FINAL MEETING SUMMARY
Community Environmental Working Group

"Striving for Continuous Environmental Improvements at Intel"

Date: October 16, 2019
Time: 5:15–7:00 p.m.
Location: Corrales Senior Center

Members Attending

John Bartlit, NM Citizens for Clean Air & Water
Mike Williams, NM Citizens for Clean Air & Water
Dennis O'Mara, Corrales resident, Corrales Residents for Clean Air and Water
Hugh Church, American Lung Association in New Mexico
Sarah Chavez, Intel

Non-Members Attending

Alexander Lowry, Intel
Erika Edgerly, Intel, Corrales resident

Jessie Lawrence, Facilitator
CJ Ondek, Recorder

HANDOUTS

- CEWG Draft Agenda
- August 21 Draft Meeting Summary
- UNM Cancer Report
- September/October EHS Activity Report
- Action-Item Progress Report

PROPOSED AGENDA

- Welcome, Introductions, and Brief Items
- Standing Agenda Items
- Intel Corporate Social Responsibility Report
- UNM Cancer Study
- Intel NMED Emissions Permit Presentation
- Action Item Progress Report
- Adjourn

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Prepared or presented by: CJ Ondek & Jessie Lawrence
Prepared for: CEWG
Date prepared or presented: October 21, 2019

WELCOME, INTRODUCTIONS, ANNOUNCEMENTS, BRIEF ITEMS
John Bartlit opened the meeting by stating the CEWG mission, which was to make environmental improvements at Intel, reduce chemical emissions at Intel, and improve community dialogue. Introductions were made.

Agenda—Revisions and Approval
No comments.

Meeting Summary—Revisions and Approval
No comments.

Other Announcements
None.

Public Comment

- Dennis O'Mara read a couple of lines from the book *Boiling Frogs*, by Barbara Rockwell. "I have Intel inside…inside my bedroom, inside my living room, inside my lungs." He said in the last couple of months he felt the same way. Almost every summer, late summer, or early fall he smelled something from Intel, and when that happened he always knew he was breathing something bad. He added that no one knew for sure what came out of Intel's stacks.

- Dennis O'Mara said Intel's Corporate Responsibility Report did nothing for him because it didn't say anything about Intel's Rio Rancho facility, and if things were not up to par at this facility that could be hidden within corporate-wide data. The report did nothing for the local community, he said.

- Dennis O'Mara said that it occurred to him that Intel conducted stack testing every year, but he never asked about findings nor were findings discussed at CEWG meetings. Sarah Chavez said that this topic was covered previously but had not been discussed in a long time. She added that all semi-annual emission reports for the last couple of years were posted on line and included the testing data. Ms. Chavez said they could talk about this item in a future meeting.

  ACTION ITEM: Jessie Lawrence will add stack testing findings discussion as a future agenda item.

- John Bartlit asked Dennis O'Mara if he had spoken with Dr. Louis Scuderi. Mr. O'Mara said yes, and reported that Dr. Scuderi had made progress with loading the data and was starting to engage a graduate student to assist with data analysis. Dr. Scuderi had told Mr.

O'Mara that he wouldn't have results until the early part of the new year, and that he couldn't make the meeting tonight.

- John Bartlit asked Mr. O'Mara to tell Dr. Scuderi to invite his graduate student assistant to the CEWG meeting. Mr. O'Mara agreed.

  ACTION ITEM: Dennis O'Mara will tell Dr. Scuderi that his graduate student assistants are also invited to future CEWG meetings.

- Dennis O'Mara said he would share Dr. Scuderi's email, which had line-item updates, with Jessie Lawrence to share with the group.

  ACTION ITEM: Dennis O'Mara will forward Dr. Scuderi's email to Jessie Lawrence to forward to the group.

- Dennis O'Mara was unable to attend until discussion of the UNM Cancer Study and said, regarding the study, "Don't drink the Kool Aid."

STANDING AGENDA ITEMS

EHS Report

Sarah Chavez said there was much construction activity occurring on site at Intel. She said the construction was happening for a year, and the activity occurred mainly inside Intel's facility and included equipment maintenance and installing new equipment, such as a new additional thermal oxidizer. Also, Ms. Chavez reported that the City of Rio Rancho was conducting a project along Intel's easement, and there was an article in the *Corrales Comment* about this project. She said there was one odor complaint via email

Regulatory Engineering

Sarah Chavez discussed an article on the Internet of Things at https://www.intel.com/content/www/us/en/internet-of-things/market-ready-solutions/mrs-for-industrial-whitepaper.html. This article offered ways for companies to use data to make operations more efficient, including intelligent warehouse management, industrial automation, and energy grid management. Many other articles were also posted on industries such as agriculture, healthcare, retail, etc. and how to use technology for efficiency. She said the Internet of Things was a company-wide initiative and similar to regulatory engineering because it was concerned with using data to become more efficient.

LEPC Update

Dennis O'Mara said the LEPC met on September 18. The main order of business discussed was a grant the LEPC had applied for to hire a company to create a new county-wide emergency

operations plan. This new plan would incorporate things that the LEPC needed addressed into the new plan. Also, Mr. O'Mara said that he attended sessions on LEPC issues at a conference hosted by the NM Emergency Management Association at the Santa Ana Star Hotel. Mr. O'Mara said the next LEPC meeting was scheduled for December 11. Jessie Lawrence said that they could discuss this meeting at the CEWG's December meeting.

ACTION ITEM: Jessie Lawrence will add the LEPC update to the December agenda.

INTEL CORPORATE SOCIAL RESPONSIBILITY REPORT

Erika Edgerly said she worked with Sarah Chavez to make this year's presentation more local in response to last year's comments. She said she appreciated feedback on tonight's presentation.

SLIDE 2: Giving Back in New Mexico, Intel Involved

- *$13 million in donations to New Mexico nonprofits and schools since 2012*
- *Over 800 employees volunteered in the community last year*
- *Over 200 New Mexico nonprofits and schools supported*

Erika Edgerly said Intel had active relationships with schools and nonprofits in New Mexico focused on K-12 STEM education, diversity and inclusion in STEM education, and underserved populations. Of Intel's 1200 employees, 800 volunteered in the community. Every time an Intel employee volunteered with a nonprofit, that nonprofit received a $10/hour match from the Intel Foundation for that volunteer's time.

SLIDE 3: Intel Supports New Mexico's Economy

- *$15 billion in capital investments since 1980*
- *$200 million spent with New Mexico-based suppliers*
- *Employees a 1200-employee highly technical workforce*
- *Hired 62% employees locally since 1995 (when Intel started tracking this number)*

Erika Edgerly gave Intel's local economic impact, as bulleted above. She said Intel tried to source locally whenever possible, and some suppliers had relocated to the area to supply Intel and others.

SLIDE 4: By 2020, Intel Will….

Take steps to reduce the environmental impact of our operations…

- *GHG EMISSIONS: Reduce direct greenhouse gas emissions by 10% per unit from 2010 levels.*
- *WATER: Reduce water use on a per unit below 2010 levels.*
- *ENERGY: Achieve cumulative energy savings of 4 billion kWh from 2012 to 2020.*

- *WASTE REDUCTION & RECYCLING: Achieve zero hazardous waste to landfill. Achieve 90% non-hazardous waste recycle rate.*

And drive dramatic increases in the energy-efficient performance of our products

- *GREEN CHEMISTRY: Implement enhanced green chemistry screening and selection process for 100% of new chemicals and gases.*
- *GREEN BUILDINGS: Design all new buildings to a minimum of LEED Gold level between 2015 and 2020.*
- *PRODUCT ENERGY EFFICIENCY: Increase the energy efficiency of notebook computers and data center products 25 times by 2020 from 2010 levels.*

Erika Edgerly went through Intel corporate-wide environmental goals. She said Inside Intel's New Mexico web page had site information available on greenhouse gas emissions. Sarah Chavez said that some of the greenhouse gases were VOCs but not hazardous, and this distinction was not listed on the website.

Ms. Edgerly said that local Intel employees were not good at recycling and waste reduction, and that it was a human behavior issue that Intel would continue to work on. She said that Intel tried to make sure that their products used less and less energy over time.

SLIDE 5: Intel's 2018 Performance Summary Goals

Intel Corporate Social Responsibility Goal Update		
Environmental Sustainability Goals	**Progress By the End of 2018**	**Status**
Reduce direct greenhouse gas (GHG) emissions by 10% on a per unit basis by 2020 from 2010 levels.	32% reduction since 2010	On track
Grow the installation and use of on-site alternative energy to three times our 2015 levels by 2020.	2.5x increase in installations	On track
Continue 100% green power in our U.S. operations and increase alternative energy use for our international operations from 2015 to 2020.	100% U.S. and EU, 25% Israel, 71% globally	On track
Achieve cumulative energy savings of 4 billion kWh from 2012 to 2020.	4 billion kWh saved	Achieved
Increase the energy efficiency of notebook computers and data center server products 25x by 2020 from 2010 levels.	8.5x (data center server products) and 14x (notebooks) since 2010	At risk

Reduce water use on a per unit basis below 2010 level by 2020.	86% returned and restored	On track
Restore 100% of our global water use by 2025.	18% progress	On track
Achieve zero hazardous waste to landfill by 2020.	4% sent to landfill	At risk
Achieve a 90% non-hazardous waste recycle rate by 2020.	90% recycled	Achieved
Design all new buildings to a minimum LEED* Gold certification between 2015 and 2020.	48 buildings certified to date	On track
Implement an enhanced green chemistry screening and selection process for 100% of new chemicals and gases by 2020.	Initial assessment complete	On track

Sarah Chavez said this slide showed where Intel was at in meeting their environmental goals. By next May Intel will publish their 2030 goals on a corporate-wide level.

SLIDE 6: New Mexico Projects

- *Recycled water fed to cooling towers and scrubbers which reduced chemical treatment and optimized operations*

Sarah Chavez said the goal with this slide was to show where Intel was working to bring environmental improvements in New Mexico. The first bullet point listed here was Intel's using recycled water in the cooling towers and scrubbers. This helped Intel use less chemicals and optimized cooling tower operations because the recycled water was actually cleaner than what was pulled from wells. This water was recycled from somewhere in Intel's manufacturing process, and in preparing the water to use they worked to remove minerals, debris, etc.

- *Increased efficiency of reverse osmosis system saving water*

Sarah Chavez said Intel made improvements to their reverse osmosis system, which saved water in the long run. Intel had to use pure water in its manufacturing processes, and improving the system meant that less water was wasted.

- *Optimized cooling towers operation to save water*

Sarah Chavez said this project was connected to using recycled water. Intel didn't have to use as much water in their cooling towers, as a result

- *100% of calcium fluoride is now recycled*

Sarah Chavez said recycling calcium fluoride was specific to New Mexico because they found a vendor that can recycle it. John Bartlit asked if Intel gave or sold it to the vendor. Alex Lowry said he did not know, but if he were to hazard a guess it would be to give, since Intel would be grateful to find someone to recycle it.

- *Conversion of some make-up air handlers to optimize humidification process*

Sarah Chavez said Intel facilities have strict temperature control requirements, and this optimization was able to save 4 million kilowatt hours (kWh) of energy.

- *Optimized the chilled water plant to save energy*

Sarah Chavez said that this optimization enabled Intel to save 9.5 million kWh hours of energy.

- *New tools installed for the new memory technology included Intel water conservation and GHG reduction measures*

Sarah Chavez said this point was related to the current construction discussed earlier. The new memory technology being installed was a joint effort between Intel and Micon. With the technology transfer Intel retooled water conservation efforts and installed greenhouse gas measures on the new tools. John Bartlit asked about initial cost savings on using less water. Ms. Chavez said in general, water does not cost a lot of money so it ends up costing more to do water-saving projects. Yet, Intel saw the value in water conservation. The better ROI was in energy conservation, she said, since Intel saw cost savings in energy reduction projects. Mr. Bartlit commented that perhaps that's why water was wasted everywhere else.

Erika Edgerly said Intel's 2030 goals would contain more goals around water conservation. John Bartlit reminded about a time in the past when the community criticized Intel for depleting the local aquifer. The CEWG had spent much time on this issue. Ms. Edgerly said that there had been many advances in technology to conserve both energy and water.

SLIDE 7: Water Restoration in New Mexico.

Water Resources Rio Grande Project on the Upper Rio Grande and Comanche Creek

- *In partnership with Trout Unlimited and the National Forest Foundation*
- *Estimated restoration benefit of 109 million gallons per year*

Erika Edgerly said Intel had realized that incremental gain around water conservation was becoming smaller and smaller due to their already having accomplished much in this area. So Intel thought to use their resources to restore water in nearby locations to make up for consumption. Intel's general rule was as follows. About 20% of the water they used was lost to evaporation or in the manufacturing process, and 80% was returned. Intel wanted to work with community partners around reclaiming this lost amount of water through supporting various water conservation projects. Ms. Edgerly said she recently traveled to Valle Vidal in Northern New Mexico to validate Intel's partnership with Trout Unlimited and the National Forest Foundation to restore water runoff to Comanche Creek, which was a tributary that fed into the Rio Grande.

Ms. Edgerly said that because of mining, cattle, and elk, much of the creek bed was eroded, water wasn't flowing, and the water table continued to drop. The beaver population was not

building dams, also contributing to the drop. Intel gave Trout Unlimited and the National Forest Foundation a grant, and the partners hired a local contractor from Santa Fe to do the water restoration work, which involved rechanneling the creek to make sure the water flowed from Comanche Creek to the Rio Grande. Today, about 109 million gallons of water a year are reaching the Rio Grande that were not reaching it previously.

Ms. Edgerly said the restoration work involved transporting an excavator to the area with rubber around its tracks so as to not disturb grasses. The excavator dug out the rocks, made ripples, narrowed the channels in different places, and where there was continued erosion the team dug under the banks to pull grass down to make a sod bench. Now the sod is stabilizing the side of the channel and carrying the water back. Benefits seen were an increased trout population, willow returning to the river bank, and animals walking only in specific spots, which helped to manage the erosion they caused. Beavers were back building small damns, which helped to restore water to the area. Also, wide green areas were returning, which showed water was clearly being stored. The National Forest Foundation will use satellite imagery to monitor progress, and work with the town of Casitas to monitor their water table. Ms. Edgerly said she was impressed by how well Trout Unlimited and the Forest Service worked together. The Forest Service worked with various groups such as the Boy Scouts and the Rocky Mountain Youth Conservation Corp to do long-term maintenance projects, such as willow planting, etc. Intel will look for additional restoration projects in the state if water consumption at the site increases.

John Bartlit asked what other kinds of projects Intel could look for. Ms. Edgerly said the projects needed to make sense in a state in which Intel did business. Agriculture and restoration projects had a lot of potential. Intel wanted to make sure that their partners would work to maintain the effort for the long term. Mike Williams mentioned working with the Acequia Association as a possibility. Ms. Edgerly said she agreed, and also cattle farmers were interested in partnering because of their interest in having grass growing in the valleys.

UNM CANCER STUDY

- Jessie Lawrence said she obtained the report from Heidi Krapfl at NMDOH, who called it the “New Mexico Cancer Concerns Work Group Assessment.” Ms. Lawrence said she spoke with Chuck Wiggins and he was holding the December CEWG meeting date to speak to the CEWG and answer questions about the study. Heidi Krapfl also told Ms. Lawrence that she would be willing to respond to questions. John Bartlit asked if Heidi Krapfl would come to the meeting. Ms. Lawrence replied that she did not know but could ask.

- John Bartlit said he framed a couple of questions to consider that were not really about the cancer report per se but were relevant. He read his first question as follows:

1. Epidemiology has well known difficulties in dealing with a relatively few cases of distinct diseases in small populations. Human organs-on-chips is a rapidly growing technology whose capabilities may come to be useful in dealing with this problem. I understand that work with organs-on-ships is being done at UNM. What can be said about the long-term prospects for using this technology in epidemiology?

- Mr. Bartlit said he wanted to ask both Heidi Krapfl and Chuck Wiggins this question, and if they didn't know anything about it, perhaps they could find out more information to share with the CEWG. He said that organs-on-chips is where human tissue was put on computer chips, and applications offered a way to gather data to help with creating new pharmaceuticals without using animal testing. In a sense it could be defined as a regulatory engineering technology because of the regulations around drug testing. Mike Williams said he thought organs-on-chips competed with epidemiology. In epidemiology, scientists could not control the variables for cause and effect, but with organs-on-chips they could.

- John Bartlit read his second question as follows:
  2. A common problem with government-sponsored reports on health studies is a lengthy cycle of internal reviews of work products. From the outside, such reviews seem to be unreasonably time consuming, sometimes expanding to years. What reasons contribute to this problem? Are numerous reviewers involved? Do current practices require all reviewers to sign off on a final version, which adds to review time when any change is made along the way? Do other aspects add substantial review time?

- Mike Williams suggested adding to Mr. Bartlit's question whether political reasons were part of the issue. He said people working on these studies were risk-averse and weren't sure how to deal with it. John Bartlit said that as a citizen it was worth calling attention to this broken system. The review process took longer than the actual study.

- Jessie Lawrence asked the group how they should with proceed with process to gather more questions. She wondered, based on the ALS presentation, if it weren't better to invite one person at a time to get more in-depth information. From this perspective, it might be a good idea to focus specifically on Chuck Wiggins first and take advantage of his presence, and then invite Heidi Krapfl separately to a later meeting, unless the same questions were for both. John Bartlit suggested establishing a schedule for getting questions to Ms. Lawrence.

- Mike Williams said he was curious about how they calculated the data. By conducting many tests chances were one in four that they would see a cancer, versus one in twenty if they looked for just one cancer. It appeared that they repeated the process for 12 different cancers. He added that he wanted to know about researchers dealt with "uncertainty" as

depicted in error bars, especially around the cancer that showed up the strongest. These questions were about process and statistics and best suited for Chuck Wiggins, he said.

- Jessie Lawrence suggested getting questions to Dr. Wiggins a couple of weeks before the meeting at the latest. She said she would send out an email to request more questions from the group, and they could create a list of questions to send to him. Sarah Chavez asked if names were associated with questions for the ALS study. John Bartlit said he and Dennis O'Mara drafted the questions with input from the group. Jessie Lawrence said she liked the idea of attaching names to the questions and to share the list of questions with Dr. Wiggins. She said they could determine if there were additional questions for Heidi Krapfl and invite her to a future meeting.

  ACTION ITEM: Jessie Lawrence will send an email to the group asking for questions to be returned within a time limit, compile the question list, and share back with the group via email, and then send to Dr. Wiggins when the list was ready or at the very latest two weeks before the meeting.

INTEL NMED EMISSIONS PERMIT PRESENTATION

Alex Lowry reviewed the permit sections already covered in CEWG meetings and reminded about the tabular format required by the New Mexico Environmental Department (NMED). He then presented on the following slides.

SLIDE: A806 – Plant Site Emission Limits

- *Semi-annual emissions calculations for the entire facility*
  - *Monthly rolling 12 month total – i.e. emissions calculated for every month to show compliance with the annual limit*
  - *Monitoring/recordkeeping – all information needed to calculate emissions kept onsite*
  - *Report includes:*
    - *NO_x, CO, SO_2, TSP/PM/PM_{10}/$PM_{2.5}$, VOCs, individual HAPs and total HAPs*
    - *Most recent VOC and HAP test results*
    - *Production capacity as a percentage of full capacity to protect confidential business information*

Alex Lowry discussed plant site emission limits in section A806 of the permit. Intel was required to calculate emissions for the entire facility and demonstrate compliance with the set limits. The calculated number was a monthly rolling total calculated every month, showing a running 12-month total for the site. John Bartlit asked how automated the process was. Mr. Lowry replied

not as much as you would think. He said he pulled data every month from continuous parametric monitoring systems such as scrubber water flow, oxidizer temperature, connectivity, flow rate, chemical usage, etc., and input these data into spreadsheets. The report included all the criteria pollutants, VOCs, individual HAPs and total HAPs, most recent VOC and HAP test results, and production capacity as a percentage of full capacity (versus number of wafers) to protect confidential business information. The semi-annual report was submitted every six months. The monthly data were maintained on site and available for NMED review. Intel did not submit the monthly data directly to NMED. Sarah Chavez added that monthly data per chemical was listed in a table in the report.

Jessie Lawrence projected the semi-annual report to show an example of the reporting submittal form. Ms. Chavez and Mr. Lowry explained the NMED reporting template to the group.

SLIDE: Part B & C – General Conditions and Miscellaneous

- *Part B & C are NMED Template language*
- *All conditions in the permit apply to the facility, but applicability may depend on what is being done*
- *These conditions require routine onsite work or submittals*
    - *B103 Annual Fee*
    - *B105 Submittal of Reports and Certifications*
    - *B109 General Recordkeeping Requirements*
    - *B110 General Reporting Requirements*
    - *B111 General Testing Requirements*

Alex Lowry said the next slide captured "general conditions" versus conditions "specific" to Intel. The language used was NMED template language and found in every permit for every facility in the state—worded exactly the same. Mr. Lowry said all the conditions listed in the permit were worded in "legalese." Sarah Chavez said that NMED required the language to be written exactly as dictated. Intel could not change it. NMED required standardized language that came from their regulatory code.

Alex. Lowry read through the conditions bulleted above. John Bartlit asked about the annual fee. Mr. Lowry said the annual fee was based on the type of permit an organization had. Intel's annual fee was about $1600.

Sarah Chavez stated that tonight was the final presentation on the permit. She said that they could next address Intel's testing, as Dennis O'Mara had requested tonight, and suggested discussing it more when Mr. O'Mara was present.

REVIEW ACTION ITEM PROGRESS REPORT

- John Bartlit commented on item #9. He said he kept thinking about and looking for ways for the CEWG to remind "ourselves" how we operated. He had written a one page summary for the purpose of giving it to the ALS panelists. It contained the CEWG mission statement and other statements to inform them who the CEWG was and how they worked. Jessie Lawrence said she would include the one-page summary when the meeting summary went out to all for review.

- Erika Edgerly asked what else they wanted to do about item #5. Sarah Chavez said they had discussed bringing in the work Intel was doing as a future agenda item. Ms. Edgerly said she was happy to go over it whenever the CEWG liked. Jessie Lawrence suggested including it in December's meeting, time permitting. Ms. Edgerly said she would be ready.

- On item #7, John Bartlit said there were lots of plants people could put in their houses to remove pollution.

- Jessie Lawrence asked the group if they should keep item #1 on the report. Erika Edgerly said she was at the National Guard in July for an event and did not recognize any of the guardsmen. She suspected that the guardsmen the CEWG were in touch with rotated out, and the unit was very busy travelling internationally. John Bartlit said he was surprised by their initial interest, since it was outside their norm. He suggested that Mr. O'Mara be present to make this decision. Sarah Chavez suggested moving this item to the future agenda topics so it didn't disappear completely. She suggested the same for items #2, because there already was an emergency item, and #3, since nothing was upcoming.

- Erika Edgerly said she would provide appetizers for the December meeting.

ADJOURN

NEXT MEETING: December 18, 2019, 5:15 pm to 7:00 pm, Corrales Senior Center.