

WEST MAUI WATERSHED STUDY

POSSIBLE SOLUTIONS FOR SEDIMENT MANAGEMENT

WEST MAUI RIDGE TO REEF INITIATIVE PUBLIC MEETING

Thursday, August 30th, 2018, 6:00 PM

Veterans Memorial Center, Lahaina, Hawaii

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PURPOSE/AGENDA

Purpose: Gather community input on possible solutions to managing sediment in West Maui watersheds

Agenda:

1. Understanding the Sediment Problem
2. Discussion of Alternative Solutions
3. Feedback/Q&A
4. Contact Info



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UNDERSTANDING THE SEDIMENT PROBLEM



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SEDIMENT PLUMES

A. Fleming Beach (foreground), Honolua Bay at top



B. Honolua Bay



C. Honokowai Stream



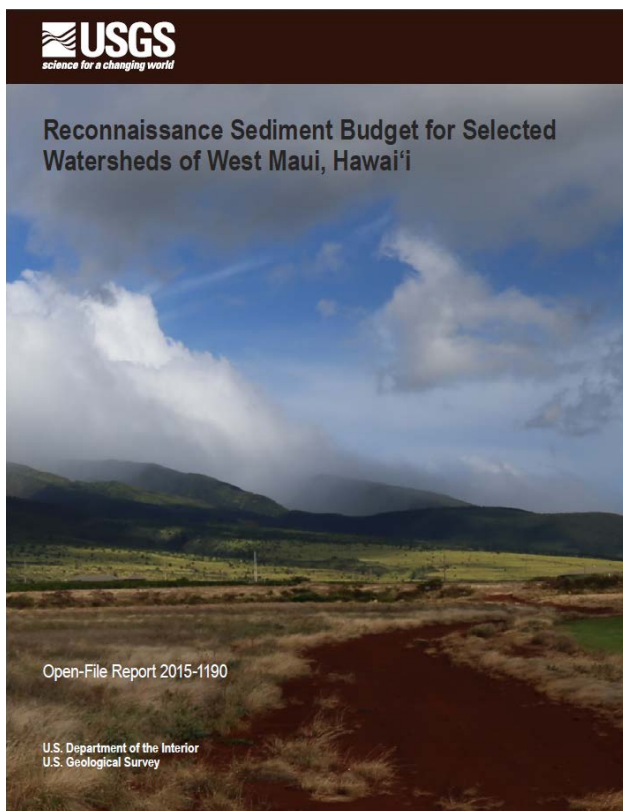
D. Honokowai looking south



Question: Where do these sediment plumes come from?



IN-STREAM EROSION

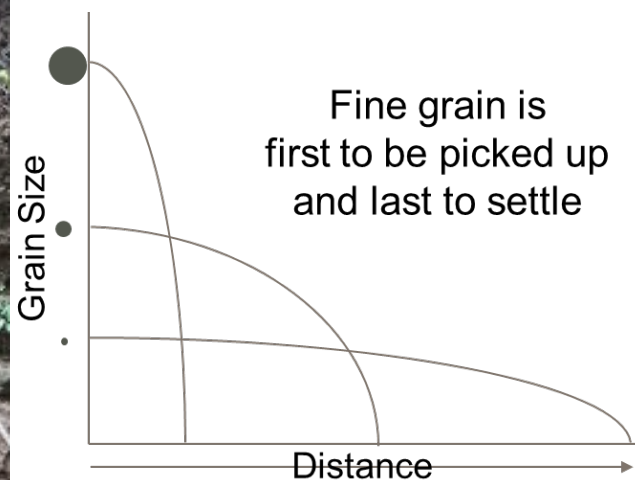


USGS OFR 2015-1190. Stock, Falinski, and Callender.

Answer: The greatest **source** of sediments in West Maui comes from **erosion of streambank agricultural fill deposits.**



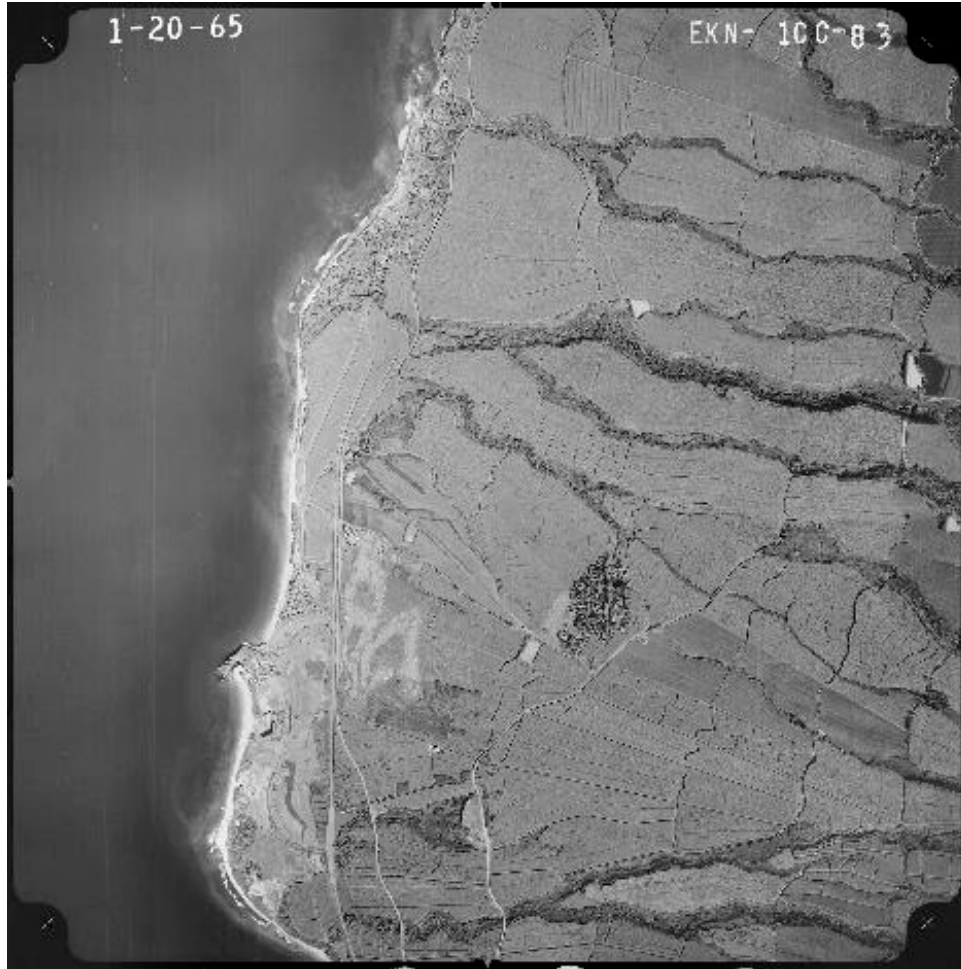
Eroding stream banks



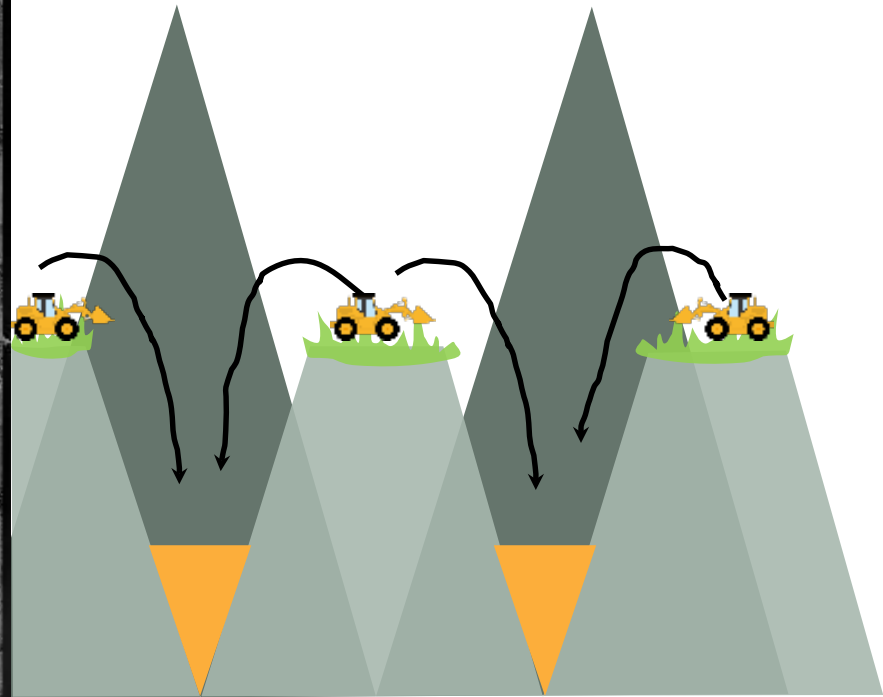
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AGRICULTURAL FILL TERRACES

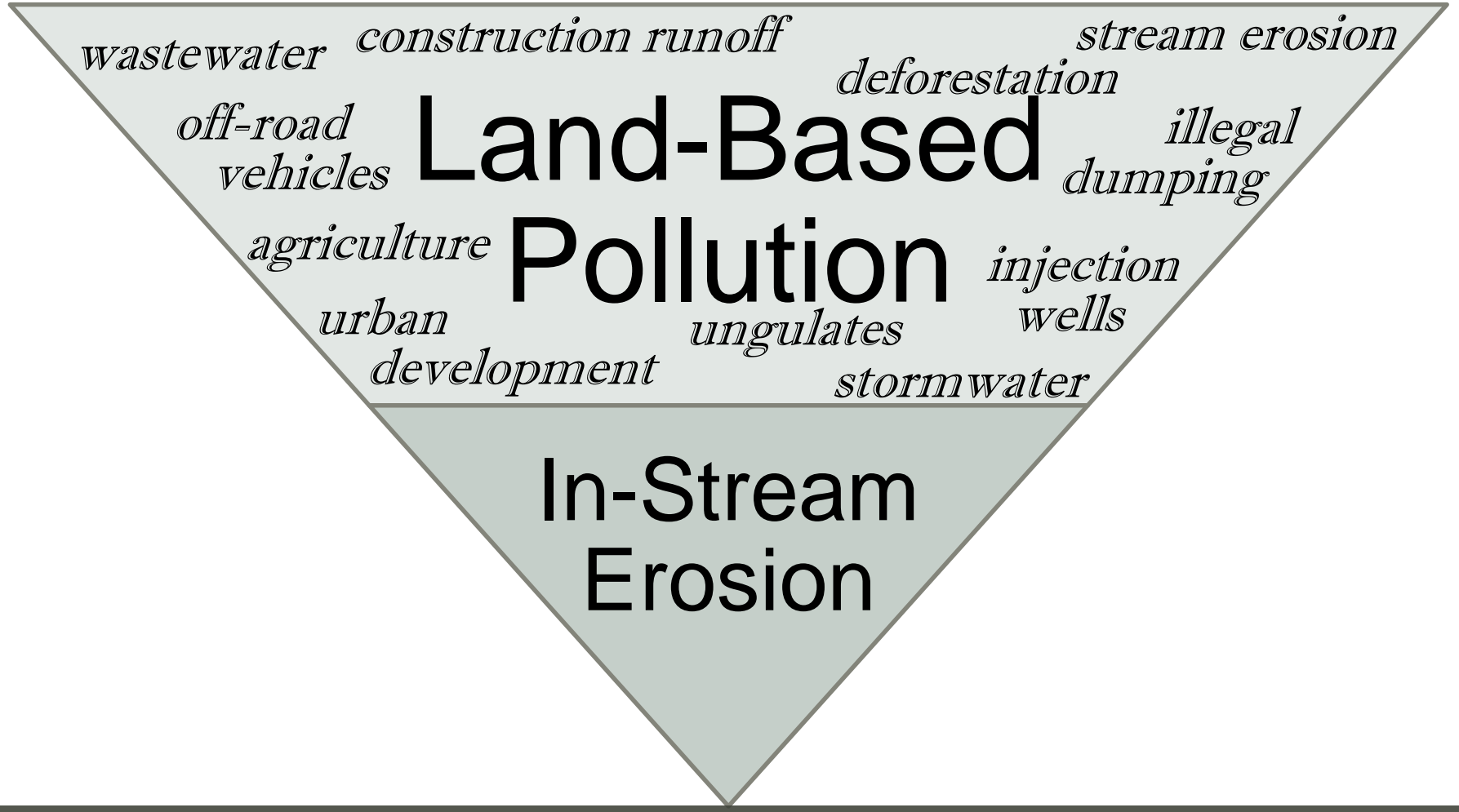


Historic aerial image of Agricultural fields in West Maui



Graphical depiction of historic agricultural fill deposits in West Maui stream valleys

STUDY FOCUS



Sediment plumes are bad. Fine-grain sediment plumes are worse. Our goal is to find solutions for reducing in-stream sediment transport, especially fine-grain silts/clays, **before** it reaches the ocean.

NEXT STEPS:

- 1. Develop Alternatives:** Based on data collected by R2R, develop first set of solutions. Stakeholder/public to provide feedback/input (current). Develop solution details. Model solutions.
- 2. Analyze Costs:** Study will provide a cost-benefit analysis to shape recommendations for cost-effective solutions.

	Plan	Cost	Sediment Reduction
Example	A	\$250,000	10%
	B	\$1,000,000	30%
	C	\$50,000,000	40%
	D	\$250,000,000	50%

- 3. Funding/Construction:** USACE study recommendations can support State/County planning efforts and decisions. The State, COM and other agencies could fund construction, implementation and maintenance of the alternatives recommended by USACE.
USACE involvement ends with the study.

Goal: Complete study within 2 years

DISCUSSION OF ALTERNATIVE SOLUTIONS

Note: Ideas are conceptual and will be further developed through the study.



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RETROFIT / REDESIGN EXISTING BASINS

Practical



Action:	Improve existing infrastructure to ensure basins have max capacity and effectively capture sediment; currently basins are not functioning optimally; when overtopped, conveys fine sediments to ocean
Pros:	Less invasive, minimal new construction, minimal environmental impact, existing maintenance program, less costly than new construction
Cons:	Permitting; increased maintenance cost for COM
Locations:	Best: Honokowai and Kahana Nui Possible: Napili 2-3, Napili 4-5, Kaopala, Mahinahina



FLOCCULATING BASINS

May be Practical



Honokowai Basin



Action:	Construct upstream basins retrofitted with flocculants (promotes clumping of fine sediments) to reduce transport of fines
Pros:	Minimal construction, used extensively in wastewater and construction applications, can expand upon existing maintenance program
Cons:	Unsure of environmental consequences, unsure of maintenance demands, novel use in Hawai'i
Locations:	All Existing Basins are potential candidates

SILT BAGS / GEOTEXTILE DEWATERING

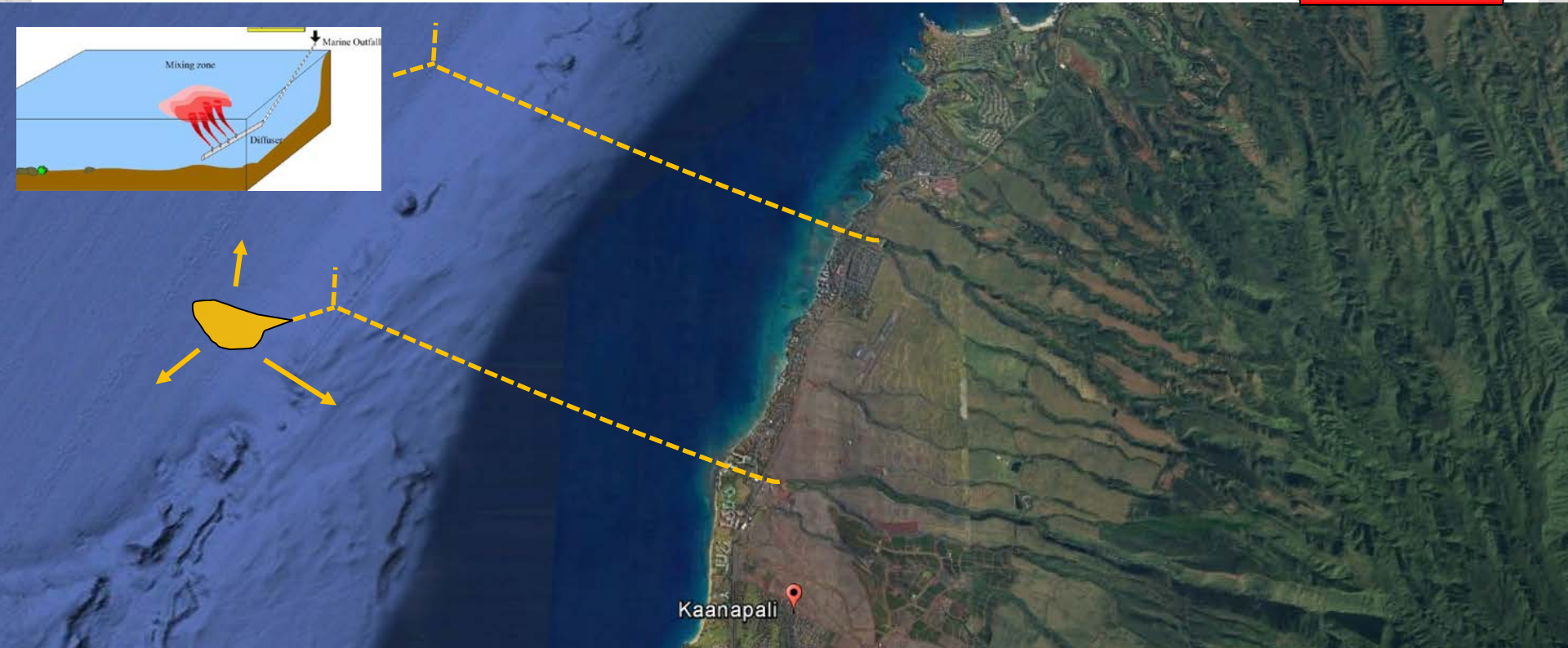
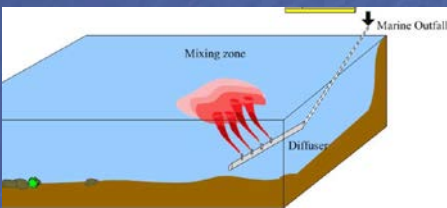
May be Practical



Action:	Install pumps to divert high stream flows into temporary geotextile bag structures that filter stream flow to remove fines and pass water
Pros:	Minimal new construction, existing maintenance program, extensive application for dewatering
Cons:	Unsure of use in large-scale, long-term application, potential impacts to aquatic life e.g .entrainment, unsure of maintenance demand
Locations:	Existing Basins

STORM DISCHARGE PIPE

Likely Not Practical



Action:	Construct a pipe to convey streamflow and sediments past nearshore coral reefs
Pros:	Bypasses nearshore reefs, minimal land disturbance
Cons:	Permitting challenge, potentially significant environmental impacts e.g. deepwater corals, unsure of maintenance demands, does not reduce sediment loading of ocean, only relocates discharge point



CONVERT IRRIGATION DITCH TO FLOOD CHANNEL

Likely Not Practical



Action:	Passively route high flow into a single watershed/sediment basin during heavy rains
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Pros:	Single site for sediment management, modify existing ditch system
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Cons:	Major construction = high cost, environmental impacts
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ALL-TERRAIN VEHICLE AND VACUUM

May be Practical



Action:	Manually remove sediment deposits from the source
Pros:	Remove sediment source, minimal new construction (e.g. temporary access), minimal environmental consequences
Cons:	Accessibility issues for heavy equipment, unknown volume, unsure of bank stability post-removal

TRADITIONAL HAWAIIAN PRACTICES

Practical



Action:	Construct or restore lo'i terraces; use historically proven methods/structures for sediment management
Pros:	Historic success, minimal environmental consequences, embraces cultural values, agricultural production, soft alternative
Cons:	Not successful at managing large storm events, water rights issues, access challenges, requires manpower for operation/maintenance
Locations:	Possible: Honokowai, Honolulu

RE-PURPOSED FLOODPLAIN

Practical



Action:	Utilize available floodplain space to hold stormwater and sediment.
Pros:	Available space in some locations, minimal environmental consequences, soft alternative, limits/prevents development in floodplain, can provide multi-use and recreational opportunities.
Cons:	Potential water rights issues, access challenges, requires manpower for operation/maintenance
Locations	Possible: Wahikuli

COMMUNITY FEEDBACK

For each alternative, consider:

1. *Will this solution work? Any additional pros/cons USACE should consider?*
2. *Where (location) would this solution work best?*



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QUESTIONS?



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CONTACT INFORMATION

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