MUNICIPALITY OF ANCHORAGE - SOLID WASTE SERVICES
INTEGRATED SOLID WASTE MASTER PLAN
BRIEFING REPORT

The Municipality of Anchorage (MOA), Department of Solid Waste Services (SWS) authorized development of an integrated solid waste master plan (ISWMP) in order to optimize its system and assets through improved operational efficiencies, capital improvements and new practices/programs that increase landfill life, improve safety and customer service, protect the environment and increase waste reduction, reuse and recycling of materials that are currently disposed of as waste. SWS collaborated with Tetra Tech and DOWL consultants and the SWS Solid Waste & Recycling Advisory Committee (SWRAC) to develop the plan.

The ISWMP includes the following:

**DEVELOP**
- Short, Medium and Long-term System Strategies

**OPTIMIZE**
- Anchorage Regional Landfill (ARL)
  - Airspace
  - Expansion
- Central Transfer Station Operations (CTS)
  - New Facility

**ASSESS**
- Diversion Opportunities & Alternative Technologies

TETRA TECH

| SEPTEMBER 2018 |
OVERVIEW OF SOLID WASTE MANAGEMENT SYSTEM

As a municipality of almost 300,000 people, Anchorage generates a large quantity of waste each year (330,000 tons in 2018). SWS provides refuse collection services for the former City of Anchorage, which is approximately 20% of the population of the MOA, and the remainder is serviced by the private sector. SWS services also include the disposal of solid waste, collection of household hazardous waste and drop off recycling at the Anchorage Regional Landfill (ARL) and seasonal food scraps collection programs at both the ARL and the Central Transfer Station (CTS). ARL is the only operating landfill within the MOA and accepts more tonnage than any other landfill in the state. The ARL is located near the community of Eagle River and has a permitted total capacity of 45.2 million cubic yards. The SWS has three transfer stations located at Girdwood, midtown Anchorage (CTS), and ARL which reduces traffic to and controls access to the working face of the ARL. Waste disposed of and hauled from the transfer stations make up approximately 80% of the total waste disposed of at ARL, with the majority coming from the CTS.

The SWS disposal utility’s budget includes a recycling fund which pays for the recycling coordinator position within SWS and various community recycling and outreach programs. The fund helps support several grants with ALPAR (Alaskans for Litter Prevention and Recycling) such as glass recycling, waste age costs, youth litter patrol, and Christmas tree recycling. Funding has also been used to support school district recycling programs and pilot programs for curbside recycling, composting, and voluntary food scrap drop-off programs. SWS is implementing a pilot program to test curbside organic waste collection in 2018 and plans on offering it service area wide in 2019.

ANALYSIS

Waste generation and capacity projections were performed for the ISWMP resulting in a gross remaining airspace of 30.3 million cubic yards at the ARL (as of 2017). Utilizing population growth projections from the Anchorage 2040 Land Use Plan, future site life projections ranged from 2062 to 2070. Internal and external data was reviewed, stakeholder interviews and a solid waste services survey were conducted, and a comprehensive review of regulatory requirements/drivers, key policies, and industry trends were considered to identify specific facility and diversion program options, potential improvements, and new approaches for SWS to manage solid waste. A benchmarking analysis was also completed to compare key performance indicators of solid waste management system performance in 12 similar medium-sized jurisdictions with limited access to marketable materials, high annual snowfall, and sub-zero winter temperatures.

Issues and opportunities identified for the ISWMP included aging (30+ years) assets at CTS creating safety issues and operational/customer service constraints, capacity increase opportunities at ARL and low diversion rates due to lack of local markets and regulatory constraints for the MOA.

Several options for each system component (ARL, CTS and diversion programs) were evaluated for the following criteria:

- Capacity Savings;
- Capital/O&M Costs;
- Revenue Generation Potential;
- Technical Feasibility;
- Permitting Feasibility; and
- Environmental Impacts.

The above criteria were ranked for each option utilizing high, medium and low rankings, resulting in a total score for each option. More detailed evaluations were then performed on the highest ranked options.

RECOMMENDATIONS

Recommendations for short, medium and long-term strategies were developed to optimize capacity through landfill operational improvements and diversion programs and to optimize CTS operations with new and expanded facilities and services.

SHORT-TERM RECOMMENDATIONS (YEARS 1 TO 5)

LANDFILL IMPROVEMENTS

Increase Landfill Capacity by 30 to 40% of 5 to 9 years through the use of alternative daily covers to manage the soil cap and an additional 8 to 11 years with an alternative final cover design to support steepening of final slopes.

LANDFILL GAS BENEFICIAL USE

Expand Landfill Gas to Energy (LFGTE) facility to generate 5.6 MW of additional electricity. If LFGTE facility expansion does not proceed, LFG to CNG vehicle fuel or heat and power treatment facility fueled by medium-BTU LFG to be explored. Texas more landfill gas to evaporative and minimize leachate disposal requirements is currently in the process of being evaluated by SWS.
NEW SEWARD HIGHWAY

Household Hazardous Waste Collection Facilities

Residential Drop-Off

Transfer Station & Warm Storage Building

EAST DOWLING ROAD

Administration Facilities & Learning Center

SHORT-TERM RECOMMENDATIONS (YEARS 1 TO 5) (Continued)

CENTRAL TRANSFER STATION

New transfer station, administration, maintenance and warm storage building, and public drop-off facilities to replace 30+ year old assets. This improves safety, customer service, efficiency, and materials management which increases the life of the ART through improved community diversion opportunities. Moving to a new property would prevent a 2- to 3- year shutdown of the existing facility for improvements and allows for future uses by other MOA departments (i.e. grit management facility at existing transfer station, additional warm storage and administrative space). It also controls adjacent uses that may impact future CTS operations.
**SHORT-TERM RECOMMENDATIONS (YEARS 1 TO 5)**

**DIVERSION PROGRAMS**

Increase diversion through food waste reduction, organsics collection and drop-off programs, expanded compost facility capacity and end market development, public sector recycling, community outreach and education programs, C&D reuse and expansion of reuse centers. Increase SWS diversion rate from 16% to 27% and reduce per capita disposal from 6.1 to 5.4 lbs/day.

**ALTERNATIVE TECHNOLOGIES**

Conduct feasibility study of technology alternatives to landfill disposal (including biological or thermal treatment) for addressing SWS and potentially AKWU (Anchorage Water & Wastewater Utility) needs. A 20% to 90% reduction in landfill disposal (by volume) may be achieved with biological or thermal treatment, respectively.

**LONG-TERM RECOMMENDATIONS (YEARS 11 TO BEYOND)**

**PLAN FOR ARL REACHING CAPACITY**

Implement permitting process for ARL expansion or alternative technology facility 20 to 26 years prior to ARL capacity projected to be reached.

**DIVERSION PROGRAMS**

Increase diversion through expanding and improving residential curbside recycling and bulky item reuse/recycling. Assessment of market demand and regulatory authority to increase recycling throughout MOA is needed.

**MEDIUM-TERM RECOMMENDATIONS (YEARS 5 TO 10)**

**LANDFILL EXPANSION POTENTIAL**

Evaluate landfill expansion permitting feasibility for ARL. Potential expansion to the west of ARL estimated to provide additional 40 myr. of capacity resulting in 45 additional years (extended site life to beyond 2100).

**DIVERSION PROGRAMS**

Increase diversion through commercial organsics collection, expanded C&D reuse and recycling and tire recycling. Increase SWS diversion rate an additional 12% to almost 40% by 2026. Decrease per capita disposal from 5.4 to 4.7 lbs/day.

**COSTS**

Preliminary costs based on ISWMP recommendations and concept plans have been developed which range from $95M to $125M in the short to mid-term.

The SWS ISWMP provides a roadmap for improved customer service, safety, environmental protection and operational efficiencies resulting in preserving landfill life up to 20 additional years or to 2090, cost savings and a plan for expansion of the ARL (providing more than 45 years of additional landfill life) or an alternative technology facility (reducing landfill disposal by 20 to 90%) to address the solid waste management needs of the MOA over the next 100 years. Periodic updates are recommended to assess progress, needs and changed conditions over time.
ANCHORAGE, AK
POP. 300,000

330,000 TONS WASTE GENERATED (2016)

ANCHORAGE REGIONAL LANDFILL (ARL)
30.3 mil CY (REMAINING)
2062-2070 SITE LIFE (EST.)

16% CURRENT DIVERSION 2016

CENTRAL TRANSFER STATION (CTS)
30+ YEARS OLD

5.6 MW LFGTE FACILITY EXPANSION

1-5 yrs
5-10 yrs
11 yrs - BEYOND

3 STRATEGIC PHASES

40% ARL DISPOSAL CAPACITY INCREASE

CTS IMPROVEMENTS
SAFETY, SERVICE & EFFICIENCY

40% POTENTIAL SWS DIVERSION 2026

MUNICIPALITY OF ANCHORAGE - SOLID WASTE SERVICES
INTEGRATED SOLID WASTE MASTER PLAN | BRIEFING REPORT