

Standing Committee on Resource Conservation and Recovery (ADC60)
Cyrus Parker, Chair

Resource Conservation and Recovery

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This paper is a compilation of comments from past and current committee members looking back to the beginning of the committee in the 1990s, the committee's current interests, and looking forward as to what the future of the committee's focus may be like. The committee's areas of interest such as contaminated property investigation and management, reuse and recycling, environmental management systems, alternative uses of right of way, and winter operations are recurring themes in this paper.

YESTERDAY

This committee is relatively new when compared to some of the more traditional committees within TRB. This is attributed to the new ideas on environmental due diligence and stewardship developed in the 1970's that eventually were adopted by the transportation industry. The committee's original focus was on promoting research that would allow the industry to quickly adapt to these new ideas on site assessment and the management of risks associated with contaminated materials. Over time the committee's interests have expanded to include additional related issues such as the environmental benefits of reusing and recycling materials, utilizing existing right of way to generate power or provide wildlife habitat, and reducing the environmental impacts of winter maintenance operations.

The seed of our committee in the early to mid-1990's was as a task force of transportation environmental professionals emerging within the more NEPA-focused Environmental Analysis in Transportation Committee. Specifically, the task force was comprised of professionals with a particular interest in and focus on hazardous wastes and contamination who wanted to expand TRB's thinking of "HazMat" as just an operations/maintenance management issue - at a time in the U.S. in particular when both long-tail liabilities from contaminated properties and opportunities and risks from "brownfields" remediation and re-use were becoming prominent environmental issues and opportunities. From this seed an independent committee sprouted and rooted itself initially with a heavy Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) - and Resource Conservation and Recovery Act (RCRA)-driven solids/wastes, surface water and groundwater compliance and remediation emphasis. As the late 1990's unfolded the newly formed Waste Management in Transportation committee also saw adjacent and as yet little-touched cross-cutting environmental issues such as Environmental Management Systems and Sustainability as opportunities to successfully branch out and grow its

own members and friends headcount and diversity. Likewise, as the new millennium unfolded and extreme weather, climate change and recycling became mainstream issues the committee further branched out with additional focus on the strong relationship between contaminated and other materials re-use, renewables, green infrastructure and alternative uses and opportunities for transportation property and facilities to have alternative or supplemental uses as a resource for transportation agencies. At the same time, relationships and joint activities with several other TRB committees and task forces developed into standing alliances – for example, committees on environmental analysis, sustainability, geology, water, air quality, pavements, environmental law, and several others. The result being the mature, thriving and collaborative member of the TRB Environmental Section that the ADC60 Committee is today, just a little over 20 years since it began. (Lewis)

Prior to the tenure of Edward Wallingford (2009-2015) as Chair of the Committee, the name of the committee had been changed to the Waste Management and Resource Efficiency in Transportation to better reflect the widening scope of the committee, which focused on waste/contamination management issues, environmental management systems, and the use of recycled materials in construction. Because these topic areas are interrelated under the concept of “sustainability” the committee focus expanded again to incorporate other elements of sustainability. Four subcommittees were either carried forward, refined or established: Waste/Remediation Management, Alternative Uses of Rights of Way, Environmental Management Systems and Recycled Materials in Construction. The Committee name was subsequently changed during his tenure to Resource Conservation and Recovery to more accurately reflect and encompass the broadening scope of committee activities. (Wallingford). Today the committee supports the efforts of a subcommittee on Transportation Infrastructure, Facilities, and Right-of-Ways as Sustainable Resources that focuses on systems-based solutions, technology advances, research, and maintenance aspects associated with non-traditional utilization of transportation real assets. (Poe)

ADC60 has also been actively engaged in discussions about incorporating recycled materials in construction of transportation facilities and roads. To this end, ADC60 sponsored workshops and meeting sessions focusing on developing metrics for environmental benefits of using recycled materials. In addition to this, specific workshops and sessions were organized, and time during committee and subcommittee meetings was dedicated to discuss addressing technical issues of introducing such materials in construction. (Pakes)

TODAY

The committee continues today much as it has in the past, by evaluating trending topics that relate to our expanding scope such as managing risk associated with contaminated materials, utilizing recycled materials, looking for ways to be sustainable and resilient, and maximizing the resources we have such as finding alternative uses for our right of way. We routinely coordinate with other committees to determine if our interests align and how we can collaborate on a topic. In addition to collaborating with our sister committees in the Environment and Energy Section, we also collaborate with ADD40 Transportation and Sustainability, AL050 Environmental Issues in Transportation Law, ADC30 Ecology and Transportation, AHD10(1) Environmental Maintenance Sub-Committee, AT040 Transportation of Hazardous Materials, AFP40 Geo-Environmental Processes, AFB60 Hydrology Hydraulics and Water Quality, AFP70 Aggregates, among other committees. We invited APF40 and AFP70 to co-host our summer workshops in 2016 and 2017 respectively and will continue to work with other committees in developing research and synthesis

topics in addition to collaborating in Annual Meeting sessions and workshops. The Committee has always had strong relationships with other committees both in co-sponsoring technical sessions at the Annual Meetings and inviting participation of other Committees to participate in the Summer Workshops that the Committee organizes. (Wallingford)

The Committee has actively participated every year in the TRB Annual Meeting and has utilized each available session slot to either host or team with other TRB Committees to present relevant, important and timely topics related to the Committee Scope. The main strength of the Committee, however, is exhibited in the Summer Workshops that the committee has organized annual for over 20 years. These workshops have been typically hosted by a State DOT or Transit Organization and have been held every summer since the committee was formed. Participation has generally ranged from 75-150 attendees. (Wallingford) (Poe)

TOMORROW

Emerging contaminants such as Per- and poly-fluoroalkyl substances commonly called PFAS have started impacting transportation construction projects in some states and was a topic of several conversations at our last Annual Meeting. Many states are looking for guidance on how to address these contaminants that are present in so many of our everyday products. Could this be the next hot topic as lead painted bridges or asbestos bridge components were of the past that state transportation agencies will have to address? Nano particles research may produce break through products for transportation applications. 3D printing is now widespread and may speed along developments in materials used in construction. Climate change may influence our decisions on sustainability and resiliency. The internet of things, electric and automated vehicles are also on the verge of changing our transportation mindset. Questions of how these new developments will impact the environment, for better or worse, will have to be asked and could greatly influence the direction of this committees' research ideas. Some thoughts for future consideration by the authors of this paper are as follows:

- With the exponentially increasing rate of societal, policy and technological evolution happening at the same time that global climate change and extreme weather impacts are also greatly accelerating, the committee must answer the call to action by yet again showing leadership by branching, collaborating and growing in synergy with other committees to help TRB meet these global challenges. While also keeping its focus on momentum on core mission objectives and activities, this means cultivating even more diversity in membership, friends, collaboration, and research development as disruptive innovation not only continues but escalates. (Lewis)
- Today there is a significant increase in using recycled materials in construction compared to the past. These materials include but are not limited to an increase in commonly used recycled materials such as fly ash, Recycled Asphalt Pavement (RAP), Recycled Concrete Aggregate (RCA) and Recycled Asphalt Shingles (RAS). Other materials of the future will be increasingly important and include materials such as scrap tires, various slag materials, used glass and ceramics. Maintaining a focus on recycled materials use for a more sustainable infrastructure system is vital to resource availability and scarcity. Going forward, recycled materials use in transportation is an important topic for which the momentum of the past should continue into the future. Finally, there is still significant room to accomplish the goals of using recycled materials (e.g. reduction of greenhouse gas emissions, water use, carbon reduction, air pollution, etc.). (Pakes)

- I believe there is an opportunity for the committee to focus on the economic benefits of the innovative resource conservation and recovery approaches and technologies it has explored over the years. (Poe)

The comments in this Centennial Paper reflect the thoughts of our members and friends on yesterday, today, and tomorrow. We have reflected on the committee's' past involvement, the topics of concern today, and speculated on the committee's involvement in transportation research in the future. Our goal is to keep our committee relevant by keeping up with trending issues across the nation by continuing to rotate our summer meetings to different regions of the country, collaborating with other TRB committees, agencies, and interest groups, and relying on our diverse and talented members and friends to identify trending transportation issues in resource conservation and recovery.

REFERENCES

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