DISCUSS MEETING TIME THIS WEEK

- Friday (Nov 13)
- Time:

Drafting ideas:

Social Context: What will the future look like in 10,000 years:

- **High tech (advanced) future -> population is massive (growth)**
- **Robots machinery to give a higher output of food for a massive population.**
- **Diet: not fully vegetarians (meat is still dietary factor)**
- **Fashion: not relevant**
- **Pipes - water travel!!**
- **Work (Automation is more prevalent but someone who deals with the machinery would be at higher risk)**
- **Animals (interacting with site)**
- **The average person (ref. person): engineer/mechanic for farm bots (automated machinery)**

Ref. person:
(a person who interacts the most with possible containment) - maintaining closest interaction with radiation.) which could be a farmer engineer or mechanic in our future.

Design:

+ Sign (story) to show that this “place” is dangerous (will make you sick) and the food from this area (or beyond the barrier) will harm you.
+ Speaker - frequencies
+ Something that repels (smell? - the 5 senses)
+ Barrier to prevent groundwater contamination for irrigation (water)
+ Vibrations
+ Culture
+ Physical marker (structure) to show danger
+ Intimidating

Materials:

- **Should be durable (people shouldn't be able to break it easily)**
- **Should be heavy (DONT STEAL) hard to move**
- **Not valuable material**
- **Not famous, magnificence, want to see and want to take**
- **Higher guilty materials would last (for like pipes - NOT EXPOSED)**
- **Guarded?**
- **Look at past data that has lasted**

Uncertainties:

- **What kind of (Land usage)**
- **The land will look like**

- **Who is gonna be stupid (IQ levels)**

Communications:

- **Message:** to show that this “place” is dangerous (will make you sick) and the food from this area (or beyond the barrier) will harm you.
- **Language -** stay way (stick to visuals) but still can add
- Visual - what symbols what drawings (how will a human be depicted)
-

(put whatever stuff down the goal is to get ideas and then edit/narrow)

Speaker idea - placing speakers around the perimeter of the area that blast frequencies to annoy people and animals to the point where the surrounding area will be cleared of both humans and creatures.

Idea: Standard Symbology – International standard to label radioactive waste zones and waste containers.

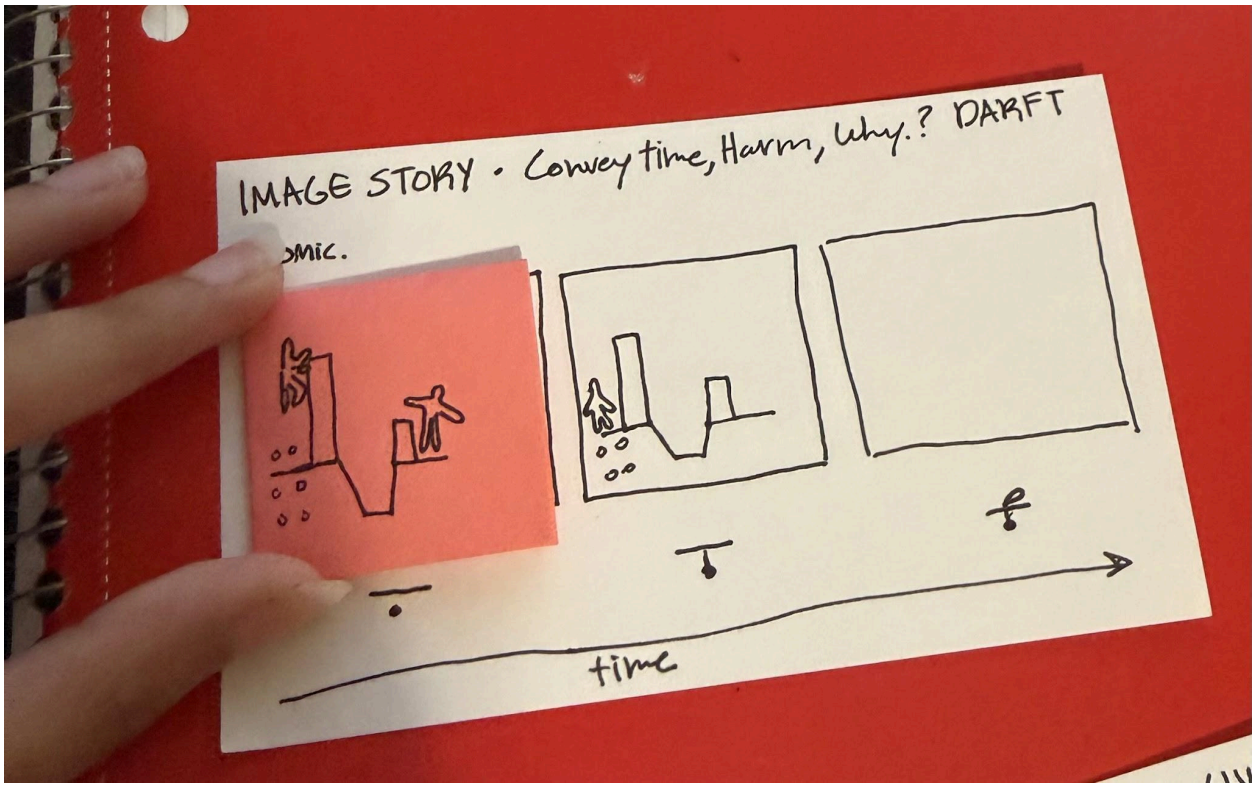
- Lower cost solution
- Once a zone is recognized to be dangerous other similarly labeled zones will be approached with caution.

Idea: Diagram of effects – Make a series of statues of a person progressing through radiation poisoning. Have the people face in the direction that the symptoms get worse to give a sense of moving forward in time regardless of the writing system.

- Communication free of symbolic drift or required knowledge of any specific language
- Could help people understand what is can and will happen to them if they stay in the area

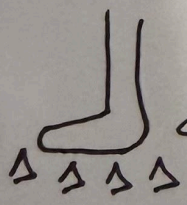
Idea: Impassible landscape – Find the most hostile mountainous environment and bury the waste deep underground.

- Would be difficult for people to accidentally get exposed
- If someone does discover the waste it would make it less likely for other people to journey to it due to the potential difficulty of it.



→ REF/HOSTILE ARCHITECTURE !

• spikes but pyramids ⚠ • they don't force out but they add to intimidation, and prevention of long exposure (less likely to stay as long)



← EX. or rather just make it difficult to physical continue on.

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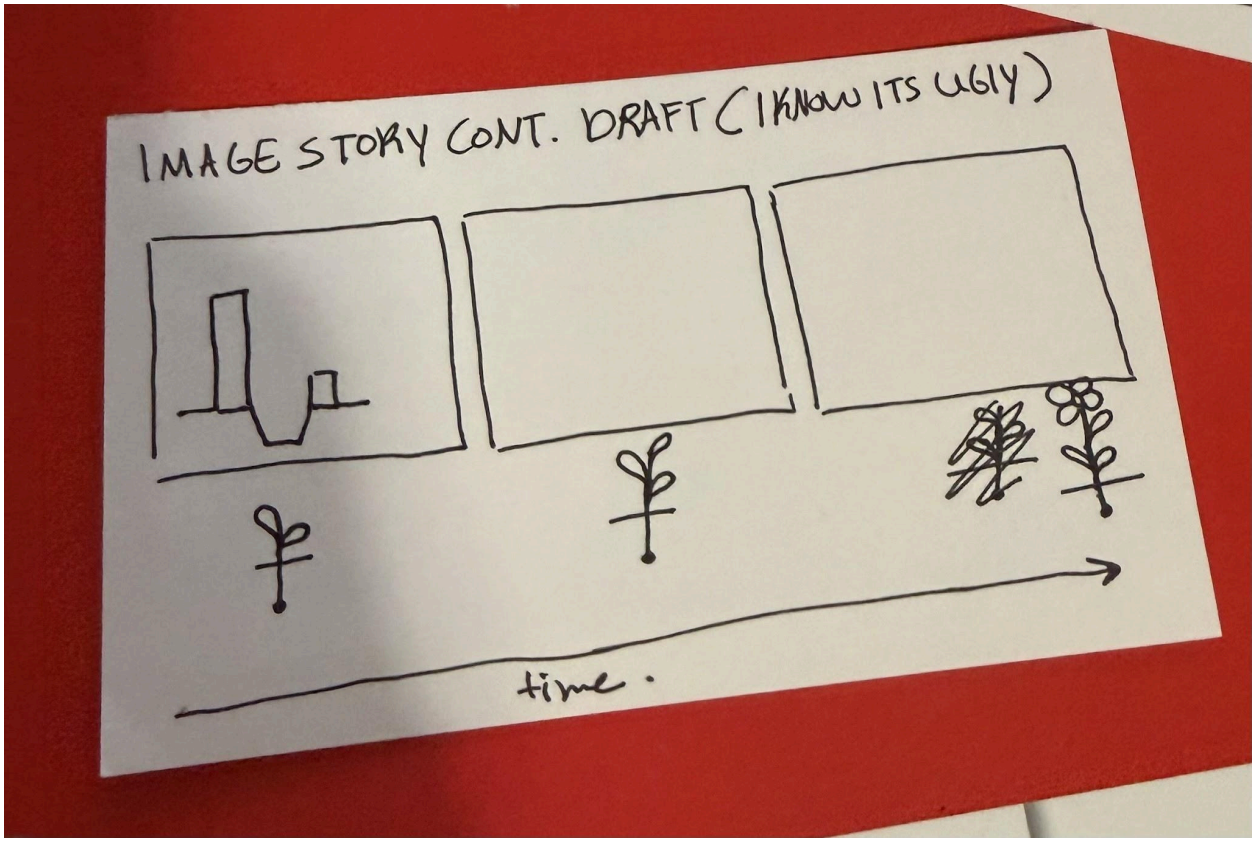

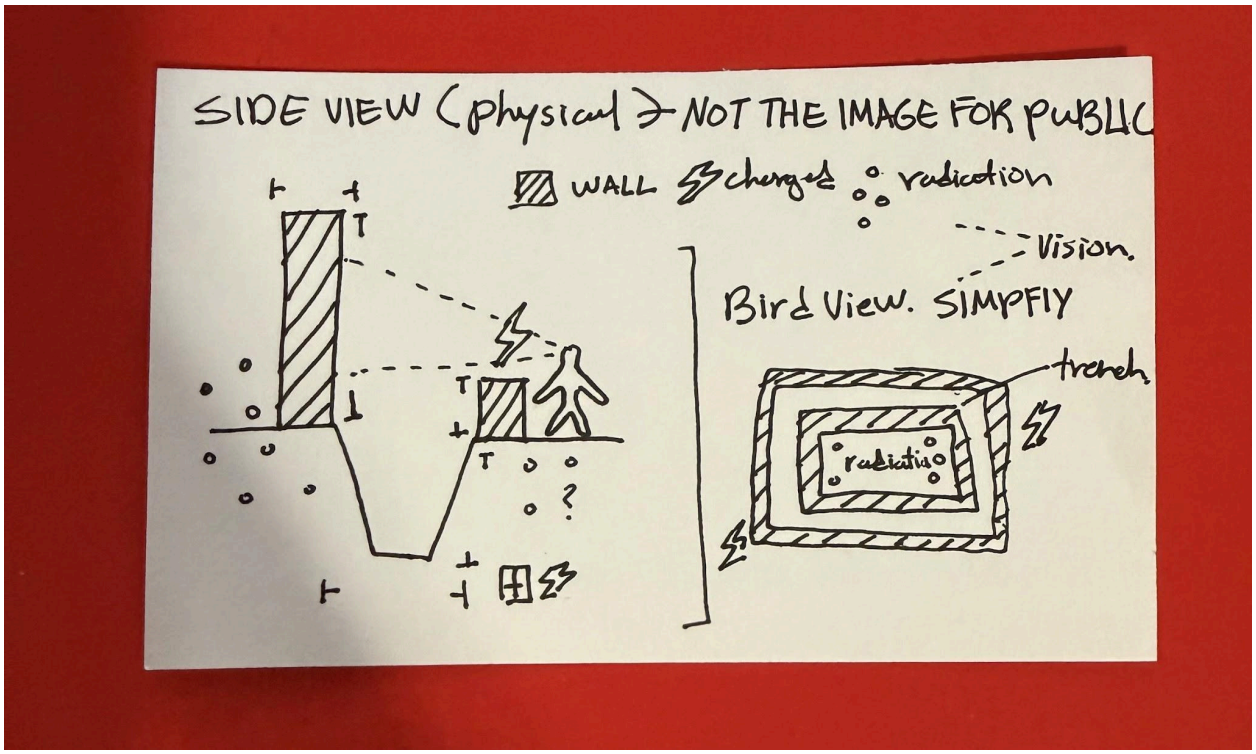

pThese markers must prevent inadvertent human intrusion into Hanford's Central

Plateau, a 79 square mile portion of the site. Your marker/warning system must effectively communicate hazards to future generations for the next ten thousand years.

Your commission will produce a report that describes the design itself as well as the thinking behind it. This is a collaborative project, with each member of your team taking the lead in one specialty area. **citing sources to support design choices and assumptions.**

What do your markers look like? How many markers are you imagining and where will you place them on site? Why did you choose this design in particular? Please provide visual renderings of your design (in place, to scale) as well as a detailed written description of its components. Describe the thinking behind each of your design choices (i.e. why this shape, size, structure, color? What specific effect are you hoping to achieve with your design?)

Our markers look like: - a (material) wall that is (inches) in width and (feet/meters) in height, which will separate the radiated/contaminated area from the pub at the front of the wall a (amount in feet) in width and (amount in feet) depth is a trench, which is sandwiched against another wall of shorter stature made of the same material as the first this wall is (inches) in width and (feet.meters) in feet, this second wall will be laced with (something) which will shock the individual with (amount of voltage) when touched/contacted. On the taller first wall a carving/drawing of a () depicting how if one were to breach this physical barrier, farm and consume food from this area, and or () they will become sick and possibly die. We are imagining (amount) of markers for this site, with their placement being at (every corner? Every 10 feet etc.) away from one another to ensure that people will view them. The visual image/carving depicts a story of what will happen if a person were to breach our design. This depiction shows a person climbing over the walled barrier, landing in the contaminated zone (interacting with something), later on leaving and as time passes becomes ill and dies. -> (describe thinking behind each of your design choices) to start with the physical (non drawing) marker both walls are meant to prevent intrusion inside the contaminated area, with the first being (feet) tall which is about (doubled) the average man height and the second being closer to waist height at (measurement) to allow for a person to see the depicted image on the larger wall, the smaller wall is charged through (the ground? We need this detail) to shock individuals when in contact, and the trench is meant to disway approach (hostile ground work will prevent comfortable entry). The specific effect we are hoping to achieve is intimidation and information.



https://audioboom.com/posts/8740508-hostile-architecture-entry-601-pr2907 podcast



https://medium.com/design-bootcamp/using-design-to-effect-change-d19f04437a8a



-- https://en.wikipedia.org/wiki/Hostile_architecture#/media/File:Boulons_anti-sdf_sur_un_perron_(Marseille,_France).jpg these are used to prevent homeless people from laying down/resting -> while they don't necessarily stop entry we may get information or use a variation of this design - (like smaller but more compacted) to replicate a hurting sensation/feeling on people's feet as they get closer to the site?

(put whatever stuff down the goal is to get ideas and then edit/narrow)

Speaker idea - placing speakers around the perimeter of the area that blast frequencies to annoy people and animals to the point where the surrounding area will be cleared of both humans and creatures.

Communication: What specific messages are you communicating to future generations? Your design must include both written and image-based messages. Your design must include both simple and more detailed messages (remember the WIPP member committee's argument that "Redundancy of message communication is important to message survivability"). For the written messages, what language or languages will you use and why? For the image-based messages, how did you think about meaning, symbols, and sequencing? Please provide transcripts for your written messages and visual renderings for your image-based messages (along with captions for their meaning). Please describe the thinking behind your communication strategies in each form.

Some ideas for written message

- **“Entering will cause deathly illness”**
- **“**

Goal due before Nov 20th: DRAFT/REVISE more on your section! (we will edit this together during the group meeting)

Materials — Ali Abbas Jafri
What materials do you recommend for the construction of this design and why? How do you predict the markers will withstand weathering and time? Will they require maintenance and, if so, who will do that work? Please include research about material durability and cost, environmental conditions at the Central Plateau (both current and future projections, including climate change), and overall physical longevity of your design.

We recommend building the markers from large, solid blocks of hard igneous rock: locally quarried basalt for the main structures, with granite as an alternative for carved surfaces. Stone meets every goal on our list. It is durable, too heavy to move or steal, and has almost no resale value, so there is little reason to scavenge it. We would avoid metals entirely, because metal is worth recycling and invites theft. The statues should be thick and simple in shape, with deeply carved features, since thin parts and shallow engraving are the first things to break or wear away.

Stone also has the best track record of any material we looked at. The federal plan for the Waste Isolation Pilot Plant (WIPP) in New Mexico made the same choice, calling for granite perimeter monuments 25 feet tall, each made of 20 tons of solid material (U.S. DOE). A geology textbook comparison shows that after a century in a rainy climate, limestone lettering is nearly erased while granite and slate change only slightly (Understanding Earth). Dry climates are gentler still: the carvings on the Cleopatra's Needle obelisk survived roughly two thousand years in Egypt's arid air.

Stone is cheap as a material. The real expense is quarrying, carving, and hauling very large blocks. Later reviews of the WIPP design warned that quarries and equipment capable of producing granite monoliths that large no longer exist, and that hauling big granite pieces long distances by rail creates its own risks for present-day workers (Klein et al. 2016). This is why we favor basalt: the Central Plateau sits on the Columbia River basalt flows, so the rock can come from nearby, which cuts transport cost and risk.

The Central Plateau is a windy shrub-steppe desert. Hanford's weather station records normal precipitation of only 6.98 inches a year and a normal average temperature of 53.6°F, but the extremes are wide, from a high of 113°F in 2002 to a low of -14°F in January 2004 (PNNL). Wind is constant, with an average of 26 days a year when gusts reach 40 mph or more and a recorded peak of 61 mph. The main threats to the markers are therefore windblown sand slowly scouring carved surfaces, freeze-thaw cracking, drifting sand burying low features, and range fires.

Looking ahead, a 2026 state climate report expects eastern Washington to see more multi-year droughts and heat spells, with yearly precipitation staying about the same while more of it falls as rain instead of snow and storms grow more intense (Inside Climate News). Hotter, drier

conditions mean more wildfire, which stone survives but which can crack or flake its surface. Over 10,000 years the climate could change far more than any current projection covers, so we designed for both drier and wetter conditions.

The markers are designed to need no maintenance, because we cannot assume anyone will be responsible for them in the far future. While the government still controls the site, the Department of Energy would inspect and repair them. After that, the design relies on redundancy: many markers instead of one, plus buried backups protected from weather. WIPP uses the same idea, with nine-inch granite discs buried two to six feet deep across the site (U.S. DOE). For this reason we do not recommend the speaker idea as a long-term element, since electronics need power and replacement parts and would fail within decades.

Sources

Hanford Site Climatological Data Summary 2003 (PNNL-14616): https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-14616.pdf
Hanford Site Climatological Data Summary 2002 (PNNL-14242): https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-14242.pdf
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How Will Future Generations Be Warned? (U.S. DOE, WIPP): https://www.wipp.energy.gov/pdfs/How-Will-Future-Generations-Be-Warned.pdf
Klein, Van Luik, and Patterson, As Permanent as Practicable: The Reality of Permanent Markers (WM2016): https://archivedproceedings.econference.io/wmsym/2016/pdfs/16191.pdf
WIPP permanent markers risk paper (WM2015): https://archivedproceedings.econference.io/wmsym/2015/papers/15173.pdf
Controls on Weathering, Understanding Earth, 7th ed.: https://digfir-published.macmillanusa.com/understandingearth7e/understandingearth7e_ch16_3.html
More Snow Is Falling as Rain in Washington (Inside Climate News, July 2026): https://insideclimatenews.org/news/22072026/washington-state-winter-rains-leads-to-increased-drought/

11/13/26 meeting recap

Goal due before Nov 20th (friday): DRAFT/REVISE more on your section! (we will edit this together during the group meeting)

We discussed ideas for how to communicate time, how to scale the drawings and how the electrified wall will work. I would recommend reading through the sections we have written. We are thinking of shifting the design to focus more on communication (The Mural) rather than making an impassable barrier. No matter how we approach blocking off the area there is always a way for people to get around it. Making them understand why they should avoid it is a higher priority. For depicting time we wanted to have a person moving over the wall and interacting with the soil in some way simultaneously we are going to have a diagram of a plant growing. Hopefully the imagery of a person moving forward and the growth of a plant should prevent any confusion regardless of the writing system.

Resolved Uncertainties

Our design is one that takes aspects of multiple to try and cover the weaknesses of a more simple design though with many moving parts some are bound to fail which is why each piece will hopefully work independently. Starting off with the walls and trench; most complex structures tend to fall apart when exposed to hostile conditions for significant periods of time. Our decision to use stone should hopefully reduce the likelihood of deterioration, but since it's hard to predict all geologic events for the next 10,000 years we recognize the possibility that a section of the wall may fall over; this is where the trench will hopefully act as a failsafe, it should provide a barrier impassible to a person on foot that implemented into the earth.

Since ladders and rope exist we decided that electrifying the wall using the energy provided by the waste was a good way to add an additional deterrent to any would be trespassers. For any highly motivated people who are smart enough to or unlucky enough to pass through our barriers the mural on the inside of the wall should help communicate what will happen to them if they proceed. As discussed in the 99% invisible article communicating with people through a mural could have the unintended effect of them reading it backwards we tried to address this by having the mural depict movement. First the person would hop over the wall and then the bad things would happen to them. We also want the figure in the mural to face the next part of the mural. This should give someone a sense of time moving in a specific direction regardless of their reading system.

Unresolved Uncertainties

The main two uncertainties that we could not address with this design were unintentionally attracting people to an area and building something permanent. Regardless of how mundane a structure is, people tend to take interest in the unknown. We wanted to steer away from the idea of having a large-scale interesting structure like the spiked earth but humans are naturally curious, people want to figure out the meaning of a structure and see if there is anything significant about it. Unfortunately sometimes people only learn when they see other people pay the price for their mistakes. If this is a repeated pattern across the globe we may end up creating pilgrimage sites rather than barriers until people realise it's making them sick. No matter how many warning signs we put up, people still do things against their own interest. Secondly the problem of permanence is a difficult thing to solve. Almost nothing we have made besides plastic will stay around as long as the waste we are trying to hide away. Electronics might fail, Erosion might get rid of our mural, A fault may form and make the wall completely pointless. In 10,000 years most likely no one will be there to upkeep these markers. There is an uncomfortable amount of luck involved in our current approach to keeping future humans safe.

Citations

Mars R. 2014 May 12. Ten thousand years. 99% Invisible. *https://99percentinvisible.org/episode/ten-thousand-years/*.