

Issues in Earth Science

“Eww, There’s Some Geology in my Fiction!”

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Teacher Resources

Dealing with a tsunami on her first assignment as number one diver, Hayley not only saves an errant octopus, but the entire Canadian coast from Vancouver to Prince Rupert.

Nuugyaa

by

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“As you can see, the 0600 measurement shows that the side of Mount Georges has continued to bulge, below the slump initially found by RADARSAT.” Deputy Minister Siddell tapped on a Power Point slide

over a red arrow pointing to disturbed earth, with a caption that read ‘increase of almost a meter.’

“The Canadian Geological Survey does expect the shoulder of Mount Georges to slide into Desolation Sound within the next twenty-four hours.” Siddell looked around the silent room.

Hayley’s mouth felt dry. She wanted to raise her water bottle for a sip but was afraid to move. Yesterday the trees below the cut had still been pointing to the sky. Today they were pointing across the sound—prelude to the collapse of the equivalent of a million transport trucks.

“So today, on station at the Nuugyaa, expect the alarm to sound.” Siddell stepped forward and stared at each person in turn. “Get the pumps started as soon as you hear it. Divers, be ready to keep sensors clear.”

Someone cleared their throat behind Hayley. She tried to swallow. When Siddell’s gaze swept over her again, she was turning the lid with her thumb.

“Any questions?”

The room was quiet.

“Dismiss. Make your way to station ASAP.”

Chairs scraped as everyone stood. Hayley sucked water in, delighting in cool relief until an errant elbow bumped the bottle and she dribbled.

“Hayley, have you seen Travis?” Greg asked her as she wiped her mouth.

“No, maybe he’s on the boat. He hates briefings.”

“Siddell’s a stickler for attendance, unless he’s in hospital he’ll be black listed by the ministry,” Greg said as he turned to leave. “Let’s go.”

Hayley followed, looking for Travis’ spikey blond hair. An iridescent red hummingbird hovering over a blossom outside the door distracted her. She wondered if birds worried about mountains falling into the sea. Not like an earthquake, she thought.

With her next step, she was on the floating dock which rebounded as dive crews tromped to the ‘not since

Dunkirk' multi-hued assortment of vessels which had called the improvised town of Haskins Inlet home for four months. Resolve pulsed with every step.

“Hayley’s number one diver today, Tom,” said Greg as he opened the engine cover of their converted fishing boat.

Tom looked at her and turned away, his cue shaking like a snake. “We getting a spare?”

“Olaf is on his way.”

Wondering when Greg had called Olaf, Hayley began routine checks of her dive gear. She felt a quiver in her legs and drank more water.

“Have you ever been number one, Hayley?” Tom asked.

“No.” She looked into his black eyes. “No one’s ever tried to mitigate a tsunami created by a massive rock slide either.”

He snorted and turned back to check his gear.

Hayley raised a hand and dropped it to her side. “I know that you have twice as many hours, feel free to make suggestions.”

“I don’t think that a number one diver should need any suggestions,” Tom said.

Hayley went crimson under her freckles.

“Enough Tom, you’ve been out of the water for eighteen months and you were never perfect either. Hayley, ignore Tom,” Greg said as he walked to the cabin.

Twin diesels rumbled as Hayley inspected air hoses. No one had said why Tom had taken time off diving and Hayley did not mind not knowing. She did mind being told to ignore someone. Sooner the mountain fell the better, she thought as she checked her helmet.

As other boats began to depart, Olaf rushed down the dock with his gear bag. He nodded at Tom before he talked to Greg in the cabin. He came out and circled the boat, casting off lines. Then he slapped Tom on the back and began a private conversation with him as the boat slipped away from its mooring.

Hayley grimaced. Thinking that if she were Tom, she might be upset with the situation, she decided to keep her focus on her gear.

Greg had the snub bow pointing after the flotilla heading to the nine-kilometer-long network of pipes and pumps known as Nuugyaa—Haida for octopus—that would dam Desolation Sound. Steep green fjord flanks plunged into blue water. On tapered cable, floating below silver helium-filled airships a kilometer above, were the wind turbines that powered the array. Offset pairs of blades ten meters apart provided stability and assisted lift from their maple seed-like design. Although the siphon effect reduced the power required, these elegant machines could power the entire West Coast. If anything failed, sections separated and floated down.

Bald eagles watched the fleet as it passed beneath their evergreen perch where Haskins Inlet met Desolation Sound. Once, Hayley had asked Tom about myths of interactions between eagles and humans. He had glared at her and walked away. Hayley wondered how she would feel if someone asked her to define Christmas or Easter.

She did not think that she would turn away from them. After this job, she would find another company to dive for. Greg was a competent supervisor, but Hayley wanted to feel part of a team and not a solo act.

Hayley brushed her socks off and slid her long legs into her dry suit. Then she stood and popped her suspenders on her shoulders before powdering her seals.

Words blew out from the cabin, "...too reliant," and wafted across the deck. From the corner of her eye, Hayley saw Tom stiffen and look at her. She sat down and stretched her legs.

'Too reliant?' She never discussed her personal life, finances, or relationships. She never asked for that information from others, unless religious beliefs were counted as personal. While Travis had yacked a kelp bed about his life, neither Greg nor Tom did. She had asked for opinions on gear and listened. No one had asked her why she had chosen her gear.

"Ready to go? Inspected the hoses?" Greg yelled out the window. "Slack tide now."

She made an 'okay' sign and watched the pump barges and yellow buoys scattered over Desolation Sound grow larger. Hayley hoped that the lattice of pipe beneath them worked as planned. If one of the sensors monitoring water movement failed, flow of the section was affected. Vancouver to Prince Rupert was a lot of coast to evacuate. The narrow passages would exaggerate any tidal wave just as they did the daily tides. Responsibility weighed on her like fathoms of sea water.

Beyond her vision was the green clad side of Mount Georges. It was hard to imagine a mountain sliced in half, no trees left and only rocky soil washing away in the rain. No attempt to deflect the massive landslide could be made. It was anticipated that trees a half kilometer up the side of Mount Bartholomew across the sound would be flushed away. Live feed cameras would record the event. Hayley imagined a wall of water, rock, and trees rushing towards her. She shivered. Hard to imagine that on a sunny day.

Greg throttled back as they approached their mid-zone station that serviced thirty pipes on Nuugyaa. The tug

waiting there slipped its mooring and drifted back. Olaf went forward to snag the buoy line. Hayley slipped her arms in and popped her head through her neck seal.

Her ears came through to the alarm wailing. Hayley jumped and looked up the sound as the siren echoed off the mountainsides. Greg was yelling at Olaf who had missed the mooring and dropped the boat hook.

Hayley lunged over the rail, using her long reach to grab the hook as it floated by. Grunting, she hauled herself up and ran forward past Tom's wide eyes.

"Get the buoy!" Greg shouted.

Around them, pumps on rafts rumbled, priming the siphon of water in one end and pushing it out the other to disrupt the energy of the tsunami. Balanced below pump, each thirty-meter section of neutrally buoyant two-meter diameter pipe ended in an arrow shaped fan that could siphon or pump. As the tsunami rolled over, the siphon in flow would begin the process of disrupting the energy, which would be continued by pumping water out.

Hayley hooked the buoy line as Greg goosed the boat forward and Olaf fell overboard.

Distant thunder of the avalanche nearly drowned the siren and the pumps as Hayley yelled out of reflex, “Man overboard!”

Hayley released the line and reached for Olaf. He seized the hook and she walked him back to the stern where Tom lowered the ladder for him. Hayley dashed past red-faced Greg and caught the line again. She looped the mooring line through the eye, tied it off and raised her hands.

As the boat drifted back, Hayley looked over the confused sea, almost a million vortexes and fountains speckling the water amidst boats struggling to moor. On Ajax Island, trees shivered as the Earth shook.

“I need you dressed, Hayley. A sensor is malfunctioning,” Greg yelled into her ear.

“Okay, dressing,” Hayley shouted, heading to the stern.

“Diver dressing,” Greg called to Olaf as he stripped in the cabin.

“Zip,” Hayley demanded of Tom, standing in a cross.

She felt Tom tuck her underwear beneath the zipper as the brass teeth closed. He patted her shoulder and watched as Hayley pulled the last centimeter of zipper shut. Kneeling, she broke her neck seal to vent excess air, glad that she could move and tremble at the same time.

Slipping into her harness, a shoulder strap twisted. Hayley felt sweat bead on her lip as she reached back to straighten it.

Tom grabbed her shoulder as he flipped it. Hayley felt the compressor start. Then Tom pulled her arms into her BC. She felt her inflator hose click into place.

Hayley dropped her fins to the deck, letting Tom push her feet in and pull the straps tight. With fingertips, she checked her water bottle and tool strap. Then she put her liner gloves on. She let Tom snug her dry gloves on over her wrist seals.

“Helmet!” Hayley yelled.

Dry air filled the helmet when she inhaled. Most of the sound of the demise of Mount Georges was sealed out.

“Comm check,” Olaf said.

“Comm check, okay,” Hayley replied.

“Diver ready?” Olaf asked as Tom hung her umbilical through a carabiner on her harness.

Hayley closed her eyes and took another deep breath as she made another mental check of her equipment.

“Diver ready,” she replied as she stood.

Legs spread, she waddled to the ladder. Glad to feel the water take her weight with each step, sweat trickled down her back as she stepped down.

“Diver in the water,” Hayley said as she sank beneath wavelets crowned with sparkling gems.

“Diver okay?”

“Diver okay,” Hayley replied as she equalised her ears.

“How’s viz?”

“Three, four metres.”

An orange Lion’s Mane jellyfish brushed her shoulder in the hazy water. Hayley wondered if Greg and Olaf could hear her heart hammering as she drifted down to the Nuugyaa suspended ten metres below the surface. The power line to the pump disappeared like a thread off a hem though it dangled to the bottom eighty meters below Nuugyaa.

“Which sensor?” Hayley asked.

“Middle one shows offline.”

Hayley finned over to the elbow that rose to the fan. She touched the algae on the turned off composite pipe and swam forward. Likely kelp wrapped around the sensor orifice, she thought. She could just see the shadows of pipes on either side of her as she kicked. Mentally she rehearsed the procedure if she got sucked in: exhale, cut lines, switch to SCUBA, steady exhale out the rear orifice. A quick trip she hoped never to make. She added air to

her dry suit and shook out a squeeze in one leg before finning forward.

She wondered what Mount Georges looked like now. The scene was likely already getting replayed for news viewers trying to see energy waves ricocheting through the Inland Passage.

“Diver okay?”

“Diver okay. What’s it look like up there?”

“Like Mount Georges had a very bad shave. Chopper pilot says the wave beat the estimated height. Energy waves reflecting will take a while to dissipate.”

“Understood.”

Hayley flicked off a starfish that had found a temporary home. She wondered how many starfish it would take to plug the sensor orifice.

A wall of water hit her. She slipped back and then held tight to a rung on the pipe. The tide had ebbed right on schedule. Not that it would change the tsunami’s power.

“Diver okay. Tide is ebbing.”

“Hope you find the problem.”

“I must be near,” Hayley said pulling herself along rungs placed for diver service.

Each breath rasped in and bubbled out. Just ahead she could see an anchor line of the intake. Being wiped from the hose by the current did not occur to her.

“At the anchor point.”

“Let me know when you are at the sensor.”

“Understood.”

Hayley hung on, feeling like a flag blown from its pole. Pinching her knees around a rung, she pulled a Jon line out of a BC pocket and curled it around the next metal loop. Then using a knee to press down, she hauled herself up to the sensor like a lumberjack.

“Diver at the sensor.” Hayley struggled to hold on and feel inside. “I feel a pulpy mass.”

“Is it kelp?”

“No,” Hayley said as she cinched the Jon line tight in one hand to pull herself up. “It doesn’t feel like kelp.”

Hayley clenched the Jon line and finned hard to hold her place. She shuffled up the line, swaying like a kite on a string. Her heavy breathing would be clear on the comm, she thought. She had heard worse. One guy had lost his beer in his helmet.

Now she could see inside the flared lip of the sensor orifice. Hayley reached out and a tentacle tip touched her finger. She started and released a bellyful of bubbles.

“Diver okay?”

“Diver okay. Problem is an octopus.”

Hayley looked into slit pupils, noting the horns were up as the octopus blushed from brown to red. She stroked the small suction cups and imagined all of them holding the creature in place.

“Tom says that it is appropriate that Nuugyaa find a home in Nuugyaa.”

“No kidding. Even with all the racket, I’m going to have to persuade Nuugyaa to find a new home.” Without hurting it, she added to herself.

Hayley pulled on the arm and watched the octopus shrink back into its shelter. She had heard that bleach flushed them out but had never tried it herself. Tap water had some chlorine in it. After taking a sip from her water bottle, she slid the hose from under her helmet. Needing a third hand, she pinched the Jon line between her legs. Feeling that she could go upside down, she squirted her bottle at the Nuugyaa. In a frantic flare of tentacles, the Nuugyaa erupted out, jetting ink and swimming backwards.

“Blockage removed. Hope that Tom will let me know the correct apology to make to Nuugyaa.”

Greg coughed. “He will, Diver.”

“Diver returning.”

“Diver returning,” echoed the surface.

Hayley looked around. If she ascended, her umbilical might catch on a buoy line. She opted to descend and seek the lee of the pipe from the current.

“Descending to main pipe,” Hayley said as she tried to float down the pipe. Her shoulders would be sore tomorrow, she thought.

“Understood Diver.”

“Diver okay?”

“Diver okay.” Like they could not see, she thought.

“Float up, Diver.”

“Understood. The dirty water coming will kill a lot of animals.” She hoped the octopus would survive.

“Thanks to Nuugyaa, most of them won’t be human.”

“True. Diver ascending.” Corny but true, Hayley thought as she drifted free. “Clear of Nuugyaa.”

“We’ll pull you in, Diver.”

Relaxed, Hayley raised her hands over her head. At the surface, the sea looked like a boiling sewage lagoon. She rolled over and finned to the stern ladder. Three men smiled as the pipe erupted into service. Hayley hoped that they had something to smile about.

“Good job, Diver,” Greg said, as the alarm changed to a rapid cheep. “Let’s get you out.”

Spurred by the increased urgency in the alarm, Hayley climbed the ladder with stiff knees as Tom pulled on her BC.

“Diver on board,” said Greg.

With the crew, Hayley looked past the bow of the boat at the peak of a massive wave, studded with trees, that was rushing towards them from almost five kilometers away. It was like standing on a highway and watching sixteen lanes of eighteen-wheelers approach. Cavities appeared in the face as the siphons pulled water away while fountains of ejected water created chop. Each kilometer of Nuugyaa battered the wave to smaller pieces. Boats

bobbed on the now jagged crest and the massive pipes pivoted as the diminished wave rolled on.

“The anchors are holding,” Hayley said, glad that no pipes had broken free.

“Yeah, it’s breaking up,” said Olaf.

As the wave rolled under them, the boat jerked on its mooring lines. Hayley watched a spruce pivot by, a plumose anemone protruding like a posy from its spines, brushing the bow of the boat. Spikes of steep waves tossed the moored flotilla behind them as the tsunami dissipated.

Hayley sagged to the dressing bench. Tom helped lift her helmet off.

“Looks like Nuugyaa took the stuffing out of the number one diver as well as the tsunami,” Tom observed. “You ready to go if another sensor goes?”

Hayley watched over the stern as the departing shift of boats tossed on seas smaller than a boat wake. She smiled.

“If another sensor fails, I’ll back up the number two diver.”



Author’s Note; With thanks to www.haidalanguage.org. Only Desolation Sound, Vancouver, and Prince Rupert are geographical places.

Laura Hill is currently resident in northern Canada where she enjoys walking, snowshoeing, and photography. Her science fiction has been recently published by Perihelion and Polar Borealis. Another story is pending publication by Third Flatiron.

Credit: 7. Nuugyaa Illustration by Erin Colson.

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