From:	Anna Henolson
To:	Carruthers, Robert (ECY); Ogle, Stephanie (ECY)
Cc:	Piotrowski, John; Butkus, Paul; Aaron Day; Garber, Rich D; Ramos, Charleston
Subject:	PCA Wallula Modified Units Emission Increase Table
Date:	Friday, June 15, 2018 1:25:01 PM
Attachments:	PCA Wallula Project Emissions Summary_NOC_TPY v1.0.xlsx

Robert and Stephanie,

Please find attached a table showing the emissions increase from modified units.

Note that this table shows emission increases identical to those in Table 3-6 of the application. Even though the PSD applicability calculations in Table 3-6 do not show separate emissions for the No. 2 M&D or the blower, the total increases for the larger emission unit category that includes these units are below the de minimis levels.

- That is, even considering all NCG venting rather than only No. M&D digester venting, the increase is still below the de minimis level for VOC.
    - Note that the No. 2 M&D digester emissions also include of TRS, but TRS is not a pollutant of concern for comparison to the de minimis levels.
- Similarly, even considering all the miscellaneous fugitive sources together rather than only the increase from the blower modification, the increase is still below the de minimis threshold.
    - Also note that the potential to emit from the blower, assuming continuous operation at the lb/hr rate listed in Table 4-2 is 0.006 tpy PM, 0.003 tpy PM10, and 0.0004 tpy PM2.5. These post-project PTE values are also below the respective de minimis levels.

Please feel free to call me any time if you have questions regarding this table or any other aspect of the application at 253-867-5600, extension 1008.

Best Regards,

Anna

ANNA HENOLSON, P.E., C.M. | Managing Consultant

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Emissions Increase from Modified Units

Emission Unit	Project Emissions Increase (ton/year)[1]							
	PM	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_x**	**VOC**	**CO**	**Lead**
No. 3 Paper Machine [2]	0.77	0.77	-0.71	--	-0.54	28.26	-1.21	--
NCG Auto-Vent (Including No. 2 M&D Digester) [3]	--	--	--	--[4]	--	0.63	--	--
All Miscellaneous Fugitive (Including Sawdust Blower) [5]	0.54	0.18	0.03	--	--	--	--	--
Project Total from Modified Units	1.31	0.95	-0.68	0.00	-0.54	28.89	-1.21	0.00
De Minimis	1.25	0.75	0.50	2	2	2	5	0.005

[1] Project emissions increases are shown for modified units only for comparison to the minor new source review exemption thresholds, *based on emissions* provided in WAC 173-400-110(5): *modification to an existing emissions unit that increases the unit's actual emissions by less than each of the threshold levels listed in Table 110(5) Exemption levels of this subsection is exempt from new source review* . The increase in each unit's actual emissions shown in this table is consistent with the actual emission increases shown in Table 3-6 of the application.

[2] The No. 3 paper machine emission increases consistent with the actual increases shown in Table 3-6 of the application are above the de minimis levels for PM_{10} and VOC.

[3] The NCG auto-vent emissions shown in this table conservatively represent all NCG venting rather than only the portion attributable to the No. 3 M&D digester for consistency with Table 3-6 of the application. The increase in VOC from increased NCG venting emissions are below the de minimis level for VOC, and the No. 2 M&D digester does not emit any other criteria pollutants.

[4] SO_2 is not emitted directly from the No. 2 M&D digester; however, the increase throughput through the M&D digester is expected to increase TRS routed to the NCG system. On a long-term basis, the increase in TRS from increased pulp throughput will be offset by sulfur recovery in the new white liquor scrubber being installed as part of the proposed project.

[5] All miscellaneous fugitive emissions shown in this table conservatively represent all miscellaneous fugitives sources other than storage piles (includes wastewater treatment, drop points, blowers & unloading, and vehicle travel) rather than only the portion attributable to the blower for consistency with Table 3-6 of the application. The blower emission increase is only a small fraction of the miscellaneous fugitive emission increases. The increase in PM, PM10, and PM2.5 from all miscellaneous fugitive operations are below the respective de minimis levels.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

August 2, 2018

Mr. James DeMay
Industrial Section Manager
Solid Waste Management Program
P.O. Box 47600
Olympia, WA 98504-7600

Re: Boise White Paper LLC Second Tier Petition for Increased Acrolein Emissions

Dear Mr. DeMay:

The Washington State Department of Ecology's Air Quality Program (Ecology) has completed a review of health hazards associated with increased acrolein emissions from the modification of No. 3 Paper Machine at Boise White Paper LLC (Boise) mill in Wallula, WA. The project will enable an increased average daily capacity from 800 to 1,400 machine dried tons of linerboard per day with a maximum short-term maximum capacity of 1,680 machine dried tons per day. With the increase in capacity, Boise will not need the No. 1 paper machine. In estimating their emissions increases, Boise considered an emissions offset from ceasing the operation of the No. 1 paper machine.

Ecology's review determined that the project's net increased emissions are unlikely to cause or contribute to short- or long-term adverse respiratory symptoms among people exposed to ambient acrolein and other toxic air pollutants.

Ecology recommends approval of the proposed project because project-related health risks are permissible under WAC 173-460-090. Because Boise considered offsets of acrolein emissions from the No. 1 paper machine as part of the health impacts assessment, the approval order must contain an enforceable condition specifying that this unit can no longer operate.

This project has satisfied all requirements of a second tier analysis. Ecology recommends that you incorporate our findings as part of your ambient air impacts analysis, and you may begin the public comment period when you are ready to do so.

If you would like to discuss this project further, please contact Gary Palcisko at (360) 407-7338 or gary.palcisko@ecy.wa.gov.

Sincerely,

Chris Hanlon-Meyer
Science and Engineering Section Manager
Air Quality Program

gp/te

Enclosure

cc: Paul Butkus, Boise White Paper LLC
Anna Henolson, Trinity Consultants
Stephanie Ogle, Ecology

DEPARTMENT OF ECOLOGY
State of Washington

Health Impact Assessment Recommendation Document for

Boise White Paper, L.L.C.
A Subsidiary of Packaging Corporation of America

No. 3 Paper Machine Modification Project

Wallula Mill

Wallula, Washington

July 2018

Contact Information

For more information contact:

Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-407-6800

Washington State Department of Ecology — www.ecology.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Union Gap 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-6800 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.

Health Impact Assessment Recommendation Document for

Boise White Paper, L.L.C.
A Subsidiary of Packaging Corp. of America
No. 3 Paper Machine Modification Project

Air Quality Program

Washington State Department of Ecology

Olympia, Washington

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Executive Summary

This health impact assessment review evaluates and summarizes the health risks from increased emissions of toxic air pollutants resulting from a project to increase the production of linerboard at Boise White Paper LLC (Boise) mill in Wallula, WA. In general, increases in toxic air pollutant impacts in the area near Boise will not likely contribute to any short- or long-term health effects. Ecology concludes that the health risk is acceptable and recommends approval of the project.

The proposed project to increased production of linerboard will require modification of:

- No. 3 paper machine to increase the average daily capacity from 800 to 1,400 machine dried tons of linerboard per day with a maximum short-term maximum capacity of 1,680 machine dried tons per day.
- No. 2 M&D digester to allow an increase in throughput from 210 to 300 oven-dried tons pulp per day.

Modification of these units results in increased toxic air pollutant emissions. One toxic air pollutant, acrolein, will be emitted at a rate that requires a health impact assessment. A health impact assessment describes the increased health risks from exposure to toxic air pollutants emitted by a new source of toxic air pollutants.

Boise hired Trinity Consultants to prepare a health impact assessment which evaluated and characterized health hazards associated with Boise's acrolein and other toxic air pollutant emissions. As part of the health impact assessment, Boise considered offsets of acrolein emissions from the No. 1 paper machine, which will not be used in the future. Ecology reviewed the health impact assessment and concluded that Boise's project-related increased emissions of acrolein and other toxic air pollutants are not likely to cause or contribute to adverse health effects. Ecology recommends approval of the project because the health hazards are considered acceptable. The approval order must contain an enforceable condition specifying that the No. 1 paper machine can no longer operate.

Second Tier Review Processing and Approval Criteria

The health impact assessment (HIA) submitted by Trinity Consultants is part of the second tier toxics review process under WAC 173-460 (Trinity Consultants, 2018). Ecology is responsible for processing and reviewing second tier review petitions statewide.

Second tier review processing requirements

In order for Ecology to review the second tier petition, each of the following regulatory requirements under Chapter 173-460-090 must be satisfied:

(a) The permitting authority has determined that other conditions for processing the NOC Order of Approval (NOC) have been met, and has issued a preliminary approval order.

(b) Emission controls contained in the preliminary NOC approval order represent at least best available control technology for toxics (tBACT).

(c) The applicant has developed an HIA protocol that has been approved by Ecology.

(d) The ambient impact of the emissions increase of each toxic air pollutant (TAP) that exceed acceptable source impact levels (ASILs) has been quantified using refined air dispersion modeling techniques as approved in the HIA protocol.

(e) The second tier review petition contains an HIA conducted in accordance with the approved HIA protocol.

Acting as the "permitting authority" for this project, Ecology's project permit engineer satisfied item (a) and verified item (b) above on July 18, 2018. Ecology approved an HIA protocol (item (c)), and the final HIA (item (e)) was received by Ecology on June 22, 2018. Ecology's modeler confirmed that refined modeling (item (d)) was conducted appropriately.

All five processing requirements above are satisfied.

Second tier review approval criteria

As specified in WAC 173-460-090(7), Ecology may recommend approval of a project that is likely to cause an exceedance of ASILs for one or more TAPs only if it:

(a) Determines that the emission controls for the new and modified emission units represent tBACT.

(b) The applicant demonstrates that the increase in emissions of TAPs is not likely to result in an increased cancer risk of more than one in one hundred thousand.

(c) Ecology determines that the non-cancer hazard is acceptable.

tBACT determination

Boise's modification of No. 3 paper machine and No. 2 M&D digester result in TAP increases requiring controls to meet the tBACT requirement. These project-related TAPs can broadly be classified as volatile organic compounds (VOCs) and total reduced sulfur (TRS) compounds. The following excerpt from the draft notice of construction approval order represents Ecology's tBACT determination:

> *"VOCs from typical paper machines" … "are typically low in concentration and generally are technically infeasible or not cost effective to control through air pollution control devices. VOC emissions can be minimized through the use of low VOC-containing chemicals as additives at the No. 3 PM and exclusive use of mill segregated clean condensates for pulp decking and washing upstream of the paper machine. Therefore, BACT for VOC and tBACT for the associated TAP emissions from the No. 3 Paper Machine is determined to be a work practice standard of using only low VOC-containing chemicals as additives at the No. 3 Paper Machine and exclusive use of mill segregated clean condensates for pulp decking and washing upstream of the paper machine meeting the requirements of 40 CFR 63.443(a)(1)(iv)(B) for methanol content. This is also consistent with VOC BACT and TAP tBACT determinations in general for similar paper machines."*

> *"The No. 2 M&D Digester has a short-term emission increase of VOC and TRS, which are subject to BACT. The No. 2 M&D Digester is a regulated source under NESHAP Subpart S, and the emissions from the digester are currently collected and combusted in either the lime kiln or hog fuel boiler, with venting of up to 1% of operating time in a semi-annual reporting period allowed under 40 CFR 63.443(e)(1). EPA recently completed a Risk and Technology Review (RTR) for MACT Subpart S and determined the rule to be protective. The most effective control technology for VOC and TRS from a digester is thermal oxidation, which is the current configuration of the controls already in place on the No. 2 M&D Digester. The proposed BACT and tBACT for the No. 2 M&D Digester is the utilization of the NESHAP Subpart S technology standard for collection and incineration of NCG with a limitation on venting to less than 1% of the operating time in a semi-annual reporting period."*

Health Impact Assessment Review

As described above, the applicant is responsible for preparing the HIA under WAC 173-460-090. Ecology's project team consisting of an engineer, a toxicologist, and a modeler review the HIA to determine if the methods and assumptions are appropriate for assessing and quantifying risks to the surrounding community from a new project.

For the proposed Boise No. 3 Paper Machine project, the HIA focused on health risks attributable to acrolein exposure because the modeled ambient air concentration exceeded an ASIL. Trinity Consultants briefly described emissions and exposure to other TAPs (tetrachloroethylene, trichloroethylene, and benzene) because these pollutants exceeded a small quantity emission rate (SQER), and Ecology requested that health hazards from exposure to these pollutants be considered.

Health effects summary

The HIA prepared by Trinity Consultants quantifies the non-cancer hazards attributable to Boise's TAP emissions. The HIA focused on potential exposure to acrolein as this was the only TAP with emissions causing an exceedance of an ASIL.

Acrolein health effects summary

Acrolein is an irritant to skin and mucous membranes. Effects of acrolein typically occur at the point of exposure (i.e., nasal passages, eyes) and upper respiratory tract. Short-term exposure to acrolein can cause eye and nasal irritation at relatively low concentrations (< 0.25 ppm [≤ 0.6 mg/m^3]) in air (CalEPA, 2008). Higher concentrations may also irritate the entire respiratory tract. Water-soluble fine particulates may potentiate the irritancy of acrolein. Accidental exposures to extremely high levels of acrolein result in high fever, dyspnea, coughing, foam expectoration, cyanosis, pulmonary edema, and death (ATSDR, 2007). Animals exposed to higher acrolein concentrations showed signs of lesions in the respiratory tract and respiratory distress. These effects became more severe with increasing concentrations. At higher levels, respiratory distress resulted in death.

There are no available studies of humans exposed to acrolein over long periods, however, an analysis of estimated environmental acrolein exposure in the range of 0.05 to 0.46 $\mu g/m^3$ among U.S. adults was associated with "marginally significant 8% increase in asthma attack prevalence-odds among adults" (de Castro 2014). The overall contribution of acrolein exposure to increased asthma was unclear, as the existence of other ambient pollutants was not addressed in this analysis. Longer-term studies in laboratory animals at higher concentrations have demonstrated severe nasal lesions as well as pronounced adverse effects on lung function leading to lethality. Studies indicated that rats were the most sensitive species. The potential carcinogenicity of acrolein cannot be determined because no information is available on its carcinogenic effects in humans, and the existing animal cancer data are considered inadequate (National Center for Biotechnology Information, 2018).

Acrolein toxicity values

Trinity identified toxicity values for acrolein from the California EPA's Office of Environmental Health Hazard Assessment (OEHHA) (CalEPA, 2008). These toxicity values, referred to as reference exposure levels (RELs), are derived from studies of animals and humans that were exposed to a known amount (concentration) of acrolein. Uncertainty factors are applied to the known exposure concentrations in relevant studies to derive RELs that are considered protective of human health including sensitive individuals. They are intended to represent a level at or below which adverse non-cancer health effects are not expected.

OEHHA's acute REL for acrolein, protective of brief (1-hr) exposures, is based on eye irritation experienced among human volunteers exposed for a short period of time (five minutes). OEHHA intended for acute RELs to be "for infrequent one hour exposures that occur no more than once every two weeks in a given year" (CalEPA, 2015).

For assessing chronic exposures, OEHHA developed a chronic REL based on a study of rats that developed respiratory lesions after repeated long-term exposure.

In addition to the acute and chronic RELs developed by OEHHA, Ecology also notes that EPA and ATSDR derived a reference concentration (RfC) and minimal risk level (MRL) respectively (Table 1).

Table 1: Toxicity Values Used to Assess and Quantify Non-cancer Hazard from Acrolein Exposure

Agency	Chronic	Organ System/ Endpoint	Acute	Organ System/ Endpoint
EPA	RfC = 0.02 µg/m^3	Resp.	N/A	N/A
OEHHA	REL = 0.35 µg/m^3	Resp.	Acute REL = 2.5 µg/m^3	Eyes, resp. (sensory irritation)
ATSDR	N/A	Resp.	Acute MRL = 7 µg/m3	Resp.
Toxicity value references: ATSDR, 2007; CalEPA, 2008; EPA, 2003 Note: Trinity Consultants also identified appropriate toxicity values for other TAPs (tetrachloroethylene, trichloroethylene, and benzene) for considering non-cancer hazards affecting the same organ system.				

Community/receptors

Boise is located near Wallula, WA, adjacent to the Columbia River and largely surrounded by agricultural land uses (Ecology, 2018). The nearest residences are approximately ¾ mile south-southeast of the mill boundary. For the purposes of assessing increased non-cancer hazards, Trinity consultants identified receptor locations where the highest exposure to project-related air pollutants could occur: at the project boundary, nearby residences, and nearby commercial locations (Figures 1 and 2). Trinity Consultants also identified sensitive receptor locations such as schools and healthcare facilities.

Ecology's review of the HIA found that Trinity Consultants identified appropriate receptors to capture the highest Boise-project attributable exposures for residential, commercial, and other potentially susceptible receptors.

Non-cancer hazard

Trinity Consultants assessed the acute and chronic non-cancer hazards from exposure to acrolein emissions from Boise and other local sources. Non-cancer hazard was characterized consistent with EPA guidance for inhalation risk assessment (EPA, 2009). Hazards were quantified using the following equations:

HQ = EC/Toxicity Value

Where: HQ (unitless) = hazard quotient;

EC ($\mu g/m^3$) = exposure concentration;

Toxicity Value ($\mu g/m^3$) = inhalation toxicity value (e.g., RfC, REL) that is appropriate for the exposure scenario (acute, subchronic, or chronic).

EC = CA

Where: EC ($\mu g/m^3$) = exposure concentration;

CA ($\mu g/m^3$) = contaminant concentration in air.

Trinity Consultants evaluated short-term (acute) exposures to acrolein and determined hazard quotients at most locations were below unity meaning short-term non-cancer hazards are not likely. Once exception is that the hazard quotient at maximally impacted boundary receptor slightly exceeds unity. This indicates that there is potential for short-term respiratory hazards from exposure to acrolein at that location. Given that the area in which the short-term hazard quotient exceeds unity is limited to a location directly on the west mill fence line bordering the Columbia River, exposure is unlikely to occur because public access is not expected.

Chronic exposures to Boise project-related acrolein emissions are unlikely to cause adverse respiratory health effects. Hazard quotients for all receptors' long-term exposure to acrolein are below unity.

Table 2: Estimated Short- and Long-Term Acrolein Related Non-cancer Hazards Attributable to Boise's Increased Emissions at Location near Wallula Mill

Receptors	Acute (Short-term)			Chronic (Long-term)		
	Max. 1-hr Acrolein Concentration ($\mu g/m^3$)	Acrolein Acute REL ($\mu g/m^3$)	HQ	Annual Avg. Acrolein Concentration ($\mu g/m^3$)	Acrolein Chronic REL ($\mu g/m^3$)	HQ
MIBR	2.7	2.5	1.1	0.14	0.35	0.4
MICR	0.11		0.04	0.0004		<0.01
MIRR	0.45		0.2	0.004		0.01

Receptors	Acute (Short-term)			Chronic (Long-term)		
	Max. 1-hr Acrolein Concentration ($\mu g/m^3$)	Acrolein Acute REL ($\mu g/m^3$)	HQ	Annual Avg. Acrolein Concentration ($\mu g/m^3$)	Acrolein Chronic REL ($\mu g/m^3$)	HQ
Sacajawea State Park	0.05		0.02	0.0002		<0.01
Lourdes Medical Center	<0.05		<0.02	<0.0002		<0.01
Finley Elementary School	0.07		0.03	0.0004		<0.01
Finley Middle School & River View High School	0.07		0.03	0.0003		<0.01

MIBR – Maximally impacted boundary receptor

MICR – Maximally impacted commercial receptor

MIRR – Maximally impacted residential receptor

Note: Trinity Consultants also evaluated acute and chronic hazards related to other TAPs with emission rates in excess of SQER. Generally, these pollutants contributed negligibly to potential acute and chronic hazards.

Other Considerations

Background exposure to acrolein

When reviewing increases in TAP emissions under second tier review, WAC 173-460-090 specifies that:

- Background concentrations of TAPs will be considered as part of a second tier review. Background concentrations can be estimated using:
    - The latest National Ambient Toxics Assessment data for the appropriate census tracts; or
    - Ambient monitoring data for the project's location; or
    - Modeling of emissions of the TAPs subject to second tier review from all stationary sources within 1.5 kilometers of the source location.

Trinity Consultants chose to evaluate background concentrations by identifying the acrolein concentration from the most recent publically available National Ambient Toxics Assessment (NATA) (EPA 2015). Table 3 shows the background average acrolein concentration and chronic hazard quotient relevant to the census tract for each key receptor. Generally, background exposure to acrolein is unlikely to result in long-term adverse health effects. Furthermore, the sum of corresponding HQs in Table 2 and Table 3 does not exceed unity for any of the receptors; therefore, long-term exposure to acrolein near the Wallula Mill is unlikely to result in long-term adverse respiratory health effects.

Table 3: Estimated Long-term Acrolein Related Non-cancer Hazards Attributable to Background at Locations near Wallula Mill

Receptor	NATA Census Tract ID	NATA 2011 Avg. Acrolein Concentration (µg/m^3)	Acrolein Chronic REL (µg/m^3)	Chronic HQ
MIBR	53071920000	0.007773	0.35	0.02
MICR	53005011501	0.016613		0.05
MIRR	53071920000	0.007773		0.02
Sacajawea State Park	53021020100	0.026306		0.08
Lourdes Medical Center	53021020200	0.052920		0.15
Finley Elementary School	53005011501	0.016613		0.05
Finley Middle School & River View High School	53005011501	0.016613		0.05
MIBR – Maximally impacted boundary receptor MICR – Maximally impacted commercial receptor MIRR – Maximally impacted residential receptor				

Uncertainty

Many factors of the HIA are prone to uncertainty. Uncertainty relates to the lack of exact knowledge regarding many of the assumptions used to estimate the human health impacts of Boise's emissions. The assumptions used in the face of uncertainty may tend to over- or underestimate the health risks estimated in the HIA. Key aspects of uncertainty in the Boise No. 3 paper machine project HIA are exposure assumptions, emissions estimates, air dispersion modeling, and toxicity of acrolein.

Exposure uncertainty

It is difficult to characterize the amount of time that people can be exposed to Boise's increased acrolein emissions. Trinity Consultants characterized increased chronic non-cancer hazards assuming all receptors were continuously exposed to average Boise project-related acrolein concentrations. Because most people will move in and out of the area of impact throughout the course of a day, week, or year, these assumptions tend to overestimate hazard.

Emissions uncertainty

Trinity Consultants estimated emissions based on emission factors developed by the National Council of Air and Stream Improvement, Inc. (NCASI). These emission factors are based on source tests conducted at different mills that produce similar products. While these emission factors represent a reasonable estimate of emissions increase, the exact amount of the increase in acrolein emitted from Boise's proposed project is unknown.

Air dispersion uncertainty

The transport of pollutants through the air is a complex process. Regulatory air dispersion models are developed to estimate the transport and dispersion of pollutants as they travel through the air. The models are frequently updated as techniques that are more accurate become known, but are written to avoid underestimating the modeled impacts. Even if all of the numerous input parameters to an air dispersion model are known, random effects found in the real atmosphere will introduce uncertainty. Typical of the class of modern steady-state Gaussian dispersion models, the AERMOD model used for the Boise project analysis may slightly overestimate the short-term (1-hour average) impacts and somewhat underestimate the annual concentrations.

Toxicity uncertainty

One of the largest sources of uncertainty in any risk evaluation is associated with the scientific community's limited understanding of the toxicity of most chemicals in humans following exposure to the low concentrations generally encountered in the environment. To account for uncertainty when developing toxicity values (e.g., RELs), OEHHA and other agencies apply "uncertainty" factors to doses or concentrations that were observed to cause adverse non-cancer effects in animals or humans. Agencies apply these uncertainty factors so that they derive a

toxicity value that is considered protective of humans including susceptible populations. In the case of acrolein exposure, the non-cancer reference values used in this assessment were generally derived from studies of humans and animals exposed to acrolein. These reference values are probably protective of the majority of the population including sensitive individuals.

Conclusions and Recommendation

The project review team has reviewed the HIA and determined that:

(a) The TAP emissions estimates presented by Trinity Consultants represent a reasonable estimate of the project's future emissions.

(b) Emission controls for the new and modified emission units meet the tBACT requirement.

(c) The ambient impact of the emissions increase of each TAP that exceeds ASILs has been quantified using appropriate refined air dispersion modeling techniques.

(d) The HIA submitted by Trinity Consultants on behalf of Boise adequately assesses project-related increased health risk attributable to TAP emissions.

Trinity Consultants assessed chronic and acute non-cancer hazards attributable to the project's emissions and those from other nearby sources and determined that short- and long-term adverse non-cancer health effects from exposure to acrolein near the Wallula Mill are not likely to occur.

The project review team concludes that the HIA represents an appropriate estimate of potential increased health hazards posed by Boise's project-related TAP emissions. The risk manager may recommend approval of the permit because:

- The cancer risk from Boise's project-related TAP emissions is less than the maximum risk (10 in one million) allowed by a second tier review.
- The non-cancer hazards are very low and therefore considered acceptable.

References

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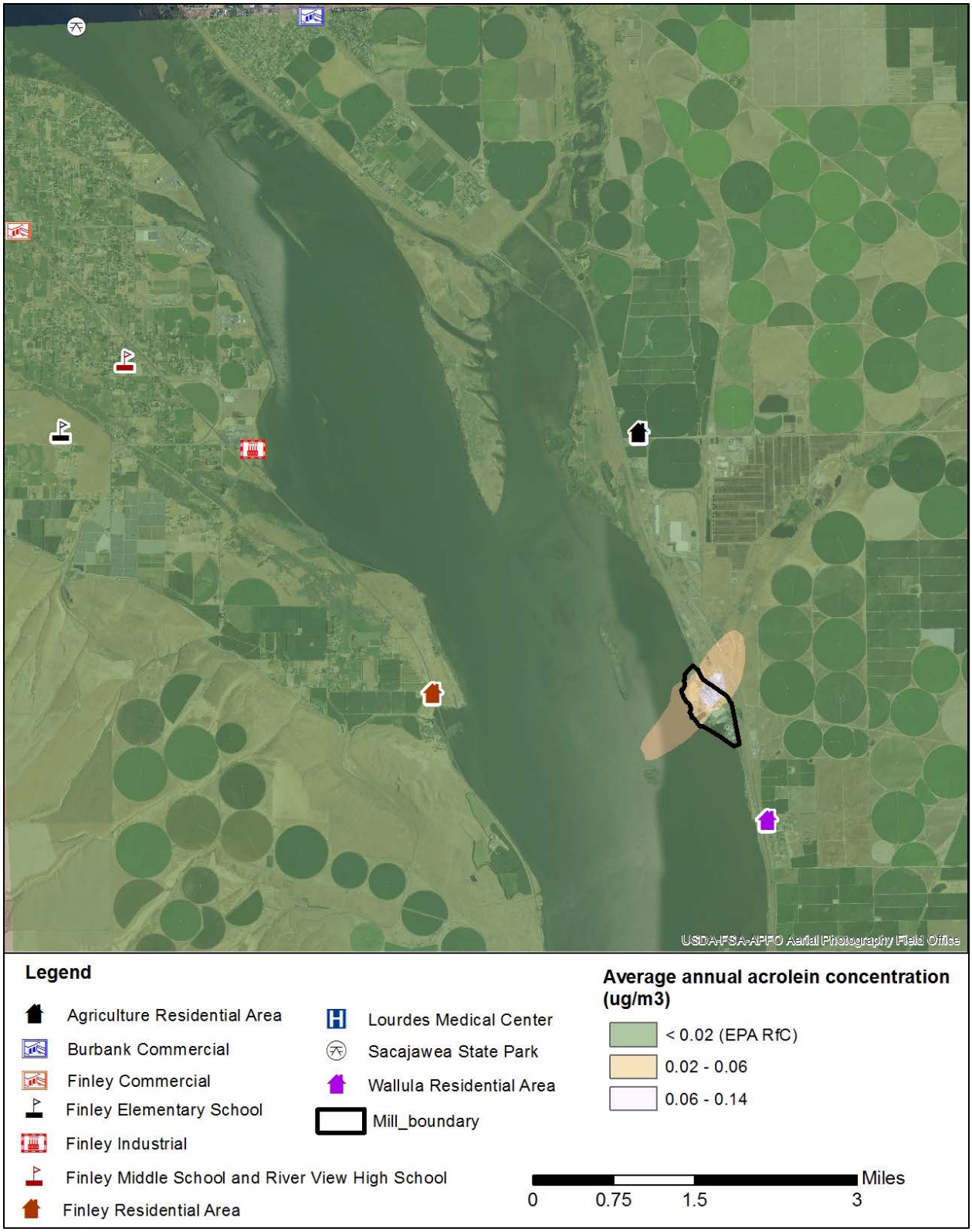

Figure 1: Boise project-related average acrolein concentrations and receptor locations

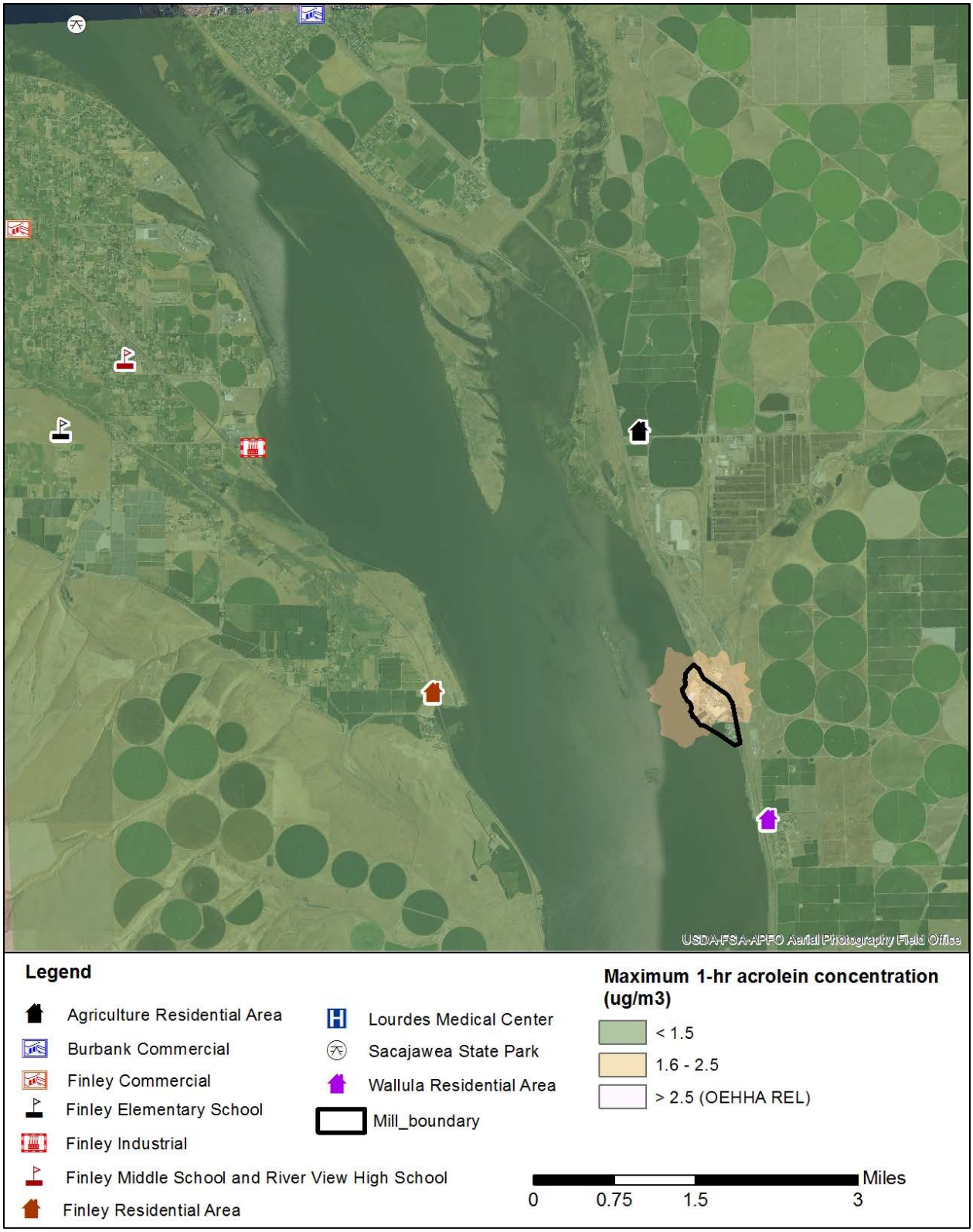

Figure 2: Boise project-related maximum 1-hr acrolein concentrations and receptor locations