

## e-Manifest Requirements Meeting Summary

### 1. Background

On February 25-26, 2013, the U.S. Environmental Protection Agency (EPA) held an e-Manifest Requirements meeting at Potomac Yard South in Arlington, VA to discuss the existing paper manifest business process and review the requirements captured to date. This was the first of three e-Manifest Requirements meetings that EPA will be conducting to solicit industry and regulatory input into the proposed business processes and requirements of the national system. The stated purpose of the meeting was to establish a common high-level understanding of e-Manifest, better understand user needs and expectations, and capture and document input to inform the system requirements process.

Kristen Gunthardt, EPA, kicked off the meeting by introducing comments by key EPA Office of Resource Conservation and Recovery (ORCR) personnel, including:

Sandra Connors, ORCR deputy director, who welcomed participants and emphasized EPA's appreciation for everyone's participation. Ms. Connors highlighted that while this meeting is the first of three face-to-face meetings, EPA hopes there is continued dialogue and partnership throughout the implementation of e-Manifest. Finally, Ms. Connors stated that EPA is committed to delivering on the promise of making the manifest process more efficient, more transparent, and more cost effective.

Joe Wilson, branch chief within ORCR, provided an overview of the meeting's purpose and goals and stated that e-Manifest is still very much in the planning phase, and thus participant's feedback is critical and will be considered as EPA moves forward. Mr. Wilson also discussed the time limitations EPA faces in deploying an e-Manifest system and noted that the system may need to be deployed in phases, given that e-Manifest is to be operational by October 2015.

Rich LaShier, EPA, provided an introduction to the e-Manifest legislation. He said current EPA estimates show the e-manifest system could save \$75 million annually, given widespread industry adoption. EPA must finalize a regulation authorizing the use of electronic manifests to ship waste by Oct. 5, 2013. This rule will outline key legal and policy elements of e-Manifest and will establish the authority of the system. The agency plans to write a draft rule outlining the proposed fee structure for the system in 2014, which it anticipates finalizing before e-Manifest becomes operational. Under the law, e-Manifest should be operational by October 2015.

Ms. Gunthardt then presented a walkthrough of the meeting agenda and logistics and conducted a roll call to identify all attendees. Section 2 of this document summarizes the existing paper manifest business process; section 3 summarizes the requirements discussion. A table of attendees is included in Appendix A at the end of this document. Please note that specific individuals have not been identified in this document, however, state- and industry-specific comments are identified.

### 2. Existing Paper Manifest Business Process

This section of the meeting focused on the existing paper manifest business process as expressed in the As-Is Manifest Process (MAF) Multi-dimensional Process Decomposition (MPD), contained in Appendix B of this document. This section was divided into an overall business process discussion among all participants, followed by separate working sessions for industry and state participants. The summary that follows captures feedback received in both the joint and separate business process discussions.

The discussion started with the **Manifest Creation** phase and the first four process steps in the MPD, *Select and Contract Transporter(s)/TSDf* through *Manifest Signed for Transport of Waste*. It was confirmed that as part of the initial step of the manifest creation, waste produced by generators is identified as RCRA hazardous waste. It was noted that Generators frequently enter into contracts with brokers, Transporters, and/or TSDFs, who provide waste categorization and manifest generation services.

Brokers may not always have a handler ID number. Brokers frequently conduct business over the phone as they are often located out of state. There is a reliance on verbal communication to identify waste type and other required information, and Brokers frequently create the manifest without all required information. State regulators expressed concern over this transactional process.

Waste profile information largely gets captured up front as these contracts are set up. The majority of the time, the waste profile gets filled out by the broker or the handler who is serving the generator. These waste profiles are facility specific, e.g. including the type of wastes they need services for or who the contact information is. TSDFs will often send out a waste "auditor" for up to 3 days to assess waste type. While the TSDf and transporter can certify waste type, the generator remains ultimately liable for the waste profile information.

It was discussed that many of the small Generators fill out the manifest form by hand, which is often hard to read, and they often rely on the transporter/TSDf to create the manifest on-the-spot and ID the waste. Larger waste management companies like Safety-Kleen/Clean Harbors create the manifest for 99% of their customers. Large Generators often will have pre-printed manifests. All of this being said, currently, most manifests are not being handwritten and there are companies that have invested in proprietary software, hardware (mobile devices) and data systems that manage information about customers (generators) and allow for manifest creation, routing, tracking, invoicing, etc.

All changes to the shipment information made by transporters and TSDFs are usually approved by the generator. Transporters will usually notify generators via telephone en route and try to obtain approval. This is usually denoted on the manifest by the transporter and they provide the name of the person who accepted their changes. TSDFs will usually follow-up with generators via telephone or email after they have "processed" the shipment. It was noted that, regardless of who prepared the manifest, the Generators are still liable for the waste shipment. They are the certifiers that the shipment is ready for transport and management. Changes while in transit are more common for ground transport. Usually no changes are made to the manifest for shipments via rail.

The concept of 'Signing on Behalf' of the Generator was discussed. There proved to be a major concern for how this will work in e-Manifest. The Generator is still responsible even if someone signs on their behalf. If an offeror or other representative is going to sign the manifest on behalf of a generator, they must have a letter of authorization. This happens on a case-by-case basis, and can sometimes cover a certain series of manifests. This is usually worked out before the shipment.

The manifest signature process was then discussed. It was noted that at a Generator site, the person who signs the manifest currently is largely dependent on the Generator itself. Some large waste Generators (for example, large companies such as DOW Chemical) have more stringent operations in place where only trained and authorized personnel can sign the manifest. For smaller Generators, often whoever is available signs the manifest.

The discussion then moved on to the **In Transit** phase, as covered in the MPD in the steps from *Manifest Signed for Transport of Waste* to *Manifest Signed for Receipt of Materials*. It was noted that Transporters may or may not do a check (test) on waste when picked up. During transit, the waste can be transferred from truck to truck of the same transporter without the requirement for a new signature. This also includes if the same transporter dumps the waste into larger container where it will be combined with “similar” waste type that was previously hauled. The current process only tracks if the waste is transferred from one transporter company to another. It was noted that transfer facilities may not be the same company. It was stated that combined shipments should require a new manifest and that regulations regarding co-mingling of waste vary between the Federal and state governments.

There was then a discussion of the edits that may be made to the manifest while waste is in transit. Various changes might occur on the manifest while it is in transit. However, if a transporter or facility needs to make changes to the generator section of the manifest, the generator’s consent must be obtained. Usually this occurs via phone conversation or email. Changes might include adding additional transporters to the shipment, edits to wrong EPA IDs or contact information, or other incorrect information pertaining to waste types, containers, amounts and etc. Often item 14 on the manifest form is used to note corrections or changes made to the manifest document. It was noted that changes that might happen on the manifest before it gets to the TSDF aren’t necessarily discrepancies that must be resolved between facility and generator. Railroad industry representatives stated their interest having the same traceability.

There was a discussion about Emergency Responders. It was stated that Emergency Responders may have the need to quickly access to waste information. If the driver and manifest are not available and the truck placard is missing then it is unlikely the responder will be able to access information that will help them identify the waste type and associated risk. There also may be issues where the Generator may be exempt and have no EPA ID #. In cases of a roadside event, the state may issue a verbal ID #, but it may be 10-30 days before data is entered into RCRAInfo. The Emergency Responder discussion included the Department of Transportation’s (DOT) role in the manifest process. HM-ACCESS was identified as DOT’s project for electronic shipping papers. In cases where the manifest is destroyed/unavailable, DOT truck numbers or license plates would help; states used to track this information on the manifest before it became uniformed. It was suggested that in the electronic manifest, the Special Handling Instructions (or equivalent) field should provide information on or a link between emergency response information (ERI) provider and generator so the provider knows the context.

The next area of discussion was the **Manifest Closeout**, which on the MPD spans from *Manifest Signed for Receipt of Materials* to *Manifest Sent to State and Generator*. The discussion centered on the three possible business process steps when the waste arrives at the TSDF. They are:

- Acceptance (Signing the manifest for closure)
  - The facility always signs the manifest before accepting or rejecting the manifest.
  - The facility signature indicates receipt of the shipment, not acceptance as the shipment may still be rejected.
  - Sometimes the TSDF keeps the manifest even with discrepancies noted.
  - Acceptance of the waste (the facility closes out the manifest, does not reject the shipment and will provide the waste management services) often happens within a short amount of time as the facility has incentive to serve its customer quickly.

- Discrepancy Identification
  - States analyze discrepancy data to find troubling patterns involving the same handlers involved in similar hazardous waste transactions
  - Gross weight vs. net weight – using the wrong measure may inappropriately cause the generator to lose their exempt status. This is especially a concern with P-waste. P wastes are unused commercial chemical products that are discarded either because they're no longer needed or they are off-spec. They are listed at 40 CFR 261.33. They are important because they are acute hazardous wastes, which trigger different requirements for generators. For example, a facility that generates more than 1kg of acute HW in a month is a large quantity generator, whereas the cut-off is 1,000kg of regular (non-acute) HW.
- Partial or Full Rejection
  - Rejections (General)
    - Rejections often occur because of permitting issues; e.g. the facility is not permitted to handle the waste, etc. Handling ability is also a factor where the facility may have an issue (e.g. power outage or inoperable management system) causing the waste to be rejected
  - Partial Rejection
    - A new manifest always gets created when there is a partial rejection
    - Currently states have limited insight if there is partial rejection – can't account for all wastes; little transparency
    - The new manifest that gets created needs to connect “manifest to manifest” to the previously issued manifest
    - States need to know the final disposition of the waste that was rejected
  - Full Rejection
    - Rejection of the entire waste could be sent back to the generator and if the original transporter has left the facility then a new manifest will need to be created and it should contain the previous manifest number to make it easier to track the waste

If a generator does not receive a copy of the signed manifest from TSDFs within 35 days of the date the waste was accepted by the initial transporter, the generator is required to contact the transporter of the waste and/or an owner or an operator of the TSDF to determine the status of the waste. A RCRA regulation requires that a generator keeps a copy of the manifest received from the TSDFs for at least 3 years from the date the hazardous waste was accepted by the initial waste transporter.

A brief discussion focused on the Importing/Exporting of waste. When shipments come into the US, a manifest is generated as the importer becomes the generator of such waste. Additionally, a manifest is generated for a shipment to be exported.

Data quality was the next major topic for discussion. State regulators provided the majority of input for this subject. It was noted that regulators compare manifest data against that contained in the Biennial Report (BR), to ensure the handler name and ID number are correct and conduct periodic checks to assess if the company ID matches what is in the system, if the waste type on the manifest matches the permit, and if the amounts and types of waste consistent throughout the process. It was stated that in-depth reviews on specific manifest should be sent to more professional staff.

A brief discussion centered on un-manifested waste, which is not reported as hazardous waste but later classified. The current process consists of a letter being sent to the state for each occurrence. State representatives suggested that states where the un-manifested wastes were generated be notified if subsequently the wastes were later classified as hazardous.

**Inspections** were discussed among state participants. Given that the current paper manifest form only has space for 6 waste codes, it was suggested that it would be nice to have all of the codes to compare to LDR notification. States often receive requests from other regulatory programs asking which generators are producing what. States do not receive a copy of the manifest until the TSDf either accepts or rejects waste. There is a significant variation in state capabilities to analyze and track waste – New Jersey has a sophisticated system, while DC and Virginia have Access databases with limited functionality. New Jersey reported that there is as little as 2 weeks and up to 2 months lag time on public availability of manifests and that reports provide company name, county, or municipality and are designed for homeowners.

### 3. e-Manifest Requirements

This section of the meeting focused on the baseline requirements for e-Manifest. Ms. Gunthardt provided an overview of the baseline requirements, and introduced the functional areas to which the requirements had been assigned. The discussion that followed was based upon these functional areas which are identified in bold as documented below.

The initial requirements discussion focused on **Electronic Manifest Creation**. This functional area concerns the processes for initial manifest creation including needed data elements and user templates or waste profiles and covers the process from initial manifest creation until either the generator or their representative (broker, transporter or TSDf) signs the manifest. It was stated that e-Manifest will need the capability to allow for batch uploads of generator/customer specific data from facility data systems, so that manifests can be generated or created from that data. Some handlers may want to upload 10,000 manifests at one time. Further, the system will need to provide blocks of assigned e-Manifest tracking numbers to facilities for use in their data systems. These numbers need to be provided prior to manifest creation, as they will be used in the draft manifest process in the facility data systems. It was stressed that generator customers should not have to do more work with the electronic system than they are doing now. The electronic process should neither present barriers nor impede the physical shipment of waste.

While Handlers need to be able to freely enter the EPA ID in the e-Manifest system, the states will need to retain the role of issuing IDs (e.g. temporary IDs, IDs for emergency situations).

It was reiterated that users need the ability to sign 'on behalf of' someone else, much like what occurs in the paper system. There is currently not a standard means for granting 'signature on behalf' authority.

It was suggested that the system shall pre-populate e-Manifest data fields where appropriate, but should allow users to populate the Generator ID number with a standard exception code to allow for the transport of PCBs, State-regulated waste, etc.

The system should provide the capability to add more than the 6 waste codes currently allowed in the paper manifest.

It was suggested that a web interface for small generators to create single manifests would be good and that there are a number of actors who should be able to create electronic manifests, including generators, transporters, facilities and brokers. Generators may have a number of designees that can operate on their behalf to create electronic manifests. Paper manifests will continue to be used as a back-up in cases where the generator does not have access to an electronic system.

It was noted the current railroad system has all information required on the manifest that is currently used to create the shipment paper forms.

e-Manifest should provide notification via email as required/needed, but should be customizable for states that want to receive email notifications. State users requested that they be given rights to view/download manifest data at time of creation.

The discussion then moved onto the proposed **Electronic Manifest Workflow**. This functional area includes requirements for the 'chain-of-custody' workflow for generators, transporters and TSDFs, data validation as the manifest is completed, offline and online mode requirements, and electronic signature requirements.

It was noted that the system should maintain a history of and provide the capability to users to view all manifest changes (where/when) while in transit, even for instances within the same company, and that the system shall provide users with information on chain-of-custody. It was stated that when waste is in transit, only handlers associated with the shipment, regulators (state and federal), and emergency responders shall be able to view the manifest data. The system shall support the capability of users to print all Manifest data while in transit. Use of this functionality is dependent on the transporter's technical capability/hardware availability. The printouts will support Emergency Responders and may satisfy Roadside Inspection requirements. The system shall provide Emergency Response information. States want to have capability to associate comments to the electronic manifest record for internal management purposes. These comments would be visible only to state users. The states do not want their comments to be incorporated into the manifest record.

It was requested that the system provide functionality to attach files (scanned supporting documents – exception letters, discrepancy documentation, import/export consent agreements) to the electronic manifest. The system should require that when providing an electronic signature, users be required to type in their first and last name.

It was recommended the system support the creation and processing of manifests for imported waste, where the importer of the waste will be identified as the generator. The system should also support the creation and processing of manifests for exporting waste. The transporter should be required to specify the port of exit and date and provide a signature when waste leaves the United States. Exports would not require data elements or "designated facility" to be completed; manifest would be completed when transported to port of exit.

As a default, EPA will enter paper manifest data into the e-Manifest system; TSDFs may also perform this function.

e-Manifest should support the full and partial rejection of shipments. In the case of partial rejection, it is critical the manifest process closely track what happens to the partially rejected waste and, if returned

to the generator, the new manifest will include a citation of the previous manifest information pertaining to the rejected wastes. The goal is to increase transparency.

The next topic was data **Quality Assurance** (QA). This concerned data quality between handlers (e.g. discrepancy reporting), as well as between states and Handlers. It was discussed whether or not the system should have the capability to validate Generator ID, name, mailing address, site address and phone number with an existing database, RCRAInfo, upon manifest creation. There was wide agreement that RCRAInfo should not be used as a reference system for validation as often the IDs within RCRAInfo are not as current as what is needed for manifesting. Facilities and their customers must have the flexibility to provide the Generator ID and other contact information from their own systems or on the fly. It was discussed that the system might validate data where possible and provide exception reporting to the appropriate user(s), but that validations should not slow/stop the transport of waste. In fact, the discussion overall of the system validating data as the manifest process occurs needs to be very much tempered to ensure maximum flexibility for transporters and facilities who are shipping and management waste. Future requirements sessions should document who is responsible for reconciling data inconsistencies.

Next was a discussion of the **User Administration** functional area, covering requirements for setting up new users, managing users, and deleting users. The system should allow registered users to the system that are not tied to an EPA ID. e-Manifest should also include the users' profiles that will determine what data will be included in the manifest based on these profiles. User profiles will also determine what data are available for download. The system should support a system administrator ("super user") role, which will allow for the creation/maintenance of user accounts and the assignment of roles to users.

The discussion then moved to **e-Manifest Formats and Standards**, which covered requirements for what standard formats or communications are needed to support electronic manifest creation or data access and QA. It was stated that the system should allow people to format data into the manifest format, but it's not a requirement that the format for the data elements for the transporter and TSDf are identical to the manifest form. In other words, for the electronic system, the interface within which users interact with does not have to have exact look of the manifest (e.g. the pilot provided a web interface with the data elements in the order of the manifest form, but not in the exact format). Stakeholders emphasized the importance of pushing up the information/data to EPA but industry doesn't want to share their internal databases with EPA and allow EPA to access their systems to pull the information out from the systems. It was stated the system should provide an ad-hoc query capability, along with standardized queries and should support a standard XML schema (or other standard equivalent) using standard protocol with error reporting. EDI would need to be supported as well.

Further discussion centered on "**Accepted**" Manifests. It was noted that sometimes a facility receives a shipment that is characterized in gallons and the facility, after taking the weight of the shipment, converts the amount to pounds. This is done for invoicing and internal reporting purposes. The addition of a new optional field "Actual Accepted Weight" was discussed to capture this information. The idea that this new field or others like it might later inform the Biennial Reporting process was discussed. Some voiced concern that new fields such as this are beyond the scope of the manifest process and are more designed for data reporting versus shipment tracking. This issue should be discussed further and perhaps separately from the core discussion of the manifest process.

Additionally, a number of **Pain Points**, or stakeholder issues with the current process were identified. These include the following:

- Tremendous variance in generator’s capability to store and manage files. Large generators have automated systems in place while other generators randomly store manifests in boxes.
- Because states only receive a copy of the manifest after the process has been completed, it limits the ability of the states to “actively manage” manifest data
- There are two main issues with data quality – legibility and accuracy.

Also identified were a number of **Issues** that could potentially impact the implementation of the e-Manifest system. These will most likely warrant further discussion during the e-Manifest Requirements process. They include:

- Emergency response – getting timely access to critical information
- Temporary or one-time state-issued IDs, such as for emergency cleanup – no RCRAInfo record
- Shipping non-hazardous items on the manifest, e.g., PCBs
- Assigning a block of handler IDs; e.g., ConEdison manholes
- BR
  - Form Code and Source Code may be issue for small guys
    - Need to be clearly defined in the instructions
- Legal concerns
  - Signature
  - Electronic copy versus paper copy
  - Is electronic data enough to prove (e.g., LQG vs. SQG)
  - Certified electronic copy
  - Record retention
- System Issues
  - What to do about outages? (power and internet, cell)
  - Security – Doesn’t want public to be able to track a load – issue of national security
  - Need ability to work on-line
- States want to be able to save copies of the manifest and be able to record comments
- How will system handle the situation where during the cradle to grave process, the manifest uses both electronic, as well as, paper manifests
- Some large handlers currently utilize proprietary systems and sophisticated technologies, such as handheld devices, that allow them to manage manifest data electronically. They would like to retain this capability and have e-Manifest support the use of their devices/systems
- Companies are concerned about keeping their proprietary information secure

Ms. Gunthardt and Mr. Wilson then concluded with a high-level overview of the meeting and provided information on the subsequent e-Manifest Requirements meetings to be held in Chicago and Denver. Attendees are encouraged to send further comments to [eManifest@epa.gov](mailto:eManifest@epa.gov). All meeting summaries will be provided to attendees as well as posted on the e-Manifest website: <http://www.epa.gov/osw/hazard/transportation/manifest/e-man.htm>

## Appendix A: Meeting Attendees

No.	Name	Organization	Phone	Email	Job Title
1	Michael R. Hastry	New Jersey DEP	(609) 943-4989	Mike.Hastry@dep.state.nj.us	Chief, Bureau of Hazardous Waste & UST Compliance and Enforcement
2	Sean K. Rook	Systech Environmental Corporation	(620) 378-4451 Ext. 102	sean.rook@lafarge-na.com	Regulatory Affairs Manager
3	Vickie North	DC Department of the Environment	202 535 1909	victoria.north@dc.gov	Hazardous Waste Outreach Specialist
4	Gabriel Treesh	CSX Transportation	904-359-1685	Gabriel_Treesh@csx.com	Hazardous material/waste transportation compliance for CSXT
5	Mike Fusco	Clean Harbors	610 558-3186	mike.fusco@safety-kleen.com	EHS Director
6	Robert Fronczak	Association of American Railroads	202-639-2839	RFronczak@aar.org	Assistant-Vice President Environment & Hazmat for the Association of American Railroads.
7	Steven Cohen	Veolia Environmental	973-691-7395	Steven.Cohen@veoliaes.com	Senior Business Analyst
8	Dennis Murphy	Delaware DNREC	302-739-9016	dennis.murphy@state.de.us	DE Exchange Network Node Contact / IT Contact
9	Tom Baker	Veolia	908 303 1635	tom.baker@veoliaes.com	Director, Environment & Transportation
10	Jennifer Hopper	Maryland Department of the Environment	410-537-3350	jhopper@mde.state.md.us	Section Head of Hazardous Waste Certification/Manifest Section
11	David S. Nicholas	USEPA	202.566.1927	nicholas.david@epa.gov	Policy Specialist within OSWER/OECA
12	Kurt Rakouskas	Exchange Network	301-531-5186	kurt@exchangenetwork.net	Exchange Network Coordinator
13	David Case	Environmental Technology Council	202-783-0870 x201	dcase@etc.org	TSDf Trade Association Representative
14	Aaron Wallisch	Venable LLP	202-344-4474	awallisch@venable.com	
15	Margaret Irwin	American Trucking Associations	703-838-1745	mirwin@trucking.org	Director, Customs, Immigration & Cross-Border Operations
16	Curt Wells	Alcoa Inc	412-553-8384	curt.wells@alcoa.com	Manager - Waste Services
17	Edward Hammerberg	MD Dept. of the Environment	410 537-3356	ehammerberg@mde.state.md.us	Technical Specialist/RCE Supervisor
18	Rachel A. Meidl	American Chemistry Council	202-249-6426	rachel_meidl@americanchemistry.com	Director, Regulatory & Technical Affairs
19	Lisa Silvia	Virginia Department of Environmental Quality	(757) 518-2175	lisa.silvia@deq.virginia.gov	Waste Inspector Senior II
20	Scott Kuhn	Clean Harbors Environmental Services	803-691-3426	kuhn.john@cleanharbors.com	VP Environmental Compliance
21	Michael Deyo	Giant Cement Holding, Inc.	804-937-0377	mike.deyo@gcpv.com	Environmental Consultant
22	Dirk Der Kinderen	DOT, PHMSA	202-366-4460	dirk.derkinderen@dot.gov	Transportation Regulations Specialist
23	Kerry Kelly	Waste Management	202-639-1218	kkelly5@wm.com	Director Federal Regulatory Affairs
24	Liz Goetz	Lion Technology	973-383-0800	liz@lion.com	Vice President
25	Karla Mercer	EQ Pennsylvania	717-849-2114	karla.mercer@eqonline.com	Quality, Environmental, Health & Safety Manager
26	Ben Smith	EQ Pennsylvania	717-849-2107	ben.smith@eqonline.com	Transportation Manager
27	Ozden Basaran	Delaware DNREC	302-739-9018	Ozden.Basaran@state.de.us	Sr. Application Support Specialist / IT Contact
28	Anthony Adragna	BNA	703-341-3755	aadragna@bna.com	Staff Reporter
29	Melvin Keener	CRWI	703-431-7343	mel@crwi.org	Executive Director

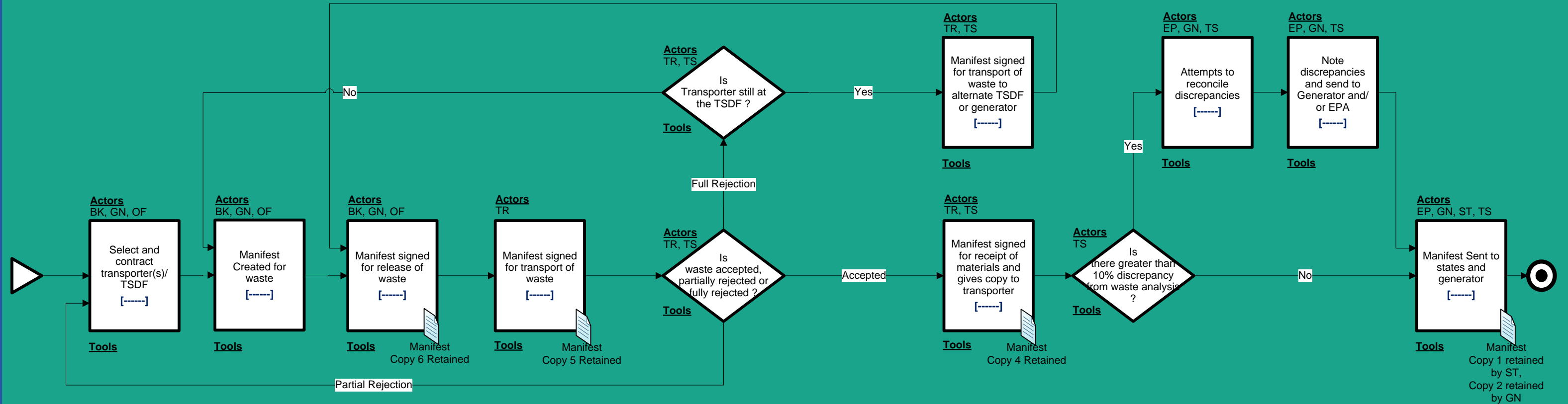
## Appendix B: As-Is Manifest Process (MAF) Multi-dimensional Process Decomposition (MPD)

See Next Page

TBD

Triggers

1. Waste has reached limits and needs to be disposed of



Observations

Recommendations

**Actors Legend**

GN	Generator
TR	Transporter
TS	TSDF Facility
OF	Offeror
BK	Broker
ST	State
EP	EPA Regional Office Admin

**Tools Legend**

[-----]	Placeholder for tool name
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**Icon Legend**

	Start Action		Value Chain Segments
	Process Thread Transition		Process Step
	Process Thread Continuation		Decision Point
	End / Terminate	[XX-XXXXX]	ESAR Code
	Produced Document	ITI-MPD-##	ITI Code
	Referenced Document	A#	Pertains to all process steps
		#	Observation
		#	Recommendation