

LLW Management Options Impact of Waste Control Specialists - 11627

Daniel D. Burns
Sr. VP Planning and Business Development

ABSTRACT

The intent of this paper is to provide a brief update of Waste Control Specialists (WCS) progress in providing comprehensive LLW management service to the nuclear industry. Additionally, it will look forward to the entry and impact of the first new provider of low level and mixed low level LLW disposal service on the industry and specifically LLW generators and managers. The impact is not just added infrastructure, WCS is also developing operations and customer service staff which will greatly influence the management of radioactive LLW.

WCS STATUS

WCS has accomplished many major milestones within the last year culminating in the finalization of construction financing and the start of construction of both the Compact LLW Facility (CWF) and the Federal LLW Facility (FWF). These two disposal units will provide disposal capabilities to the nuclear industry and government managers of radioactive LLW. The CWF construction will be complete in the third quarter of this year, while the FWF will be complete in early 2012. Allowing for a two month operational readiness review the CWF will begin operations toward the end of this year.

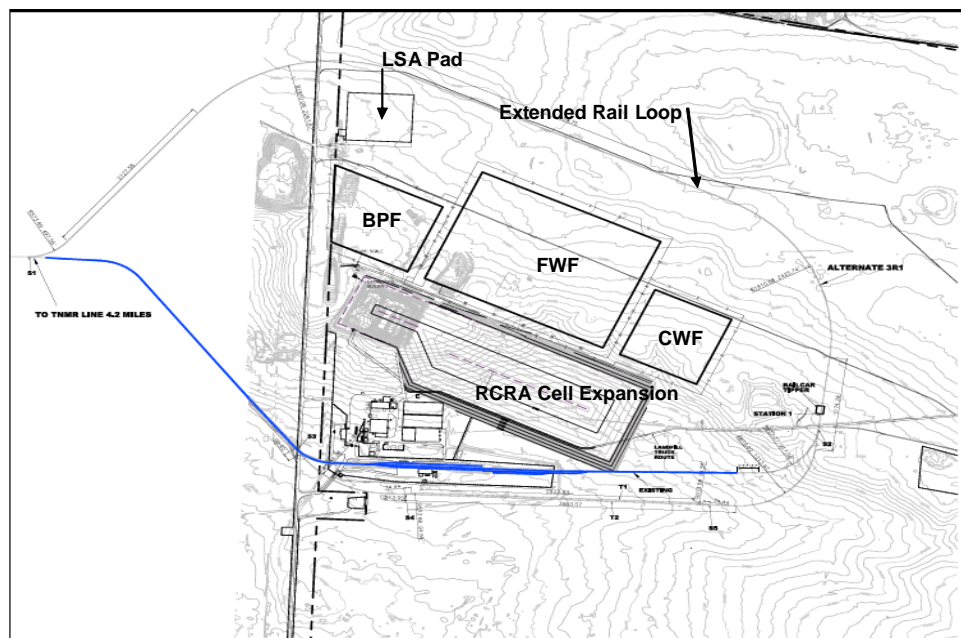


Figure 1 -WCS Site Layout

Leading up to the start of construction several key decisions and actions have been completed or will be completed. All pre-construction license items were finalized and the Texas Commission

of Environmental Quality (TCEQ) authorized the beginning of construction in December 2010.

The construction financing resulted from the issuance of municipal bonds by the County of Andrews, the home county of the facility. A very favorable credit rating was obtained by Andrews and the bonds were issued and sold in November 2010. This arrangement is a concrete example of the community support for the facility and the dedication of the host citizens and elected officials.

WCS is required to open the CWF first and provide burial for compact LLW generators. For the CWF, pricing is subject to a rate setting rule governed by the TCEQ. The TCEQ will issue what is termed a “maximum rate” for disposal service based on review of WCS’ rate setting application. The application was originally submitted in June 2010. WCS made two submittals; one for compact generators only and one which included a reasonable volume estimate of LLW imported from other compacts or unaffiliated States that do not currently have access to disposal services for Class B and C LLW. WCS views this as necessary to provide service at reasonable cost to generators. Approval of the “maximum rates” is pending.

Under the provisions of law and the rules, WCS is authorized to enter into agreements with clients for disposal at the CWF for rates lower than the maximum with review by the TCEQ Executive Director. WCS has entered into provisional agreements with several clients and will fully implement the contracts upon review by the Executive Director. These negotiations with clients take into account the opening of the facility, the rate setting rules, and the needs of the clients.

The other more significant development is that the Texas Low-level Radioactive LLW Disposal Compact Commission or Texas Compact Commission (TCC) has issued rules for the importation of LLW from outside of the Texas Compact. Under Texas law, TCC is the authorizing entity to allow importation of LLW from other compacts or unaffiliated States. Only LLW from the United States generators will be considered, no foreign LLW. Primary considerations allowing the importation of LLW include:

[Change the considerations below to better match the language in 675.23(h) – availability, economic impact, etc.

- Reserve capacity for and meet needs of the Texas Compact generators.
- Provide benefit to the Compact generators.
- Meet all license conditions.
- Provide stability to the Compact LLW Facility operations.

Each of these developments has allowed WCS to be positioned to provide needed comprehensive LLW disposal operations, including radioactive material processing, MLLW treatment, and LLW disposal.

IMPACT AND CHANGES IN LLRW INDUSTRY

The nuclear industry has historically been plagued by limited options when it comes to LLW management, specifically the important aspect of isolation of hazards and transfer of responsibility for perpetual care of radioactive LLW to cognizant, responsible entities. Additionally, every previous disposal facility in the United States has “evolved” rather than being purposefully designed, operated and closed. For the first time in the United States, WCS will provide and facilitate safe and sure final LLW management with the opening of LLW and MLLW disposal operations.

Looking forward to future operations in the nuclear industry, it is difficult to project all the impacts related to LLW management. Some things are certain; a new option will be available for all types of LLW and more options will be available for problematic and orphaned LLW. LLW management practices will also change for treatment and disposal facilities as well as LLW generators. Most questions will need to be answered in the years to come.

Four primary points are offered for discussion in this paper:

1. Operationally-generated LLW volumes will continue historic reductions, but with higher specific activities.
2. Event related LLW (e.g., D&D and remedial action) volumes, types, and activities will change with added physical, radiological, and chemical form management choices.
3. Life-cycle LLW management costs will go down with increased focus on customer service and smarter point-of-generation techniques and controls.
4. Additional options such as very low activity disposal and characterization/segregation will become more widely used.

WASTE FROM ONGOING OPERATIONS

The nuclear industry has generally learned its lessons pertaining to the generation of LLW from ongoing operations. Pollution prevention and LLW minimization techniques are more routinely incorporated into the design of new facilities and existing operations have been updated with the cost of LLW in mind. The result has been decade’s long advances in the reduction of LLW volumes. Continuous improvement is an ongoing approach at many facilities so this reduction trend is anticipated to continue. However the rate of reduction will be more modest.

Higher activity LLW (e.g., class B and C) need to be evaluated separately from lower activity LLW (class A). It is even appropriate to evaluate sub-classes of class A LLW on a more specific basis.

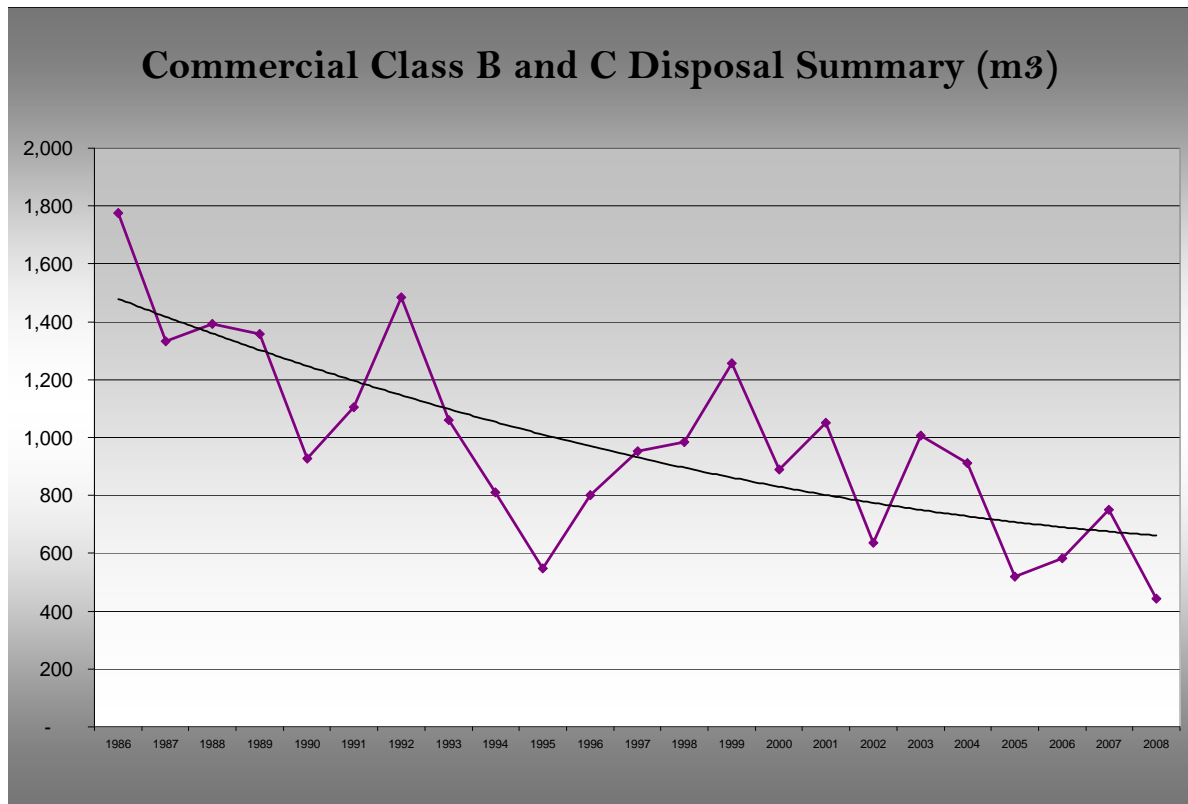


Figure 2 - Commercial Class B and C LLW Disposal History

Even though the number of generators has increased, the disposed volume of class B and C LLW has been reduced by more than half over the last two decades as a result of greater care and more informed LLW generation management. There has not been a single event leading to the dramatic reduction. It is the result of continual improvement and optimized operations and maintenance at generating facilities, alternative materials, more comprehensive understanding of operating needs and more efficiency in packaging. It is important to note that the underlying hazard (radiological source term) has not been reduced to the same extent as that of the volume reductions (specific activities are increasing).

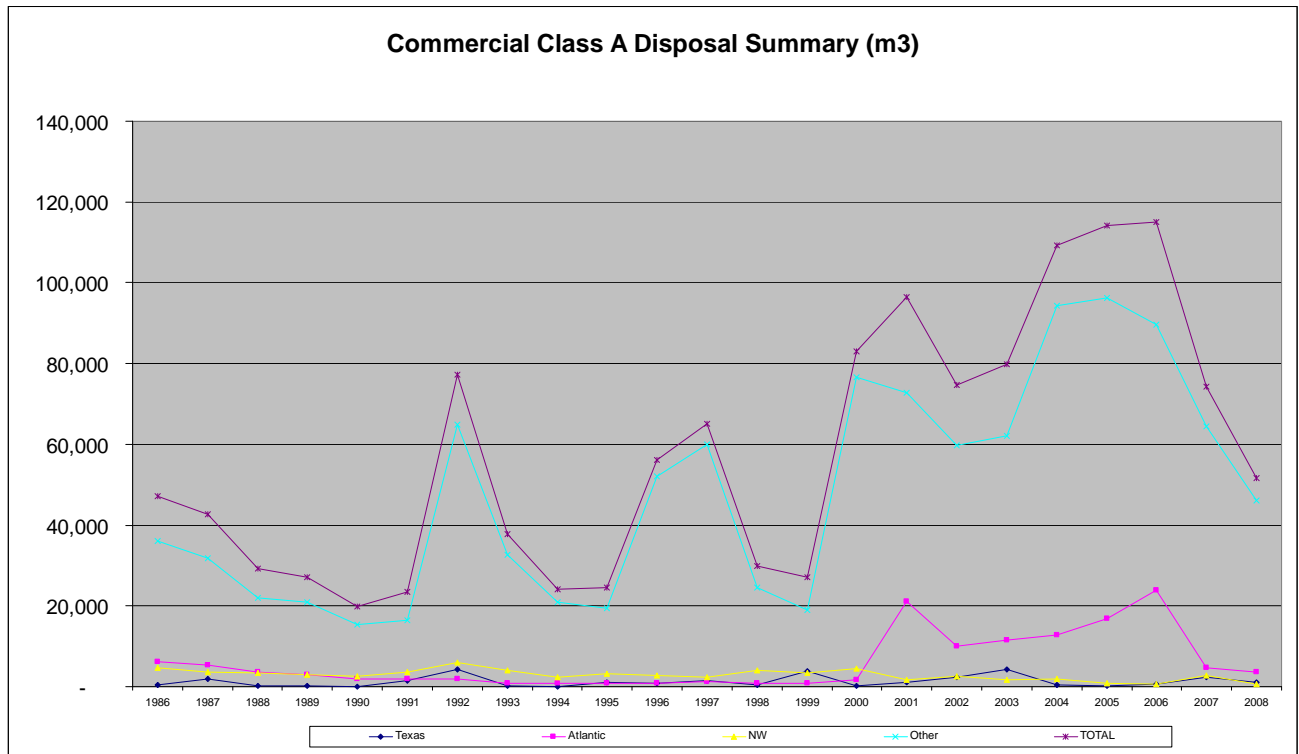


Figure 3 - Commercial Class A LLW Disposal History

Upon first glance at the historical trend of LLW disposal of commercial class A LLW, one might conclude that the volumes are holding steady if not increasing over the last 25 years. Figure 3 depicts the volumes of class A LLW disposed by originating compact affiliation. All of the data presented comes from the DOE - Manifest Information Management System (MIMS). Generally, the peaks and large volumes depicted in the class A LLW summary information stem from “event” related LLW. These events are not ongoing generation or production activities but are primarily private operator remedial actions from what DOE terms “Industrial” generators. Industrial generators are users of radioactive materials distinct from government, utilities, and hospitals and universities. Historically, nearly all of the LLW from these events was disposed of at the EnergySolutions Clive facility in Utah.

In most cases, the CERCLA process or other management and risk decision protocols were used to determine that the safest and most protective option was to remove the LLW from its historic location and move it to a more appropriate final disposition location. Although WCS has significant LLW disposal capacity, it is not presumed that WCS will dispose of large quantities of LLW from industrial remedial actions from outside the Texas Compact.

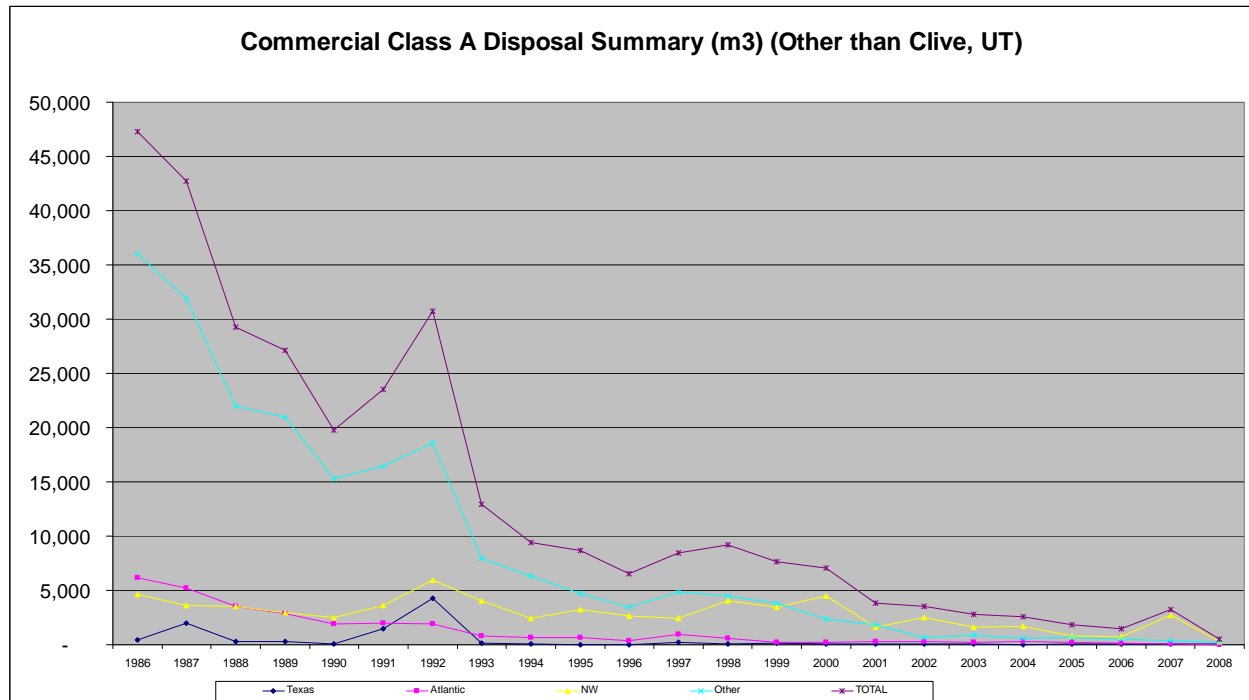


Figure 4 - Selective - Commercial Class A LLW Disposal History

WCS unique and is different than previous and existing disposal facilities. Our disposal facilities represent the first purpose designed and built disposal facility under the Low Level Waste Policy Act. Additionally, it is not an “evolved” or “adapted” disposal facility that started its life under former regulatory guidance or a remedial action. Figure 4 depicts the volumes of class A LLW disposed of at facilities other than Clive. During our evaluations, WCS wanted to determine the effect of having an operational disposal facility on the generation rates in the commercial industry. A concern was that having a disposal operation would lead to more LLW generation since an outlet is readily available. The data and history of the Northwest and Atlantic compacts demonstrates that this is not of concern as disposal volumes have consistently trended lower over the last 25 years.

Figure 5 depicts a cross section of the disposal configuration for the WCS FWF. The disposal cell will be excavated to depths of nearly 100 feet below grade and liners will be constructed. LLW placement will occur to within about 40 feet of grade and then a cover system will be constructed with final cover placement to restore natural conditions utilizing the unique natural conditions of the area for safe, protective and permanent isolation of

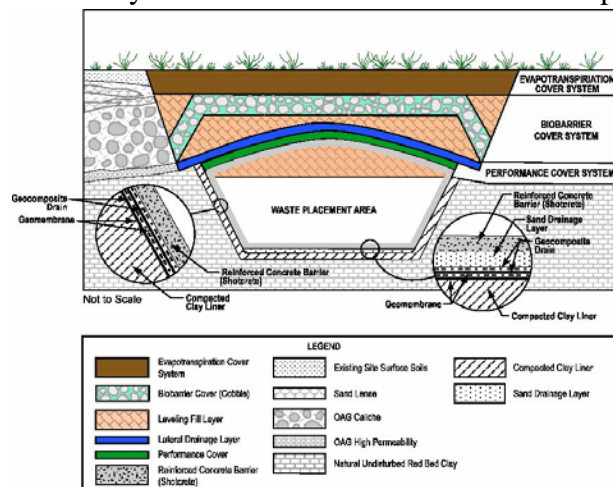


Figure 5 - FWF Design Cross Section

the hazards.

EVENT RELATED WASTES

Although WCS radioactive LLW disposal licenses are not intended to address large quantities of commercial LLRW generated from remedial actions or out of compact decommissioning LLW, we expect to impact these activities. For commercial entities, WCS will provide a solution for the smaller volumes of class B and C LLW from hospitals, universities, utilities, government, and industrial generators. WCS Federal LLW Facility does have the capability to be part of the solution for the federal generators of remedial and event related LLW.

As significant as the WCS infrastructure and facilities are to the LLW management industry the simple fact of opening, operating, and conducting the business of WCS will provide more subtle but important changes. WCS has heavily invested in people to operate and represent our services. This staff will engage closer than ever with the LLW generator personnel to bridge the gulf between generating activities and treatment and disposal operations. This closer interaction will lead to enhanced safety, efficiencies and cost effectiveness on both ends of the cycle.

Overall LLW Management Costs Will Go Down

WCS will work with LLW generators and emphasize solutions for each element of the life-cycle of LLW. The actions taken by LLW generators; starting with the planning of operations and remedial actions through characterization, physical handling, packaging and ultimate disposal greatly affect LLW costs and are inherently related. With the emergence of a new facility, competition will necessitate new approaches that are more customer oriented and friendly. Conventions and recent practices in LLW disposal service have been instituted that are very narrow (one or two sizes fit all). WCS staff will work with generators in new ways, developing and implementing management and control that are project/LLW specific rather than the current nationalized methods. In this way overall costs will be managed and reduced. Additionally, greater efficiency at the disposal site will be reflected in unit pricing.

Figure 6 through 9 depict LLW which has been prepared for treatment and/or disposal. One of the major contributors to cost of LLW disposal is that volume is mostly determined by the physical form of the LLW itself and the packaging selected. Additionally, depending on the



Figure 6
Example of excessive voids



Figure 7
Example of inefficient package usage



Figure 8
Example of characterization challenges

needs at the point of generation, effort associated with sizing, handling and placing LLW into containers represent a great expense.

In addition to volume and handling, a major contributor to the life cycle cost of LLW is the proper characterization of the LLW. Physical form contributes to the methods of characterization. Appropriate planning and insight into the LLW acceptance needs at the disposal site can lead to significant cost savings and higher confidence in proper characterization.



Figure 9 Example of overpacking and excessive pre-package effort

These pictures are offered to show how working together the generator and disposer can plan appropriately for maximizing packaging efficiency and reducing handling costs on both ends while enhancing worker safety.

ADDITIONAL OPTIONS

As WCS enters the disposal market, several new techniques for LLW management will come to fruition. Two related considerations for LLW life cycle management choices are emerging.

The first is the management of very low activity LLW. This category of LLW represents the largest volume of material from remedial actions and D&D. The radiological nature of this LLW and the manner in which they are generated result in low radioactivity levels dispersed over and within large quantities of media. From a technical perspective, they represent much lower hazard levels than those assumed in the design of radioactive disposal facilities. Additionally, bulk characterization methods have become more reliable for measuring and ascertaining hazard levels.

Both the DOE and NRC are exploring the use of restricted or exempt type disposal or isolation techniques for final disposal. These initiatives are early in their development; however they may prove to be appropriately safe, protective, and cost effective.

The second is increasing interest in sorting and segregation services to support potential alternative disposal. An example is the DOE issuance of contracts for sorting and segregation (LLW treatment and processing IDIQ) of these types of LLW. An increasing number of providers have developed as a result.

WCS, as a comprehensive service provider (including storage, processing, treatment, and RCRA, LLW, and MLLW disposal) will be able to bring unique value to these initiatives.

SUMMARY

WCS is in the final stages of being able to provide LLW and MLLW disposal services and with continued commitment and hard work will be fully operational by early next year. With the facility opening there will be changes in the nuclear industry and the management of radioactive LLW. While all of the changes cannot be known, it should be expected that LLW management will have many new options and that the cost of the life cycle of LLW will decrease while enhancements to protectiveness and safety continue to improve.