Consumer Confidence Reports: Opportunities and Challenges for Small NC Water Systems

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**Introduction**

**Consumer Confidence Report Rule Revision**

Drinking water customers have the **right to know** what is in the water they are consuming and from where the water is sourced. This founding principle spurred the passage of the federal Consumer Confidence Report (CCR) rule in the 1996 amendment to the Safe Drinking Water Act (SDWA). The rule was promulgated in 1998.¹

Consumer Confidence Reports, or annual Water Quality Reports, provide consumers with an annual snapshot of the quality of their drinking water, while also providing important information on health risks, treatment methods and other educational materials.² Overall, the goal of these reports is to allow individuals to make informed decisions about the water they drink.

Currently, the U.S. Environmental Protection Agency (EPA) is in the process of revising the CCR rule to achieve the following³:

1. Increase the readability, clarity, and understandability of the information in these reports.
2. Increase the accuracy of information presented, and risk communication, in CCRs.
3. Require community water systems serving 10,000 or more people to provide consumers with reports twice per year.

The revised CCR regulations are required under the America Water Infrastructure Act (AWIA), which amended the SDWA in 2018. AWIA’s aim is to improve the nation’s water infrastructure, water quality and safety, and enhance public health through increased

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³ [“Consumer Confidence Report Rule Revisions.” EPA, Environmental Protection Agency, Last accessed on August 12, 2022.](https://www.epa.gov/ccr/consumer-confidence-report-rule-revisions#:~:text=The%20revisions%20are%20intended%20to,with%20reports%20twice%20per%20year)
investments. The Act also required the EPA to amend the CCR rule within a 2-year window.⁴

In 2021, the Natural Resource Defense Council (NRDC) filed a complaint against the EPA for failing to amend the CCR rule to address the four items outlined above. The current rule revision is in direct response to this lawsuit and the failure of EPA to issue its revisions 24 months after the passing of the AWIA.⁵

**North Carolina Small Water Systems**

According to the North Carolina Department of Environmental Quality’s (NC DEQ) Division of Water Resources (DWR), there are nearly 6,000 public water systems in NC.⁶

A 2019 Duke University report explored characteristics of small drinking water systems in North Carolina, finding that almost 95% of all public water systems (CWS, NTNCWS, and TNCWS) serve fewer than 3,300 individuals. Of the estimated 1,996 *community* water systems, 86% serve 3,300 individuals or less.⁷

**Distribution of NC Public Drinking Water Systems by type and by service population**

<table>
<thead>
<tr>
<th>Broad classification</th>
<th>Small</th>
<th>Medium²</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Type (EPA category)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>1,377</td>
<td>340</td>
<td>141</td>
<td>1,996</td>
</tr>
<tr>
<td>Non-Transient, Non-Community</td>
<td>292</td>
<td>52</td>
<td>1</td>
<td>345</td>
</tr>
<tr>
<td>Transient, Non-Community</td>
<td>3,075</td>
<td>30</td>
<td>0</td>
<td>3,105</td>
</tr>
<tr>
<td>Total</td>
<td>4,744</td>
<td>422</td>
<td>142</td>
<td>5,446</td>
</tr>
</tbody>
</table>

(Zhong, Jizhen, et al.)

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These small water systems face numerous technical, managerial, and financial (TMF) obstacles compared to larger systems, and oftentimes find themselves in noncompliance with SDWA regulations.  

**Project Scope**

Through our organization's own experience speaking with both customers and operators of small community water systems (typically those serving 10,000 or less customers), we understand that these drinking water providers may not have the operational or technical capacity to best communicate important drinking water information to their customers. We've published two reports on this topic:

- **Do NC Water Utilities Habla Espanol? (2020)**
- **Working Towards Water Justice in North Carolina Mobile Home Parks (2019)**

Our publications and past community work on Consumer Confidence Reports led our organization to be selected to participate in an interview with EPA Region 4 staff to discuss the proposed CCR revisions. The interview was conducted in May 2022.

Following this interview, we accepted a summer intern, Zoe Saum (Appalachian State environmental sciences student), who was further interested in understanding the experience of small water systems in complying with the current CCR rule, and what suggestions they may have to reduce burdens on both the utility staff and the customers accessing the information.

This report summarizes the work Ms. Saum and Clean Water for NC accomplished over the summer, which included facilitating a questionnaire to 50 North Carolina medium to small-sized water systems to better understand their observed challenges and opportunities concerning CCRs.

Responses to the questionnaire, while largely narrative in nature, highlight the following:

- Limited translational assistance by both local government staff and NC DEQ impact decisions to provide a Spanish version of CCR;
- Poor internet access and inability to keep customer email addresses updated are a barrier to electronic delivery of CCRs;
- The electronic delivery of CCRs would reduce staff burden, cost less, and increase delivery efficiency;
- The CCR template provided by NC DEQ is widely used;

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- The technical nature of the language used in the CCR template reduces customers’ ability to understand the report; and
- There is interest in utilizing a more effective, aesthetically pleasing CCR template to increase customer interest in and comprehension of the information.

This brief report is intended to provide a unique insight into the perceived challenges and opportunities of publishing effective CCRs by North Carolina's smallest water systems. While the scope of this report is considerably small and by no means represents the experiences of all small to mid-sized water systems in the state, we hope that NC DEQ may see this as a starting point to conduct more in-depth research into the challenges faced by relatively understaffed, overburdened, and rural drinking water providers.

This report will also be shared with EPA Region 4 staff to help inform decisions regarding the current CCR rule revision.
Methodology

Fifty public community water systems were identified for this outreach project, spanning 40 counties across North Carolina.

Systems were primarily chosen based on the size of the population served, prioritizing mid-small sized water systems serving 10,000 or less individuals. Population served was determined using the NC DEQ's Drinking Water Watch search engine.10

Additional demographic data collected included the percent Hispanic population in the town/municipality in which the water system operates, the percent of the population with less than 9th grade education in the town/municipality in which the water system operates, and the percent of the population with some high school education but no diploma in the town/municipality in which the water system operates. This information was collected utilizing the EPA’s EJSCREEN mapping tool, which generated values based on the 2019 American Community Survey.11

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9 North Carolina County Map, GISGeography. https://gisgeography.com/north-carolina-county-map/
### Demographics of Selected Water Systems Compared to North Carolina

<table>
<thead>
<tr>
<th>Demographic Indicator</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Hispanic Population</td>
<td>8.28%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>10.7%</td>
</tr>
<tr>
<td>Percent of the population with less than 9th grade education</td>
<td>6.74%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>4.24%</td>
</tr>
<tr>
<td>Percent of the population with a 9-12 education but no high school diploma</td>
<td>10.9%</td>
</tr>
<tr>
<td>North Carolina</td>
<td>7.35%</td>
</tr>
<tr>
<td>Average Population Size of Selected Water Systems</td>
<td>3,314</td>
</tr>
<tr>
<td>Total Population of North Carolina</td>
<td>10,314,000</td>
</tr>
</tbody>
</table>

We were interested in understanding the above demographic indicators of the populations served by the selected 50 water systems due to the central focus of EPA’s CCR rule revision in increasing readability, clarity, and understandability of the reports.

The average percent of the population with less than a 9th grade education and some high school education but no diploma served by the selected water systems were both higher than the state average. This is important when considering that the majority of responses to the questionnaire highlighted respondents’ belief that the current language is too technical for general understanding.

While the percent Hispanic population on average served by the selected water systems was smaller than the state average, the size of the two comparative groups is vastly different. The importance of acknowledging these populations exist within the customer base of small North Carolina water systems is discussed later in the report.

Following the selection of water systems, we collected contact information for each town and municipality and conducted “cold calls.” These calls were generally first directed towards the Town Clerk or Public Works Department, then forwarded to the appropriate person after describing the scope and goal of our project. Follow-up emails were sent to all water systems that we were unable to reach via phone.

Of the 50 water systems identified, we received a relatively small set of responses from 11 towns or municipalities (22% of utilities contacted responded to the CCR questionnaire). Given feedback we received from respondents, we are not surprised by the limited response given TMF obstacles common in systems of this size.
The questionnaire was administered through Google Docs and responses were collected anonymously to incentivize greater participation.

The goals of the current CCR rule revision informed the focus of our questions, which included: language clarity and accessibility, delivery methods, and perceived solutions to existing challenges and/or burdens faced by small water providers.
Section 1: General Utility Demographics

How many individuals are employed by your utility?
11 responses

Six respondents, or 54.5% of water systems participating in the questionnaire, indicated that they employ 1-5 individuals.

This is in line with findings from a 2011 EPA report that analyzed national characteristics of drinking water systems serving 10,000 or less individuals. Their analysis shows that system size impacts the water department’s labor characteristics, and, on average, systems with a customer base of 10,000 or less have only two administrative staff.
members. In systems serving 3,300 or fewer individuals, these staff members often work 20 hours or less per week.\textsuperscript{12}

Responses to the question about the size of the population served are as expected, given we utilized data in NC DEQ's Drinking Water Watch search engine to prioritize outreach to water systems serving 10,000 or less individuals.

\textbf{Section 2: CCR Accessibility for Non-English Speakers}

Does your utility serve a relatively large number of Hispanic or non-English speaking households? (10\% or more of your total customer base)

11 responses

\begin{center}
\begin{tikzpicture}
\fill [red] (0,0) circle (1cm);
\fill [yellow] (0,0) circle (0.5cm);
\end{tikzpicture}
\end{center}

\begin{itemize}
\item Yes 72.7\%
\item No 27.3\%
\item Unsure
\item Prefer not to answer
\end{itemize}

\textbf{We are largely interested and concerned about how water systems communicate health risk and water quality information to their non-English speaking drinking water customers.}

As indicated in the above responses, only 1 water provider indicated that they make available a translated CCR for customers. In their narrative response, they stated that they did so because they acknowledge that: “We have a number of areas that are Spanish speaking.” They also stated this translation was provided through the local Police Department.

The other 10 respondents did not provide translated CCRs, giving the following reasons in their own words:

\begin{itemize}
\item The CCR template provided by NCDEQ includes a Spanish introductory paragraph, but the rest of the report template is not translated. I include this introductory paragraph in the CCR for water systems that have a sizeable
\end{itemize}

Hispanic/Latin population, but otherwise omit it. I would say a combination of it "not being required" and with no alternate language templates being made available is why translated copies are not distributed.  
- Limited Spanish-speaking residents and no bilingual translators available to convert to Spanish.  
- Municipality not serving sufficient number of non-English speaking customers.  
- We haven't ever provided a translated version although that would be smart. I am not a native Spanish speaker though I do know enough to speak to our customers should they so need it. Before now I hadn't thought to, nor was it recommended to me in the past two years to have it translated.  
- Low non-English speaking population.  
- Hadn't ever thought of that.  
- Has not been a demand for translation to another language.  
- We do not at this time have a translator on staff.  

(*two provided “N/A” as their response)  

In our 2019 report, *Working Towards Water Justice in North Carolina Mobile Home Parks*, we discuss our experiences speaking with over 100 residents in 37 mobile home parks (MHPs). Many North Carolina MHPs are in a unique situation, in that owners of these communities – many of whom live outside the state – are responsible for managing the small drinking water system and producing and delivering the annual CCR.  

Our 2019 report summarizes conversations with non-English speaking MHP residents who 1) had never heard of an Annual Water Quality Report, 2) were unsure where they could access theirs, and/or 3) were unable to understand the information because the language was not provided in any language other than English.  

As shown in the above pie chart, the majority of responses to our CCR questionnaire indicated that the water system doesn’t believe they serve a relatively large proportion of non-English speaking customers. However, the multilingual requirement under the Safe Drinking Water Act is extremely vague and may have influenced these responses.  

The EPA requires public water utilities to translate their annual CCRs, provide a translated statement on the importance of the report, or provide contact information for someone who can translate the report, if they “have a large proportion of non-English speaking residents”. What constitutes a “large proportion” is not defined.
In North Carolina, DEQ merely relies on a water provider to decide whether or not they serve a “large proportion” of non-English speaking households, and whether or not they need to comply with the multilingual rule and provide a translated CCR.13

We are not suggesting that all Hispanic-identifying individuals are unable to speak and/or read English, but that perhaps the lax multilingual rule requirement and lack of information and resources about the requirement reduces a water systems interest in investigating the language proficiency of its customer base.

**Recommendation #1:**

Small water systems are often short-staffed or employ individuals who may only work part-time. These staff members may be unable to investigate whether their water system serves a “large proportion” of Spanish speaking households or may lack the tools to do so. Further, as indicated by one of the questionnaire respondents, water system staff may not even be aware that they are supposed to provide translated CCRs.

On NC DEQ's Division of Water Resource's “Compliance Services” webpage, it should be made clear that water systems are required to translate not only their CCRs, but any communications regarding a customer's drinking water, if they serve large populations of non-English speakers.

DEQ should also provide demographic search tools and user guides on their “Compliance Services” webpage to help build the capacity of local governments to understand the demographics of their town or municipality.

Inability to access translation services also appears to be a barrier to providing translated CCRs. We acknowledge that small local governments and their water departments may not have the staff capacity or staff skills needed to provide reports in any language other than English. It is recommended that NC DEQ explore opportunities to not only assist local governments with CCR translations, but also provide a Spanish translated template for water providers on their “Compliance Services” webpage.

Many of NC’s larger municipal systems, such as City of Durham14, provide excellent Spanish translated water quality reports, and may be able to assist DEQ with providing a general translated template as well.

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Over the past decade, the Hispanic population in North Carolina grew by 40%, outpacing the national rate. Many of these growth pockets have occurred in NC’s smallest, most rural satellite towns. Greater attention must be given to providing equal access to water quality compliance and translation services for all NC water systems, and in lieu of any stricter enforcements by EPA, NC DEQ can begin making these accessibility improvements now.

Section 3: CCR Delivery Challenges and Opportunities

How does your utility deliver CCRs to customers?
11 responses

The delivery methods used by the eleven respondents reflect the current CCR direct delivery requirements for water providers serving 10,000 or less customers.

- Six respondents indicated that the report is included with customers’ bill, a separate mailing, or other email communication;
- Two indicated that the CCR is mailed or directly delivered to individuals;
- One indicated that the CCR is published in the local newspaper;
- One indicated that the CCR is made available in a public posting within the community; and
- One indicated that the CCR is emailed to customers.

Beginning in 2011, following the EPA-administered CCR Retrospective Review Plan, the agency began investigating opportunities to improve the effectiveness of communicating

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drinking water information to the public while also reducing delivering burdens on water systems.\textsuperscript{16}

The EPA considered two electronic delivery approaches that they interpreted would be consistent with the current CCR rule language of “mail or otherwise directly deliver”\textsuperscript{17}:
1. Paper CCR delivery with a customer option to request an electronic CCR, or
2. Electronic CCR delivery with a customer option to request a paper CCR.

The EPA established a memorandum in 2013 that clarifies the CCR Rule delivery options. This memorandum did not change or replace any of the CCR regulatory language, but served simply as unenforceable guidance.

The EPA is again considering the effectiveness of electronic delivery in the current rule revision, and we wanted to understand what challenges and opportunities small North Carolina systems associated with the electronic delivery of their CCR.

Questionnaire participants expressed the following in their own words:

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited internet service in area, updating email addresses.</td>
<td>Reduced paper waste, and reduced risk of delays.</td>
</tr>
<tr>
<td>Not everyone having access to internet.</td>
<td>Less time consuming and cheaper. Our water treatment department (which puts the CCR together) only has two employees. Time is limited.</td>
</tr>
<tr>
<td>We provide CCR on our town website and have still yet had any feedback of not being able to find or read.</td>
<td>Cost of service, staff time</td>
</tr>
<tr>
<td>Email information, limited-service area.</td>
<td>Being able to resend more than once for people that didn’t get it</td>
</tr>
<tr>
<td>Updating email addresses, internet service issues.</td>
<td>Speed, efficiency, limited personnel</td>
</tr>
<tr>
<td>Current email information, internet coverage.</td>
<td>Paperless, more cost effective for printing, ink and postage</td>
</tr>
</tbody>
</table>

*Only 6 of the 11 participants chose to participate in this narrative portion of the questionnaire


The top challenges to providing an electronic copy of the Consumer Confidence Report, as stated by questionnaire participants, include limited internet access and difficulty keeping email addresses up to date.

Respondents identified numerous positive outcomes associated with an e-delivery method, including reducing staff, materials, and postage costs; increasing delivery speed and efficiency; and reducing staff burden and time spent on the deliveries.

**Recommendation #2:**

EPA should consider allowing water systems to deliver their water quality reports electronically, acknowledging the many opportunities to reduce staffing and cost burdens associated with other methods.

However, it is important that this delivery method be made *optional*, as many water systems are located in regions where communities do not have adequate internet access.

NC DEQ should consider conducting a more robust and widely-administered survey to better understand CCR delivery challenges and opportunities perceived by small water systems.

**Section 4: CCR Readability, Clarity, and Understandability**

What type of CCR template is used by your utility?

11 responses

- [ ] Template provided by NC DEQ
- [ ] Created our own CCR template
- [ ] Unsure
- [ ] Prefer not to answer

100%
All 11 questionnaire participants indicated that they utilize the CCR template provided by NC DEQ. This template can be found on the “Compliance Services” webpage and was revised on February 2, 2022.\(^\text{18}\)

We understand that much of the language in NC DEQ’s template, including that of the “What EPA Wants You to Know” section, cannot be modified until changes are made at the federal level. We also acknowledge that communicating water quality data and health risks to the general public is a difficult task, and that information that is understandable to one community may not be easily comprehended by another.

However, because EPA is interested in increasing the clarity, readability, and understandability of the language outlined in CCRs, we wanted to get a perspective from small NC water systems about what they believe are the main obstacles to providing customers with an effective snapshot of the safety of their drinking water.

The following are responses provided by eight of the participating water systems, in their own words:

- I think more comprehensive explanation of terms, and a realistic explanation of the risks and functions of water treatment, would be helpful to the customers. People seem to be more concerned about "what's going into their water" than "what's in it", so I think that would be meaningful to share.
- Scale back technical terms.
- Only if it is made simpler, the large majority of customers know very little about the terminology or what the numbers mean.
- As with most reports they use a lot more technical jargon than the average person would understand. So maybe some FAQ's listed at the end in layman's terms may help or even a guide as to what certain things mean and definitions of some of the terms used for water treatment.
- Technical language.
- Customers don't know why they have the info.
- We see little interest in the CCRs but notice that the availability of the CCR often causes customers to ask "if their water is alright".
- I've found a lot of consumers have a hard time with comprehension more than anything when it comes to reports and documents the only thing that seems to breakthrough is using language they are used to hearing and real world examples.

(*three water systems declined to answer this question)

Many of these responses were echoed in stakeholder feedback during the CCR Retrospective Review in 2011, which found the information provided in the reports to be confusing, misleading, and alarming to some individuals.

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As stated in the demographics discussion earlier, the 50 water systems selected for this study had higher percentages of the population with no high school diploma compared to the state average. It is an unfortunate reality that the current technical language, as well as the sheer quantity of information, in the current reports may be a barrier to large populations of North Carolina customers who have lower educational attainment levels.

Effective reports are written with the target audience in mind, and EPA’s focus on increasing the clarity and readability of the CCRs is a positive step forward to ensuring all consumers are provided an equal opportunity to learn more about the safety of their drinking water.

**Recommendation #3:**

It would be short-sighted to expect NC DEQ provide an effective Consumer Confidence Report template that would work for all communities. Much of the required information, including where the drinking water is sourced, the Source Water Assessment Program (SWAP) analysis, local activities underway to protect the water source, etc., is highly local in nature. Even EPA’s “Best Practices Factsheet” encourages water systems to tailor their CCRs to local conditions, framing the reports as a unique opportunity for community water systems to connect with customers, educate them about the safety of their water, and promote involvement in protecting this source.\(^{19}\)

Additionally, as the current CCR rule is under review, we acknowledge that it may be some time until we see how EPA will address the concerns surrounding clarity, readability, and understandability, and what language alternatives they may propose. The rule revision will undoubtedly lead NC DEQ to revise the template that is currently being provided, so making any revisions before then would not be a good use of agency time and will probably confuse the very water systems it is intended to assist.

In the interim, it is recommended that NC DEQ provide a Resources Library for drinking water providers to develop effective and accessible CCRs for their customers. Current CCR compliance services for water suppliers include the following:

- **Electronic Delivery Information (February 2013 Letter/E-mail to All Community Water Systems)**; includes instructions for electronic submittal of CCR and Certification form to the Public Water Supply Section
- **CCR Certification Form and Template** (revised February 2022) [pdf][Word]
- **Source Water Assessments**
- **U.S. Environmental Protection Agency 40 CFR 141 and 142**
- **EPA - CCR Rule Delivery Options** (Memorandum dated January 3, 2013) [pdf]

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This library should not only include guidance on multilingual requirements, but should also share the EPA “Best Practices Fact Sheet: Consumer Confidence Reports” document and examples of CCRs that go above and beyond to implement these best practices. (Examples: Fayetteville Public Works Commission, City of Durham, City of Asheboro, Harnett County)

Clean Water for North Carolina has a “Community Tools” webpage that provides fact sheets and guidance on how to navigate publicly accessible mapping applications and search engines, including EPA’s EJSCREEN. Featuring the EJSCREEN mapping application as resource may help utilities better understand the demographics of their service population and make informed decisions about whether they should provide translated CCRs.

Appendix A provides an example “CCR Resources for Utilities” list that DEQ should consider including on their “Compliance Services” webpage.
Conclusion

Although our questionnaire reached only a tiny fraction of small water systems in North Carolina, we hope responses provide a unique insight into the perceived opportunities and challenges that are associated with providing effective Consumer Confidence Reports.

A main takeaway from reviewing participants’ answers is that small water systems rely heavily on NC DEQ guidance when developing their annual water quality reports. This is evident in responses that highlight the widespread use of NC DEQ’s CCR template, the inability to provide translation services due to local constraints, and the desire to provide more straightforward, easily understood reports for customers.

We hope the provided recommendations will begin a conversation within NC DEQ about what more can be done to ensure that water systems of all sizes are provided the resources to effectively communicate important drinking water information to consumers.

The unique insights of small drinking water providers may also prove valuable to EPA staff members when considering how the CCR rule can be revised to communicate the value of water, promote wise use, build community trust and customer satisfaction, and to encourage investment in resource protection and infrastructure.
Appendix A – CCR Resources for Utilities

Compliance Services

Consumer Confidence Report Rule (CCR)

- **Electronic Delivery Information (February 2013 Letter/E-mail to All Community Water Systems)**; includes instructions for electronic submittal of CCR and Certification form to the Public Water Supply Section
- CCR Certification Form and Template (revised February 2022) [pdf][Word]
- **Source Water Assessments**
- U.S. Environmental Protection Agency 40 CFR 141 and 142
  - (with corrected link*)
- EPA - CCR Rule Delivery Options (Memorandum dated January 3, 2013) [pdf]
- EPA - CCR Retrospective Summary (EPA 816-S-12-001, 12/2012) [pdf]

Preparing the Consumer Confidence Report (CCR)

- EPA – Best Practices Fact Sheet: Consumer Confidence Report [pdf]
  - Provides more than two dozen translations for informational statements to use on CCRs.
- EPA – Preparing Your Drinking Water Consumer Confidence Report [pdf]
  - Assists drinking water systems with preparing and distributing CCRs.
- EPA – **Public Service Announcements & Communications Tips for Water Systems**
  - Materials that water system owners and operators may find useful for communicating to their customers about the CCR, specific contaminants, or other water quality-related issues.
- WA State Department of Health – **Translations for Public Notification**
  - Provides more than two dozen translations for informational statements to use on CCRs.
- EPA - **EJSCREEN**
  - The Environmental Justice Screen and Mapping Tool (EJSCREEN) is a mapping and screening tool that combines demographic and environmental indicators to identify areas where people are vulnerable. Learn more at cwfnc.org/tools