such as clean wood, cardboard, and scrap metal. Heavier items, such as appliances, will be unloaded by customers onto a raised platform area or moved from the tipping floor to the platform by KCSWD staff using a fork lift. Space for recycling of materials typically collected curbside by commercial haulers (e.g., glass, paper, plastic) has not been specifically programmed into the Factoria RTS design but could be provided as space allows.

HHW Facility

An approximately 4,700-square foot HHW facility will be located on the east side of the recycling and transfer station building across the covered canopy from the recycling area. The HHW facility will provide for collection, processing, and storage of hazardous materials from the public and small quantity generators that should not be disposed of in the MSW stream. Materials that will be accepted at the HHW facility include automobile batteries and fluids, gasoline, oil-based paint, household cleaners, chemicals and adhesives, pesticides, and thinners and solvents. Material storage areas for the new facility were sized based on an assumed 25-percent increase from 2007 collection volumes.

The new HHW facility will also include a “swap room” where the public can look over, and take home, a limited number of items for personal use that have been turned in by other customers. Such items may include oil-based paints, stains, automotive products (e.g., antifreeze, brake fluid), and household cleaners and will be individually reviewed and approved by HHW staff to be eligible for reuse.

The HHW facility will include an open processing area in the center of the building that can be modified as needed based on the types of materials received in the future. A combined employee office/break area will be located at the front of the facility with a direct view of the drive-through area for facility staff to see arriving customers.

Material storage areas within the facility will be divided into the following categories: acids, bases, inerts, flammables, oxidizers, poisons, compressed gases, propane

tanks, reactives, and unknown cabinets. Certain materials including paints, antifreeze, and motor oil may be consolidated from individual containers prior to storage. Some materials, including flammables stored in drums and empty, new drums, will be stored outside the building in an approximate 1,300-square-foot paved area enclosed within a perimeter fence located north of the HHW building. An at-grade loading dock will be located north of the outdoor storage yard for load-out of materials using a forklift. The general material flow in the building will be material acceptance, processing, storage, and finally load-out. It is anticipated that materials will be transported using a 30-foot box truck at least every week.

Administration Building

An approximately 4,800-square foot administration building will be located adjacent to the RTS building which includes work space, locker rooms, and break area for the transfer station operators (TSOs). The building will also include a supervisor’s office and conference room which may be used for public meetings, tours, and emergency work space for County employees during periods of inclement weather and natural disasters. The building will be separated from the RTS for seismic purposes and for an improved work environment (minimize dust and odors). The building will be slightly elevated (approximately 4 feet) above the RTS tipping floor and windows provided to allow viewing of the floor from the conference room, supervisors office and TSO work/break area.

Traffic Circulation

A key planning requirement for the Factoria RTS is separating customer traffic (commercial and self-haul vehicles) from transfer vehicles and providing separate commercial and self-haul access and unloading locations. For the Factoria RTS, adequate queuing space was considered for each point where customers may be required to wait, including:

- Inbound and outbound approaches to the scale facilities
- Entrance to the transfer station building
- HHW drop-off area
- Paid and free recycling areas

The trailer/container chassis yard was designed to allow a minimum of 150 feet in front of each back-in stall (covered/uncovered parking, open top, and stationary pre-

load compactors) for maneuverability. The trailer/container chassis parking area will also be flexible to accommodate future transition to containers stacked at least two-high. On occasion, storage of open top trailers for organics (i.e., yard waste, wood waste) will be accommodated as well.

Commercial and self-haul traffic and unloading areas in and around the transfer station will be separated to the maximum extent possible to allow for efficient operations and increased safety for all customers. The eastern portion of the building will be for self-haul customers, separated from the commercial unloading area by daily MSW and organics storage areas. A permanent or temporary barrier may also be installed to separate self-haul traffic from commercial vehicles and transfer station equipment. There will be up to 11 unloading stalls oriented north-south for residential self-haul customers. On the weekends when high volumes of self-haul customers and very few commercial customers use the transfer station, the self-haul unloading stalls may be reoriented east-west to allow additional customers to unload simultaneously, minimizing the queuing time. Self-haul traffic may utilize the commercial entrance/exit on the weekends depending on the unloading area orientation.

Maintenance Area

A 2,500-square-foot maintenance area including a vehicle maintenance bay will be provided on the lower level of the RTS building where light maintenance of the on-site mobile equipment can be performed including lubrication and fluid changes, replacement of minor parts, and other preventive maintenance activities. Space for storage of tools and spare parts will be included in the Factoria RTS design.

Trailer/Container Chassis Storage Yard

A large, paved, container chassis maneuvering and storage yard will be located north of the RTS building. The project allows for up to 20 back-in trailer/container chassis parking areas, of which 7 stalls are located under the north side of the RTS building (lower level, covered) and 13 stalls are located along the north edge of the site (uncovered). Maneuvering for a future reach stacker (top pick loader) to unload empty containers and load full containers was also considered.

Sustainability Elements

A primary goal for the Factoria RTS project is to incorporate sustainable measures in the design, construction, and operation of the facility and pursue a LEED® Gold (Version 2009) certification. A number of sustainable features including rooftop rainwater harvesting and pervious pavement will be incorporated into the station design to minimize the amount of stormwater runoff collected for treatment and discharge. Pervious areas of the proposed development will be designed to maximize infiltration through the use of engineered rain gardens and bioswales. Harvested rooftop stormwater will be conveyed to a 40,000 gallon cistern to use for tipping floor washdown and other non-potable uses.

A 45 kW photovoltaic generation rooftop system is also planned to provide on-site power to the administration building and HHW facility.

Forest Stewardship Council (FSC) certified cedar architectural beam elements, bamboo veneer paneling, concrete floors, and light emitting diode (LED) lighting will all compose an interior quality that will enhance the facility's message of sustainability. Potential displays will offer insight into recycling and provide an educational opportunity regarding sustainable practices and solid waste operations.

The project is also pursuing certification from the Salmon-Safe program. Salmon-Safe is a regional organization that provides guidance for site developers, designers, and land managers interested in developing sites that demonstrate environmental stewardship by minimizing impacts to sensitive aquatic and upland resources. The organization has been certifying sites as "Salmon-Safe" since 1996, initially focusing on agricultural properties using peer-reviewed criteria and rigorous on-site inspections. More information on the Salmon-Safe organization can be found on their website at <http://www.salmonsafe.org>.

Public Art

In 1973, King County adopted legislation creating the 1 Percent for Art Program. The program requires that 1 percent of funds from capital construction projects be set aside for public artwork. Experience has shown that investments in public art benefit the community in many ways, from deterring vandalism to turning public facilities into better neighbors and community assets. The artwork for the Factoria RTS will reflect a recycling theme to help

promote greater public awareness regarding solid waste issues.

SUMMARY AND CONCLUSION

Adequate planning at the beginning of a project is a valuable step towards a successful project. Numerous aspects should be considered during the planning phase including stakeholder interests, site constraints, lessons learned from similar projects, and a wide range of concepts.

KCSWD has completed the planning phase for the new Factoria RTS culminated by King County Council approval of the Facility Master Plan. The planning phase has enhanced the overall project through addressing lessons learned on previous projects, identifying site constraints, considering multiple conceptual layouts, and engaging diverse stakeholders with unique interests. The resulting preferred conceptual layout reflects the most appropriate features with the best layout, at an acceptable construction cost. The preferred concept has now been developed to the 60% design level and construction is anticipated to begin in 2013.

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TABLE 1. LEVEL OF SERVICE RATINGS FOR THE FACTORIA TRANSFER STATION

Level of Service Criteria		Result
1.	Estimated time to a transfer facility within the service area for 90 percent of users	Yes
2.	Time on site meets standard for 90 percent of trips a. Commercial vehicles (less than 16 minutes) b. Business self-haulers (less than 30 minutes) c. Residential self-haulers (less than 30 minutes) * Meets criteria on weekdays but not weekend days.	No No* Yes
3.	Facility hours meet user demand	Yes
4.	Recycling services - meet policies in 2001 Solid Waste Plan a. Business self-haulers b. Residential self-haulers	No No
5.	Vehicle capacity a. Meets current needs b. Meets 20-year forecast needs	No No
6.	Average daily handling capacity (tons) a. Meets current needs b. Meets 20-year forecast needs	Yes No
7.	Space for 3 days' storage a. Meets current needs b. Meets 20-year forecast needs	No No
8.	Space exists for station expansion a. Inside the property line b. On available adjacent lands through expansion	Yes Yes
9.	Minimum roof clearance of 25 feet	No
10.	Meets facility safety goals *The presence of these physical challenges does not mean that the station operates in an unsafe manner. It does mean that it takes extra effort by staff and management to ensure that the facility is operated safely, which reduces system efficiency.	No*
11.	Ability to compact waste	No
12.	a. Meets goals for structural integrity b. Meets Federal Emergency Management Act immediate occupancy standards	Yes No
13.	Meets applicable local noise ordinance levels	Yes
14.	Meets Puget Sound Clean Air Agency standards for odors	Yes
15.	Meets goals for traffic on local streets a. Meets Level of Service standard b. Traffic does not extend onto local streets 95 percent of time *Meets criteria on weekdays, but not weekend days. Yes or no rating based on evaluating all days within study period.	Yes No*
16.	100-foot buffer between active area and nearest residence *Meets 100 feet from residence criteria, but businesses are within 100 feet.	Yes*
17.	Transfer station is compatible with surrounding land use *Factoria is a 30+ year old facility in need of maintenance that has been deferred over the years. It is visible on the approach to adjacent businesses and meets the criteria on weekdays, but not on weekend days. Yes or no rating based on evaluating all days within study period.	No*

Source: KCSWD (2006)

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TABLE 2. 3-YEAR AVERAGE TONNAGES AND TRANSACTIONS BY CUSTOMER TYPE

Year	Self-Haul		Commercial Haulers		Total	
	Tons	Transactions	Tons	Transactions	Tons	Transactions
3 year average (2007-2009)	29,700	99,700	122,700	22,000	152,400	121,700
2030	45,000	156,000	180,000	34,000	225,000	190,000
Change	15,300 51.5%	56,300 56.4%	57,300 46.7%	12,000 54.5%	72,600 47.6%	68,300 56.1%

Source: KCSWD Annual Reports for 2007, 2008, and 2009

FIGURE 1. PROJECT VICINITY MAP

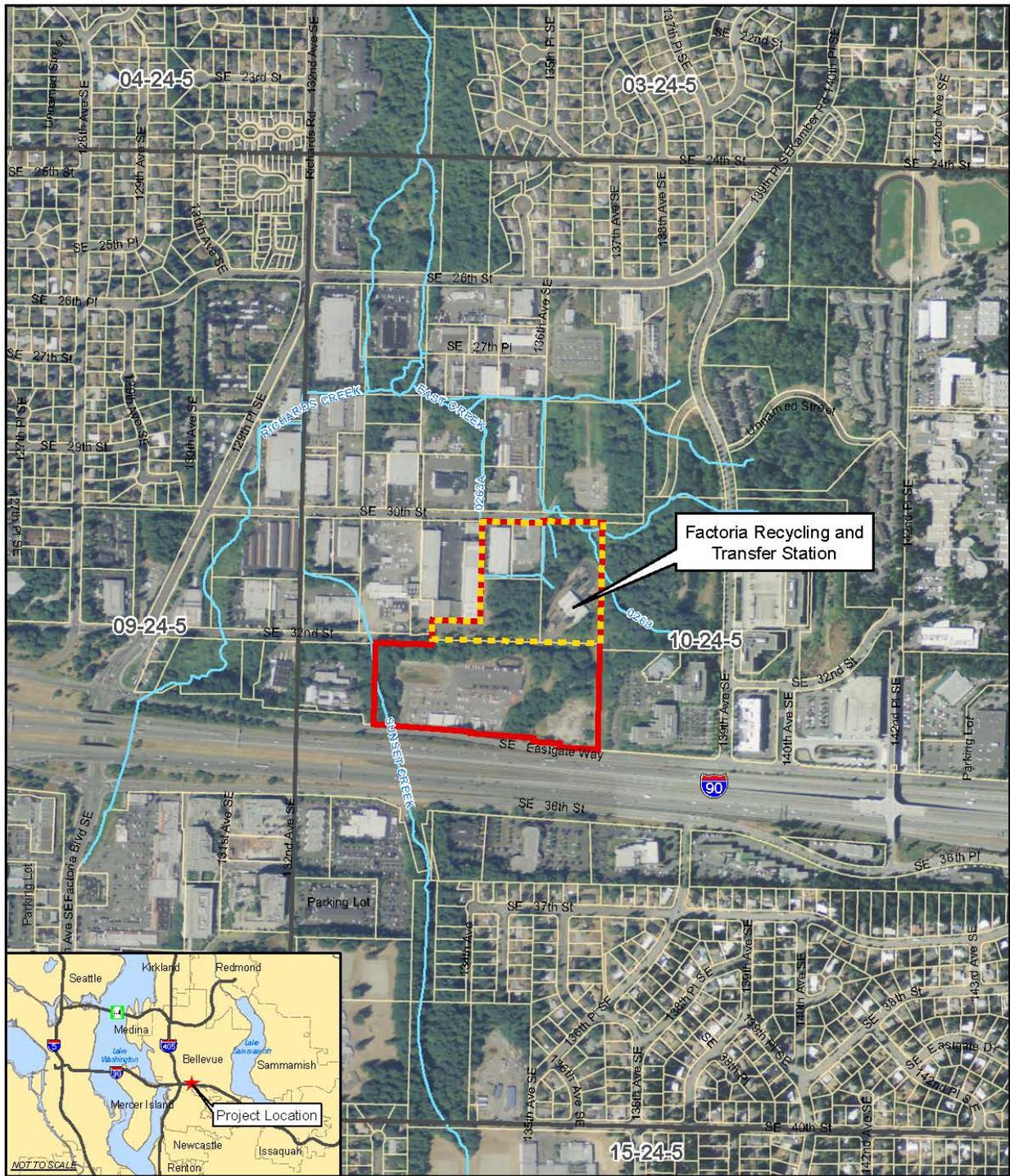


Figure 1. Project Vicinity Map

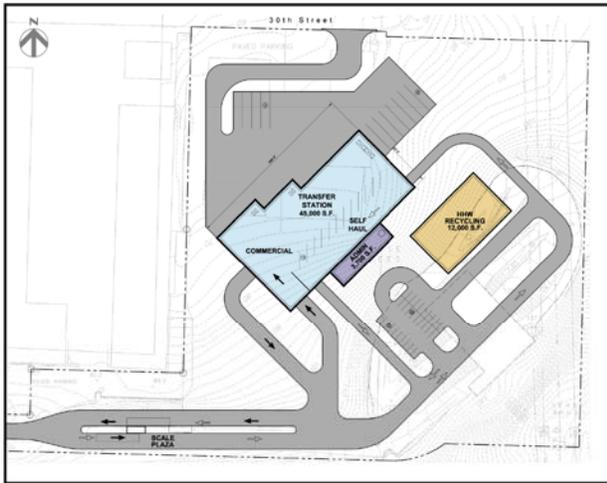


Factoria Recycling and Transfer Station | Bellevue, Washington

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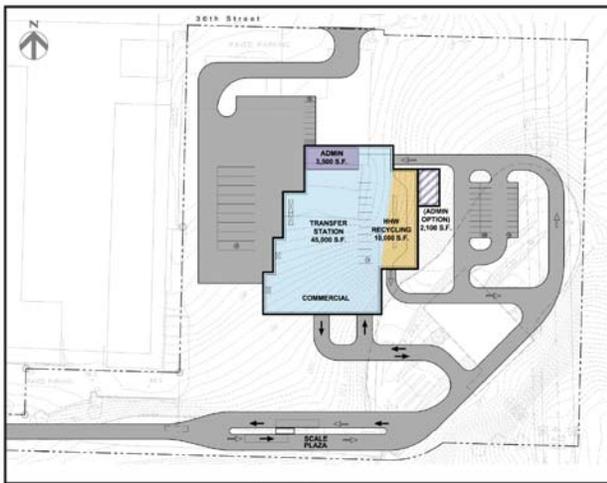
FIGURE 2. INITIAL CONCEPTUAL SITE LAYOUTS CONSIDERED FOR THE FACTORIA RTS



Concept 1A: Traffic Separation



Concept 2B: Southeast Trailer Parking



Concept 2D: East Scale Plaza



Concept 3: 32nd St Access Only



Concept 4: Tunnel, One Bridge

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FIGURE 3. PROCESS FLOW SCHEMATIC OF RECYCLABLES MANAGEMENT AT THE FACTORIA RECYCLING AND TRANSFER STATION

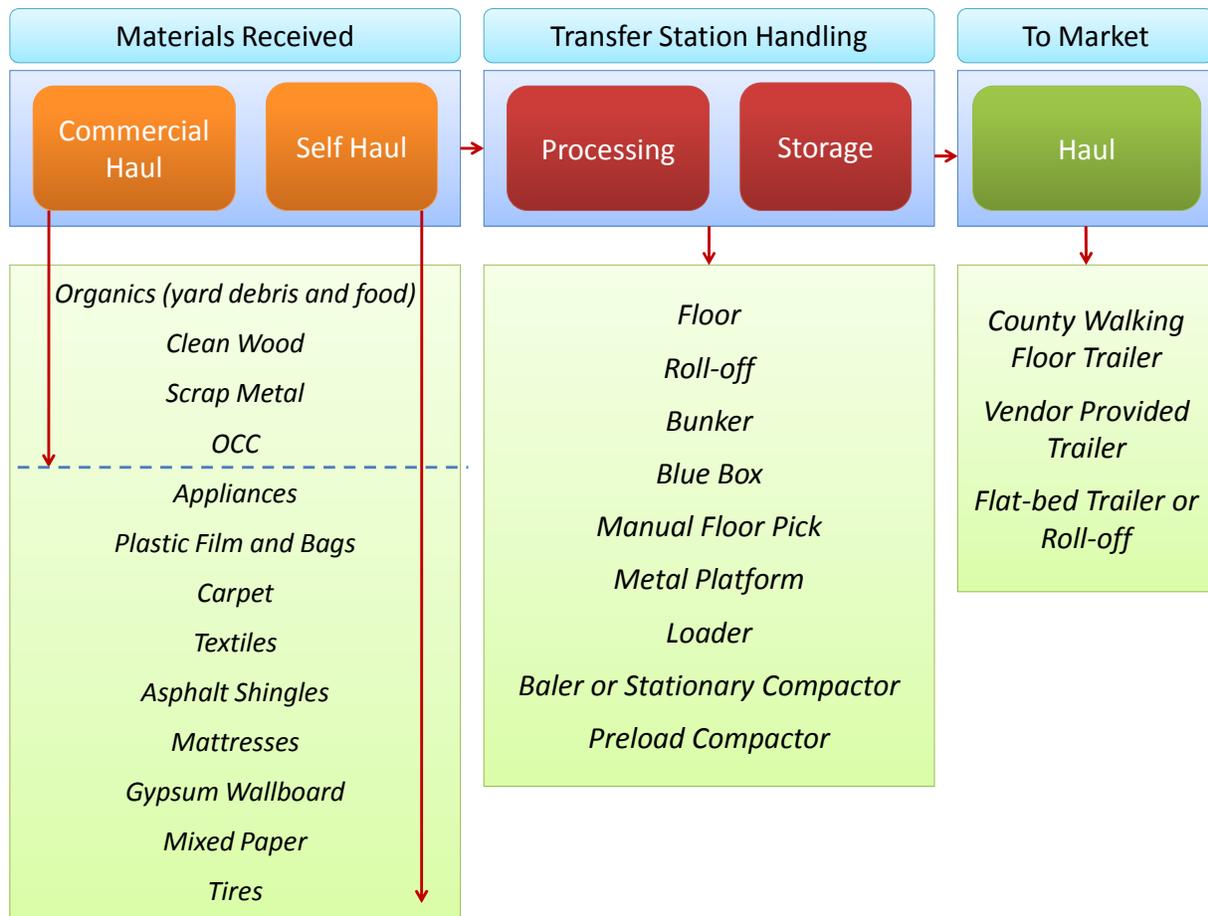


FIGURE 4. PREFERRED SITE LAYOUT FOR THE FACTORIA RECYCLING AND TRANSFER STATION

