Let’s Do This!

In Pursuit of Zero Waste with Incident Recycling
Organizational Context

Active and Emerging Fires
(Snapshot on 20 May 2021)
Operational Context

Fire Camp:

- A campsite for firefighters and support personnel. It is typically set up for a large project fire which requires a large amount of staffing, organization, and logistics. According to the National Incident Management System, a fire camp is one of five predesignated temporary facilities.
National Greening Fire Team
Mission, Vision, Focus & History

MISSION
• Integrate sustainable best management practices on incidents & in the fire community

VISION
• Achieve net zero environmental impact by 2030

FOCUS
• Energy Conservation
• Water Conservation
• Waste Reduction
• Fleet and Fuel Efficiency
• Sustainable Acquisition
• Sustainability Leadership, Education, and Outreach
• Business Efficiency & Return on Investment

HISTORY
• 2010 Team Established
• 2010 – 2018 Team Develops as “Grassroots” Entity
• 2019 Team Officially Chartered under Washington Office Fire & Aviation Management
Greening Fire Team Network by Geographic Area Coordination Center (GACC)

<table>
<thead>
<tr>
<th>Area</th>
<th>Individuals</th>
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<tbody>
<tr>
<td>NWCC</td>
<td>15</td>
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<tr>
<td>ONCC/OSCC</td>
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<td>AICC</td>
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<td>SACC</td>
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<td>EACC</td>
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The GFT network includes 99 individuals from various GACCs and agencies, including Washington Office, NIMO, NAFRI, and NIFC Ambassadors.
Greening Fire Team Network

By Agency

<table>
<thead>
<tr>
<th>Agency</th>
<th>Number of Individuals</th>
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<tr>
<td>Forest Service</td>
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<tr>
<td>Bureau of Land Management</td>
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<tr>
<td>Bureau of Indian Affairs</td>
<td>1</td>
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<tr>
<td>CAL FIRE</td>
<td>1</td>
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<tr>
<td>National Park Service</td>
<td>2</td>
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<tr>
<td>National Renewable Energy Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>State of Arizona</td>
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<tr>
<td>State of Montana</td>
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</tr>
<tr>
<td>Other</td>
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</tbody>
</table>

- A Greening Fire Team (GFT) Ambassador is an individual with a desire to help advance sustainability Best Management Practices (BMPs) in incident operations.
- Our GFT Ambassadors champion the Greening Fire Team mission by participating at the level of involvement that suits their interests, passions, and available time and resources.
National Renewable Energy Laboratory (NREL) and Sustainability Best Practices On Incidents

- **Energy**
  - Renewable Energy systems
  - LED lights
- **Water**
  - Nonpotable, recycled water for vehicle washing
- **Waste Reduction**
  - Reduce consumption of plastic bottles for sports drinks/bottled waters
  - Expand use of rechargeable batteries in radios
  - Develop holistic strategy to manage food and other compostable waste
  - Implement standardized recycling on incidents

Read the NREL report at: [https://www.nrel.gov/docs/fy19osti/73771.pdf](https://www.nrel.gov/docs/fy19osti/73771.pdf)
Focusing on Reducing Waste

Triple Recycle Station
(2020 Red Salmon Complex, ONCC)
Congressional Findings (42 USC 6901)
Solid Waste Disposal

Many cities will be running out of suitable solid waste disposal sites within 5 years!

(b) Environment and health
The Congress finds with respect to the environment and health, that:

1. although land is too valuable a national resource to be needlessly polluted by discarded materials, most solid waste is disposed of on land in open dumps and sanitary landfills;
2. disposal of solid waste and hazardous waste in or on the land without careful planning and management can present a danger to human health and the environment;
3. as a result of the Clean Air Act [42 U.S.C. 7401 et seq.], the Water Pollution Control Act [33 U.S.C. 1251 et seq.], and other Federal and State laws respecting public health and the environment, greater amounts of solid waste (in the form of sludge and other pollution treatment residues) have been created. Similarly, inadequate and environmentally unsound practices for the disposal or use of solid waste have created greater amounts of air and water pollution and other problems for the environment and for health;
4. open dumping is particularly harmful to health, contaminates drinking water from underground and surface supplies, and pollutes the air and the land;
5. the placement of inadequate controls on hazardous waste management will result in substantial risks to human health and the environment;
6. if hazardous waste management is improperly performed in the first instance, corrective action is likely to be expensive, complex, and time consuming;
7. certain classes of land disposal facilities are not capable of assuring long-term containment of certain hazardous wastes, and to avoid substantial risk to human health and the environment, reliance on landfill should be minimized or eliminated, and land disposal, particularly landfill and surface impoundment, should be the least favored method for managing hazardous wastes, and
8. alternatives to existing methods of land disposal must be developed since many of the cities in the United States will be running out of suitable solid waste disposal sites within five years unless immediate action is taken.

(c) Materials
The Congress finds with respect to materials, that:

1. millions of tons of recoverable material which could be used are needlessly buried each year;
2. methods are available to separate usable materials from solid waste; and
3. the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments.

How Much Trash Comes from Incidents?

Over the 2017 fire season, it is estimated that:

- **Fire camps** in the Southwest likely generated roughly 6.1 million pounds of trash on incidents.
- Forest Service **offices** in AZ and NM likely generated roughly 6.98 million pounds of trash.

This means that **47% (almost ½!) of Forest Service trash in this region came from incidents!**

Source for estimating trash from office space: https://www.wastecare.com/usefulinfo/Waste_Generated_by_Industry.htm
What is the Cost of Trash on Incidents?

- The cost for hauling trash varies GREATLY by locale, however costs between $400 and $800 per hauled dumpster/roll-off are common.
- On a larger incident, this could mean costs between $11,200 and $22,400 per week.
- More trash generated = Higher trash costs
Challenges to Standardizing Recycling

• “In house” recycling efforts struggled with lack of standard recycling equipment, processes, staff, etc

• No single contract vehicle available for ordering recycling
  • Recycling is expensive, right?
  • Do vendors exist that can provide on-site recycling on incidents?
  • What qualifications and experience do such vendors have?
  • What would a scope of work look like?
  • Who will write and manage such a contract vehicle?
Incident Recycling
2021 is the Third Year of the Three-Year Pilot

- **Standardized recycling equipment, signs, processes, expectations** means that our rotating fire camp personnel have a similar recycling experience on each camp, which increases efficacy and engagement.

- **Highly qualified vendors** can provide Incident Management Teams assurance that waste diversion services at fire camps will improve waste management practices with reduced strain on logistics personnel.

- **Reduced person-hours** tied to submitting and processing requests for recycling on a case-by-case basis across all four GACCs.

- Standardized waste diversion reporting that enables the agency to easily capture and communicate our efforts to achieve compliance with USDA Directive 5600-005 to divert 55% of our agency’s waste from the landfill.
What On-Site Incident Recycling Services Are Provided?

1) On-site set-up/maintenance/tear-down of incident recycling equipment
2) Standardized collection and sorting of waste and recyclables
3) Process back-hauled waste and recyclables from remote camps
4) Transport recyclables to the nearest recycle outlet
5) Waste diversion tracking and reporting
6) Recycle revenue management (if applicable)
What is Recycled?

**PRIMARY RECYLING**
- Cardboard
- Plastic #1 and #2
- Paper
- Aluminum/Tin Containers
- Glass

**ADDITIONAL SERVICES:**
- Cooking Oil
- Tires
- Batteries (All Types)
- Wood Pallets
- Scrap Metal
Top GFT Deliverable: “Turn-key” Incident Recycling
Initial Challenge to Adoption
Perceived Expense of Recycling

Recycling on incidents is too expensive, right?

• When we compare the cost of incident recycling to other common services at fire camps, portable toilets and hand wash stations cost nearly three (3) times as much as incident recycling.

• On the Whitewater Fire in 2017, the contracted incident recycling amounted to only .05% of the daily fire camp operating costs!

• What is the cost of not recycling? New landfills are estimated to cost between $11.9 and $27.5 million in taxpayer dollars.
Recycling can Reduce Trash Hauling Costs

• The recycling BPA team can work with Logistics to reduce the frequency of dumpster hauls and cut trash hauling costs by 50%-80%.
  • This could mean a savings of up to $18,000 per week!
  • Additional benefit: Our agency is reducing its long-term negative impact on local community landfills.

Photo from 2019 Cellar Fire showing a 50% reduction in trash by removing the recyclables
Feedback from the Field 2020
Recycling significantly reduces the trash problem!

- Slater Fire (OR): **Contracted incident recycling (through the BPA).**
  - The team **diverted over 37,000 pounds** of materials and achieved a **43% waste diversion rate**.
  - The incident recycling vendor also managed the donation of **3,600 pounds of non-perishable food** to the local community.

Other Intangible Benefits of Recycling
2020 Incident Recycling Results
Waste Diversion Dashboard

Average Cubic Yards of Primary Recyclables by GACC

- Southwest (SWCC)
- Southern California (OSCC)
- Northwest (NWCC)
- Northern California (ONCC)

Average Diversion Rate by GACC

- Southwest (SWCC)
- Southern California (OSCC)
- Northwest (NWCC)
- Northern California (ONCC)
Striving to Increase Participation By Simplifying and Standardizing Messaging

The most current electronic version of these posters will be maintained on the GFT public website at: https://www.fs.usda.gov/managing-land/fire/sustainable-ops/incident-recycling
Does the Public Value the Program?

Jo Young  BIGGEST THUMBS UP TODAY! Thanks for the good news.

Adrienne Vaughn  Thank you so much! My sons school received a large donation of food snacks left over from the fire! Way to give to the local communities!

Norene Klimes  Tis amazing the effort this company puts in to save the 🌱

Kathryn Axton Hardin  This is wonderful! I always hated the waste that went on in fire camp. I'm really thrilled to hear about this effort.

Becky Stockton Walker  So cool - thank you for saving our land - plus entertaining & appreciating the welfare of animals 🧡ضح

Walker Fire 2019  
Human Eco Recycling Vendor  
800 reactions, 83 comments, 190 shares  
https://www.facebook.com/USFSPlumas/
Preparing for 2022 (and 2030)
GFT Waste Reduction Initiative
Net Zero Waste Design and Assessment

• Net Zero Waste Design and Assessment
  • FY21 – Phase One: Supply Chain, Recycle Infrastructure and Partnerships Analysis and On-Site Waste Audits at Select Caches
In response to feedback from the Logistics community, we are starting the process to expand the incident recycling to other geographic areas in 2022.

5. The GFT has identified incident recycling vendors that can provide recycling services on-site at incidents across the country. In the future, would you like any of the GACCs below to be added to the incident recycling BPA? Please select ALL that apply.

- RMCC (Rocky Mountain) 30
- Northern Rockies (NRCC) 39
- Great Basin (GBCC) 30
- Eastern (EACC) 18
- Southern Area (SACC) 21
- Alaska (AICC) 15
- Other 3
2022 – Preparing for an Expanded Incident Recycling BPA

- Circulating nationwide incident recycling vendor market research survey through contacts with US Green Building Council, National Recycling Coalition, EPA, etc
- Goal: Identify sufficient, qualified vendors that can provide on-site recycling services at all wildland fire camps across the US in the future
- Deadline for responses extended to: Friday, 28 May 2021!

USDA Forest Service Wildland Fire Incident Recycling Market Research

On behalf of the USDA Forest Service, GSA is conducting market research to understand capabilities related to providing the below requirement.

The National Greening Fire Team (GFT) is conducting market research to identify vendors that have the skills and experience to provide On-Site Incident Recycling services at wildland fire camps across the United States in the future.

Information describing the On-Site Incident Recycling program can be found at: https://www.fs.usda.gov/managing-land/fire/sustainable-oes/incident-recycling.

If your company is interested in providing such services, please complete the questionnaire below.

NOTE: Completion of this questionnaire is optional and is for “market research” purposes only and does not affect any “current” VIPR agreements, Dispatch Priority Lists (DPLs), contracts, etc. nor does it constitute submission of a bid, quote, or proposal. No contracts will result from completion of this questionnaire, but your responses might be included on an internal source list for future market research conducted by an Incident Management Team during an active incident.

Responses Due: 5/21/2021

Greening Fire Nationwide Incident Recycling Market Research questionnaire: https://feedback.gsa.gov/jfe/form/SV_5nymUFkeBnBzVTU
Other Ways We Are Working to Help Green Fire

Forest Service Employee in the NWCC Receiving HydroFlask via Partnership with the Greening Fire Team
Solar Powered Water Filtration System + Reusable Potable Water Storage

Solar panels charge electronics and communication equipment in the field with no noise and no emissions.

Solar-powered water filtration system provides potable water to the reusable 5-gallon water container.
GFT Green Procurement Initiative

• Green Vendor Market Research
  • Goal: Better understand what green products/services are currently available, how much they cost, where they can be provided, what companies provide them and their technical specifications related to size, equipment requirements, performance, etc.

Solar/Wind Powered / Off Grid Light Towers
EPA Federal Green Challenge Award Innovation

News Releases from Region 09

EPA Recognizes Vallejo, Calif.-Based USDA Forest Service Operation for Innovative Zero Waste Wildfire Response Initiative

(6/17/20)

Contact Information
Selected Daniels judy.daniels@eere.energy.gov
4/18/18

SAN FRANCISCO — Today, the U.S. Environmental Protection Agency (EPA) recognizes several facilities in California and elsewhere for efforts to apply innovative measures to conserve money and resources as part of the Federal Green Challenge program. The Challenge is a national initiative that encourages federal agencies to reduce the federal government’s environmental impact.

“With ongoing federal budget reductions and constraints on the federal government’s spending, we must do more with less to recover and reduce costs. This federal initiative helps identify innovative ways to meet our mission goals and achieve our fiscal sustainability goals,” said EPA’s national program manager for the Federal Green Challenge, Janice Cariss. “It is important to highlight examples of federal government leadership and innovation that advance the Agency’s mission and set a good example for America.”

Under the Federal Green Challenge program, the USDA Forest Service Region 5 in Vallejo, Calif. has won the Regional Innovation Award. The Region was able to establish sustainable operations that are keeping the federal government’s financial status at a level that meets both the mission and fiscal requirements.

“Sustainable Forest Operations (SFO) is a program created by the USDA Forest Service to introduce and implement sustainable operations in the regional offices. The goal of the program is to establish a sustainable forest operation in each of the regions. The goal is to reduce the federal government’s environmental footprint and enhance the sustainability of the federal government’s operations. The SFO program is a great example of how government can lead the way in sustainability.”

“Through the Federal Green Challenge, the USDA Forest Service is committed to reducing its environmental footprint and improving its sustainability in the operations of its facilities. The SFO program is an example of how the USDA Forest Service is making progress towards achieving these goals.”

EPA 2020 Federal Green Challenge Award Winner
U.S. EPA SMM Web Academy
Achieving Zero Waste with Innovative Reuse and Recycling Contracts

By Max Wechsler
Operations Manager
May 25, 2021
Urban Ore-ientation

- For-profit corporation founded in 1980
- $2.7M gross revenue in 2020
- 31 employees (28 full-time) + regular contractors
- Handle 7,000 – 8,000 tons annually
What is an EcoPark?
The Bad Old Days (1979)

Mandated salvaging at the dump
We still salvage
Urban Ore Tour

Unloading the salvage truck = The first activity every morning
Store Receiving Department
General Store Department

30,000 square-foot warehouse
Building Materials Department

2.5-acre yard + doors, trim, flooring inside
Building Materials Receiving
Outside Trader Department
What Isn’t Reused, We Recycle
<table>
<thead>
<tr>
<th>Month</th>
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<th>Recycled (Pounds)</th>
<th>Total Recycled (Tons)</th>
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<td>Salvaged</td>
<td>Dumped</td>
<td>Nonferrous Metals</td>
<td>Ferrous Metals</td>
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<td>Jan</td>
<td>60.5</td>
<td>1.2</td>
<td>6.6</td>
<td>15.1</td>
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<td>Feb</td>
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<td>11.6</td>
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<td>Mar</td>
<td>67.1</td>
<td>6.7</td>
<td>6.7</td>
<td>18.2</td>
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<td>21.6</td>
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<td>Total Pounds</td>
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<td>729.1</td>
<td>80.3</td>
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Dollars and Cents (2018)

• Purchases for resale*  $ 56,500
• Sales taxes collected  $226,000
• Property taxes  $114,000
• Payroll taxes, fed & state  $315,000

TOTAL  $711,500

* What we pay out to supply-side customers for bringing us high-quality merchandise. Averages ~$100K annually
Dollars and Sense

Intangible economic, environmental, community, and social benefits = PRICELESS

• Disposal costs saved by customers at the Transfer Station (supply side)
• $$$ saved by customers purchasing our affordable goods (demand side)
• Preservation of cultural and material value
• Creation of local jobs and local community
• Climate impacts (!!!)
We have grown.

Gross Revenue
1981 – 2009
1983 = New Transfer Station
City Incubation = 1983-89
We invented Material Recovery Enterprise in the zoning code: A business that diverts discarded materials from a number of waste streams including but not limited to the Transfer Station, drop-off, pick-up and curbside collection...
RESOLUTION NO. 62,849-N.S.

REAFFIRMING THE CITY’S ZERO WASTE GOAL AND REFERRING THE ISSUE TO THE SOLID WASTE COMMISSION

WHEREAS, in 1976, only six years after the first Earth Day, Berkeley’s City Council established a goal of recycling 50% of its then-landfilled discard stream; and

BE IT FURTHER RESOLVED, that the City also sets a Zero Waste Goal of eliminating Berkeley’s materials sent to landfills by the year 2020.

BE IT FURTHER RESOLVED, that the Solid Waste Commission examine changing its name to something more reflective of the City’s waste reduction goals and report back to the Council with an potential suggestions.
2018 = Zero Waste Reaffirmation

WHEREAS, at least six separate service functions, which individually could be called Material Recovery Enterprises as defined in the Berkeley Municipal Code, are provided in the transfer station, including three that are privately owned (Ecology Center, Community Conservation Center, and Urban Ore) and three that are owned by the City and financed through an Enterprise Fund; and

THEREFORE BE IT RESOLVED, that the elected City Council, who represent the citizens of Berkeley, expresses its satisfaction that its transfer station has developed an ecology of commerce among City programs and contracted operators, and that its focus on labor instead of machinery has provided more jobs than automated systems, and has also produced some of the highest-quality secondary resources in the market; and

BE IT FURTHER RESOLVED, that Berkeley should analyze the structure of fees paid to recovery operators to assure that Berkeley’s whole system can function reliably in the face of changing markets; and
2020 = City Renews Contract

RATIONALE FOR RECOMMENDATION
This salvage and reuse/recycling program supports increased diversion of materials from landfills, and helps move the City toward its Zero Waste Goal. In addition, the Transfer Station’s operational expenses associated with long-haul transportation and landfill use are also reduced.
Salvaging Contract

Salvage service fee of $47.74/ton = what the City pays for landfill hauling and disposal tipping fees

- Assists in attaining Berkeley's Zero Waste and Climate Action Plan goals
- Reduces manufacturing resource use and energy impacts by returning goods and materials to the commerce cycle
- Reduces the City’s transportation costs to haul waste to the landfill

URBAN RE
To End the Age of Waste
Salvaging Contract
Public-Private Reuse Partnership
(3-year term)

Urban Ore has:

- **Exclusive rights to salvage reusable materials** from the City’s transfer station tip floor
- Space on the transfer station property for a **staff shed** and a **box truck**
- **Salvagers spot and report hazardous materials** to City staff to avoid illegal disposal
Contract Requirements

- **Hazardous materials recognition training** offered by the City or an independently certified safety training company

- Salvage workers shall **notify City workers if they observe hazardous materials or materials banned from landfill** being unloaded onto the tipping floor

- **Detailed safety requirements**, notifications and reporting

- **Monthly written report:** Invoice to include number of **tons of material recovered** from the salvage and diversion program, and **total staff hours worked**
What’s Covered

• Goods that may be reused for their *originally intended purpose* or goods that may be *re-purposed*

• Eligible material categories (may be updated periodically by mutual consent): *building materials, institutional fixtures, housewares, furniture, clothing and goods* and some non-ferrous scrap metal (with exclusions for 3rd party C&D contracted materials)

• Contractor has sole right and discretion to determine whether any item is acceptable
Salvage Contract Documents

- City Council Authorization and Contract:
  [Scope of Services, Second Document, pages 15-16]

- EPA Zero Waste Case Study: Berkeley
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Transfer station salvaging and Urban Ore, Inc. EcoPark, Berkeley, California

Questions?

Main Recycling Station at the Lime Fire Camp in Northern California