

AGENDA

Planning Commission Regular Meeting

Wednesday, February 15, 2023 at 6:30 PM

City Hall Cowles Council Chambers In-Person & Via Zoom Webinar

	Hom	er City Hall	Zoom Webinar ID: 979 8816 0903 Password	: 976062
	491 E. Pioneer Avenue		https://cityofhomer.zoom.us	
	Homer, Alaska 99603		Dial: 346-248-7799 or 669-900-6833;	
	www.cityofhomer-ak.gov		(1oll Free) 888-788-0099 or 877-853-524	47
1.	CALL	ГО ORDER, 6:30 Р.М.		
2.	AGEN	DA APPROVAL		
3.	PUBL	C COMMENTS UPON MAT	ITERS ALREADY ON THE AGENDA	
4.	RECO	RECONSIDERATION		
	4.A.	4.A.Reconsideration Issued by Commissioner Venuti:Page 3 - 4Forest Trails Subdivision Preliminary PlatAgenda Item Report PC 23-012		
5.	CONSENT AGENDA (Items listed below will be enacted by one motion. If separate discussion is desired on an item, that item may be removed from the Consent Agenda and placed on the Regular Meeting Agenda at the request of a Commissioner)			
	5.A.	Unapproved Meeting Mir PC Unapproved Minutes	nutes <u>for February 1, 2023</u>	Page 5 - 15
6.	VISITORS			
7.	ANNO	ANNOUNCEMENTS/PRESENTATIONS/REPORTS (5 minutes each)		
	7.A.	City Planner's Report Agenda Item Report PC 2	23-010	Page 16 - 19
8.	PUBLIC HEARING(S)			
9.	PENDING BUSINESS			
	9.A.	If Reconsidered: Forest Trails Subdivision <u>Agenda Item Report - PC</u> <u>Supplemental Packet 02</u>	Preliminary Plat <u>23-007</u> <u>0123</u>	Page 20 - 94
10.	. NEW I	BUSINESS		
	10.A.	Ordinance 22-42(S-3) and Agenda Item Report PC 2	d Representative Development Agreement 23-011	Page 95 - 117

11. INFORMATIONAL MATERIALS

11.A.	Commission Calendar	Page 118 -
	2023 PC Calendar	119
11.B.	City Manager's Report	Page 120 -
	CM Report for February 13, 2023	136

12. COMMENTS OF THE AUDIENCE

13. COMMENTS OF THE STAFF

14. COMMENTS OF THE COMMISSION

15. ADJOURNMENT Next Regular Meeting is Wednesday, March 1, 2023 at 6:30 p.m., a worksession will be conducted at 5:30 p.m. All meetings scheduled to be held in the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska



AGENDA ITEM REPORT

Reconsideration Issued by Commissioner Venuti on Forest Trails Preliminary Plat

ltem Type:	Action Memorandum		
Prepared For:	Planning Commission		
Meeting Date:	15 Feb 2023		
Staff Contact:	Renee Krause		

Summary Statement:

At their regular meeting on February 1, 2023 the Commission approved the Forest Trails Subdivision Preliminary Plat. Commissioner Venuti issued a reconsideration. The reconsideration was timely filed with the Clerk's Office. The Clerk notified the City Planner and Chair as required.

The Commission must address a motion to reconsider the motion made by Commissioner Highland, seconded by Commissioner Conley. The motion has been included below.

If the Commission agrees to reconsider they will address the issue under Pending Business. This will bring the motion on the table for continued debate.

HIGHLAND/CONLEY MOVED TO ADOPT STAFF REPORT 23-007 AND RECOMMEND APPROVAL OF THE PRELIMINARY PLAT WITH THE FOLLOWING COMMENTS:

1. THE CITY OF HOMER DOES NOT OBJECT TO REQUESTS FOR EXCEPTION TO CODE LISTED IN THIS STAFF REPORT.

- 2. INCREASE DRAINAGE EASEMENT TO 40 FEET FROM CENTER OF DRAINAGE
- 3. PORTION OF SOUTH ROAD RIGHT OF WAY WILL INCLUDE PEDESTRIAN EASEMENT

Discussion ensued on the following:

- Use of Weed Free Gravel
- Getting Walkways in Developments
- Setbacks or provisions for the sustainability of the creek were accomplished
- City sets standards and the Developer must meet those standards before taking on the maintenance
- Council expressed frustration over the lack of enforcement of adopted policies
- City Code establishes requirements for non-motorized transportation
- Pedestrian Access is defined between Lot 3 & 4 on the plat
- Does a Pedestrian easement get defined in the utility easement or right of way

- Observation of heavy traffic on East End Road and school children walking along there versus having a pedestrian path
- Previous success by the City working with the School District regarding establishment of connecting trails to schools

VOTE: NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Staff Recommendation:

Move to reconsider/not reconsider the motion to adopt Staff Report 23-007 and recommend approval of the Forest Trails Subdivision Preliminary Plat.

1. CALL TO ORDER

Session 23-03, a Regular Meeting of the Planning Commission was called to order by Chair Scott Smith at 6:30 p.m. on February 1, 2023 at the Cowles Council Chambers in City Hall, located at 491 E. Pioneer Avenue, Homer, Alaska, and via Zoom Webinar. A worksession was called to order at 5:35 p.m. On the agenda was a continuation of a presentation by Jen Martin, US Army Corps of Engineers, regarding their role and permitting authority in Alaska.

PRESENT: COMMISSIONERS BARNWELL, VENUTI, SMITH, HIGHLAND, CONLEY, STARK

ABSENT: COMMISSIONER CHAIPPONE (EXCUSED)

STAFF: CITY PLANNER ABBOUD DEPUTY CITY CLERK KRAUSE ASSISTANT PLANNER DODGE

2. AGENDA APPROVAL

Chair Smith noted the items in the supplemental packet and requested a motion and second to adopt the agenda as amended.

HIGHLAND/CONLEY MOVED TO APPROVE THE AGENDA AS AMENDED.

There was no discussion.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

3. PUBLIC COMMENTS ON ITEMS ALREADY ON THE AGENDA

Scott Adams, city resident, spoke to Ordinance 23-02 regarding appropriations for the purchase of land in the Bridge Creek Watershed Protection District. He noted that the dates will need to be changed and council postponed the ordinance to bring back a new ordinance.

4. RECONSIDERATION

5. CONSENT AGENDA

5A. Unapproved Regular Meeting Minutes for January 18, 2023

Chair Smith read the consent agenda into the record and requested a motion and second.

HIGHLAND/CONLEY MOVED TO APPROVE THE CONSENT AGENDA AS PRESENTED.

VOTE: NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

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6. PRESENTATIONS/VISITORS

7. STAFF & COUNCIL REPORTS/COMMITTEE REPORTS

7A. City Planner's Report Agenda Item Report PC 23-006

Chair Smith introduced the topic and deferred to City Planner Abboud.

City Planner Abboud reviewed his staff report that was presented in the packet. He spoke to the following:

- Invasive Species
- Port Expansion
- funding for the purchase of land in the Bridge Creek Watershed
- Permitting software update
- Commission providing input on the transportation plan draft mid-March
- Selection of a firm to perform the Comprehensive Plan and Title 21 Update
- Clearing and Grading regulations
 - information provided tonight in the supplemental packet provides good information for consideration
 - Can be used for the Comprehensive Plan update
 - Previous recommendations of 50 & 100 feet did not pass with the public
- Participation by the City in a housing forum
 - Planning Directors of Alaska speaking on this topic
- Commission Calendar
- EDC actions over the past month

Commissioner Highland volunteered to provide the Commission report at the February 13th Council meeting.

Mayor Castner responded to the public comment made on Ordinance 23-02 and stated that it was postponed to the February 13th Council meeting. He provided a quick synopsis of the process regarding the ordinance, reporting that a new ordinance was not required.

City Planner Abboud stated that when a draft of the Transportation Plan was ready it will be submitted to the Commission for review and input. He explained that he was not involved in that project and would have to double check the staff assigned to it. City Planner Abboud reiterated the mid –March date as a first guess for Commission review in response to Commissioner's questions.

8. PUBLIC HEARING(S)

9. PLAT CONSIDERATION(S)

9.A. Forest Trails Subdivision Preliminary Plat Agenda Item Report - PC 23-007

Chair Smith introduced the item and deferred to City Planner Abboud.

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City Planner Abboud pointed out the aerial map and reviewed specifics included in the Action Item Report PC 23-007 commenting further on the following:

- Comprehensive Plan guidance
- Applicant working with Public Works and the Planning Department on road rights of way widths
- Pedestrian Easement and paths or connections
- Development Agreement is required
- Exceptions that the Applicant was requesting
- Staff recommends the Commission approve this preliminary plat
- Creek bed has been designate as wetlands from the Corps of Engineers
- Discussion can be held on the road width
- Easements required are being met
 - 2 Pedestrian Easements leading to the school
 - Review of the Borough Code Requirements
 - o If the project is phased streets must be dedicated in the first phase
- Not discussing the development of this property at this time and the city would need to amend city code to address those concerns.

Nick Botkin, applicant, reported that he was present for questions from the Commission.

Chair Smith opened the public comment period.

Jan Keiser, Public Works Director/City Engineer, referring to page 20 in the packet, reviewed her Memorandum dated January 12, 2023 on this project. Referring specifically to the recommendations in that memorandum stated the following:

- a 10 foot wide easement between Lot 3 & Lot 4 recommended adoption
 - provided an explanation for asking for the 40 foot drainage/pedestrian easement
 - o working out land management concerns with the Kachemak Heritage Land Trust
- working with DOT in the future for connecting sidewalk and Paul Banks along East End Road

Joel Cooper, Stewardship Director for Kachemak Heritage Land Trust (KHLT), noted the information that was provided in the Supplemental Packet covering 10 pages expounded on the following points:

- stream channel that runs through the area is a significant one
- KHLT manages almost 4000 acres 28 conservation easements, and 18 parks and preserves
- pro-land and pro-development
- protection of vital habitats
- Previously seen in these types of developments were immediate increase in unauthorized tree cutting, motorized vehicle use, discriminate trail development which opens areas up for the potential spread of invasive species and habitat degradation.
- Recommended reducing the right of way size which will lessen the impact, reduce impervious cover, which will lessen the impact to drainage that would affect the property that KHLT manages.
- Recommended and requested a 50 foot undisturbed, riparian buffer.
 - o information was submitted on the benefits of a natural buffer versus a planted buffer
- The Notice of Subdivision should have included a map that had more information since their opinion the map provided was not informative enough, it just showed lines and did not reflect the prominent natural and man-made features.
- The city should review the requirements of Chapter 20 and cross reference with the subdivision process.

- Having pedestrian access to their managed land creates additional costs for KHLT and they already have limited staffing and budget.
 - It is believed by KHLT that this will bring additional persons and impacts to the management of the property and existing trail system.

Scott Adams, city resident, expressed concerns on bringing a development of 13 homes next to a school with no safe pedestrian access for children, the bulldozing of trees on the property before anything has been approved, presenting plans with pedestrian connections that are never developed and if developed are not maintained. This subdivision will also compound the issue of traffic along East End Road to and from Paul Banks Elementary School and he hopes the Commission will take that into consideration.

Laura Karstens, city resident, explained that she started listening and attending Planning Commission meeting when she herself was recently sent a notice regarding activity near her home up Baycrest. She has her children take a bus to West Homer Elementary a mile to the school as she does not believe that there is a safe way for her children to walk that mile to the school. She noted that the maintenance of the sidewalk and location next to the highway provides questionable safety. She encouraged the Commission to implement a safe alternative for this subdivision to the school.

Chair Smith seeing no further members coming forward or indicating they wish to provide comment, closed the Public Comment period. He offered the City Planner and Applicant the opportunity for rebuttal.

City Planner Abboud reminded the Commission on some of the information before them regards cleaning some items up when they make motions. He stressed the Commission make a motion on what they felt was appropriate, Public Works is asking for a 40 foot easement and a neighboring property owner is requesting a 50 foot buffer. He noted that City Code does not contain a definition for buffer. If there is a drainage easement, you cannot construction anything within that easement or interfere with it. The Commission can amend the size to keep people out of the drainage easement. A buffer would have some qualities that in theory the city could put something in there. He recommended the Commission make a motion to address the size of the drainage easement. In that motion you may combine it with verbiage that addresses a pedestrian easement on the south of the right of way on the plat. Impervious coverage would be addressed in the development agreement. City Planner Abboud acknowledged that he would not mind seeing where the road would be placed and if there would be a consideration for a narrower developed road; that is a part of City Code that is enforced by Public Works, not the Planning Department.

In reference to the Public Notice, the Planning department could send out a more detailed vicinity map. The intent of the notice is to provide neighboring property owners of the proposed development, but the purpose is to give people an idea and the public can then ask for more information on the project. He noted the pedestrian sidewalk/easement was addressed and would be included in the subdivision agreement.

Mr. Botkin, applicant, offered rebuttal on the reason for the pedestrian easement were to provide that access. He was unsure whose responsibility the maintenance of such access would fall to once those lots were sold.

Chair Smith opened the floor to questions from the Commission.

City Planner Abboud facilitated discussion on the following:

- City Council approved regulations requiring all new subdivision roads to have sidewalks, this subdivision is not requiring sidewalks.

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- Pedestrian access would be created on the south side of the right of way
 - o Question is raised on how a sidewalk is constructed next to a gravel road
 - Very Wide gravel road which lends to speeding traffic
 - Separated path with additional maintenance issues
- this is rural residential district not central business district or urban residential where a paved road and sidewalk is required
 - they will have a space for pedestrians
 - o minimal traffic
 - o narrow road, residential traffic, limited
- Does the regulations permit that flexibility
 - Yes, it does outright sidewalk and paved road in urban residential, residential office and central business districts
 - as the transportation plan is developed refining requirements better

Mayor Castner countered that City Council was not interested in having unimproved rights of way that is not going to substitute for access. If you create an unimproved right of way, then that is all it probably will ever be. He further stated that the expectation the city will come in, construct the improvement then maintain it if there is an improved right of way, then the expectation may be met. He opined that this is not what Council had in mind on providing walkable areas.

Commissioner Highland requested clarification on the pedestrian access up to East End Road and between Lots 3 and 4 regarding size.

City Planner Abboud and the applicant, Mr. Botkin, facilitated discussion on the following from the Commissioners:

- Not providing a larger print out of the plat, while the one provided in the packet was clear the writing was so tiny it could not be easily read.
 - Technical issues in printing the document provided by the applicant prohibited an 11 x 17 copy to be provided to the Commission.
 - \circ ~ Staff offered to share screen so they could review a larger copy of the print
 - Concerns with the lack of a buffer along the creek as it was a substantial drainage
- Trees were already cut to edge of the creek
 - trees were cut down to perform a topographical survey as the road would be going in along the creek which is required for the engineering specifications
- No construction can be conducted within a drainage easement
- Public Works recommended a drainage easement of 40 foot, this is 20 feet on each side of center
 - o Commissioners can amend that recommendation
- Consideration of a 60 foot drainage easement
 - Question on how that would impact the building setback and the unknown effect on the development design
 - Development cannot interfere with the drainage so the building setback would be the drainage easement.
- Clarification that a pedestrian path, in the existing easement, would run along the south side of the proposed subdivision road, there is a proposed pedestrian easement between Lot 3 and Lot 4
- Steep slope regulations would not be applicable to this action, even though some of the topography in the pictures may make it appear to apply, but unless there was a 15 drop to the creek it would not apply.

- Appreciation was expressed for the memorandum from Public Works and the recommendation on extending the easement for the drainage.
- Concerns on how this creek was affected by a 100 year flood
 - There was no available data or studies on this creek.

Mr. Cooper requested an opportunity to speak to the Commission.

Chair Smith advised that the Commission would require a motion to suspend the rules to allow additional public comment period.

Chair Smith requested a motion.

HIGHLAND/CONLEY MOVED TO SUSPEND THE RULES TO ALLOW ADDITIONAL PUBLIC COMMENT PERIOD.

There was no discussion.

VOTE: NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Mr. Joel Cooper requested clarification of the definition of a 15 foot drainage easement in as far as landscape and vegetation.

City Planner Abboud stated that the drainage management is definition of the land in this case centered on the actual drainage, which is the stream itself. You would extend 15 feet from the center to the left and then to the right. No structures would be allowed as far as zoning and development, no filling, debris that would or could interfere with the drainage could be removed using heavy equipment if needed. The city has no regulations on the vegetation in that drainage at this time.

Mr. Cooper then posed a question regarding installation of oversized culverts in the creek crossings to accommodate the possibility of heavy rain events bringing lots of sediment downstream and onto KHLT property.

City Planner Abboud noted that the person within the city was present tonight and has heard Mr. Cooper's concerns. The Commission does not address those concerns during this action tonight. There is nothing in the plan that is before the Commission for them to reference.

Mayor Castner commented that he was familiar with state laws regarding riparian zones, and they are always marked from the edge of the creek, not center of the creek. So, if the city has an alluviated area that is 10 feet wide they would only have a couple of feet to work.

City Planner Abboud responded that they can only work with the current conditions. He could not forecast what would happen if the drainage changes in the area, it is not supposed to be disturbed now, mark it on the plat according to what the surveyors find is the center of the creek currently.

Mayor Castner questioned further, that if they were starting from center and the creek or stream was 3 to 4 feet wide then we have already eaten up a couple of feet on each side, so he tried to visualize other areas

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in the city where people have contacted him regarding flooding because they never got the drainage area delineated and then structures were constructed within the drainage and while these were legal, they really were detrimental to the flow and drainage of the storm water. He expressed surprise and consternation at the thought of having to deal with the center line of any water course, expressing that those courses can move back and forth and you could end up with a house sitting on the edge of a creek.

City Planner Abboud noted that there no riverine studies and that would be needed to do such regulations. The Commission can address the issue by recommending a larger easement.

Scott Adams commented reviewing the Kenai Peninsula Borough website and the changes that happen from preliminary plat to actual construction regarding pedestrian access easements and for the most part he stated they never were built; so questioned what assurance was provided that the pedestrian access routes would be constructed.

Public Works Director Keiser responded that Public Works has been researching and marking all pedestrian easement and actually over the past summer brushed out so that they can be used by the public. They will have gravel laid this upcoming summer. She provided further information on pedestrian easements in the new development next to Jack Gist Park. Ms. Keiser explained that the drainage easement is designed to cover the area where the stream or creek is predicted to go, however that is not always the way things happen, in Homer there is a tendency for the stream to get deeper, not wider. If we get the easement wider then it could follow the stream as it moves from side to side. We haven't seen big alluvial drifts being created. Asking for the 40 foot is a progressive move for the city. This will allow the water to move and we can keep structures out of the drainage.

Commissioner Barnwell noted that page 39 of the supplemental packet described the easement with pictures and could be very useful in discussion of drainage management and the different habitats involved.

Commissioner Conley supported increasing the drainage easement to 40 feet and that would address a lot of the Commissions concerns.

HIGHLAND/CONLEY MOVED TO ADOPT STAFF REPORT 23-007 AND RECOMMEND APPROVAL OF THE PRELIMINARY PLAT WITH THE FOLLOWING COMMENTS:

1. THE CITY OF HOMER DOES NOT OBJECT TO REQUESTS FOR EXCEPTION TO CODE LISTED IN THIS STAFF REPORT.

2. INCREASE DRAINAGE EASEMENT TO 40 FEET FROM CENTER OF DRAINAGE

3. PORTION OF SOUTH ROAD RIGHT OF WAY WILL INCLUDE PEDESTRIAN EASEMENT

Discussion ensued on the following:

- Use of Weed Free Gravel
- Getting Walkways in Developments
- Setbacks or provisions for the sustainability of the creek were accomplished
- City sets standards and the Developer must meet those standards before taking on the maintenance
- Council expressed frustration over the lack of enforcement of adopted policies
- City Code establishes requirements for non-motorized transportation
- Pedestrian Access is defined between Lot 3 & 4 on the plat

- Does a Pedestrian easement get defined in the utility easement or right of way
- Observation of heavy traffic on East End Road and school children walking along there versus having a pedestrian path
- Previous success by the City working with the School District regarding establishment of connecting trails to schools

VOTE: NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Chair Smith called for a recess at 8:08 p.m. The Meeting was called back to order at 8:16 p.m.

10. PENDING BUSINESS

11. NEW BUSINESS

11. A. US DOT RAISE Planning Grant Application and Recommendation of Support Agenda Item Report - PC 23-009

Chair Smith introduced the item by reading of the title and deferred to City Planner Abboud.

City Planner Abboud and Public Works Director Keiser jointly reported on the purpose and intent of the proposed grant application and how the opportunity for federal funding would be used by the City of Homer and for which projects. It was explained that the action was time sensitive so a motion in support is being requested.

Chair Smith requested a motion and second.

HIGHLAND/VENUTI MOVE TO ADOPT ACTION ITEM REPORT 23-009 AND RECOMMEND SUPPORT OF THE CITY OF HOMER REACH PROJECT, 2023 RAISE PLANNING APPLICATION AND FURTHER RECOMMEND CITY COUNCIL FAVORABLY CONSIDER ISSUING A RESOLUTION OF SUPPORT.

There was no discussion

VOTE: NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

11. B. Review of the Preliminary Plat Processes Agenda Item Report - PC 23-008

Chair Smith introduced the item and deferred to City Planner Abboud.

City Planner Abboud reviewed Action Item Report 23-008. He commented further on the following:

 Process and review of the preliminary plat by the Planning Department staff then present for public comment before submittal to the Kenai Peninsula Borough Planning Commission.

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- City Planning Commission is advisory to the Borough
- City Planning Commission can make recommendations such as larger drainage easements.
- Applicant will make the recommendations and plat notes on the preliminary plat prior to submittal to the Borough.
- Borough will perform a more detailed review of the plat and then present to the Borough Planning Commission for additional public comment and approval.
- Public Works Director will review and create/draft the subdivision/development agreements.
- Exceptions to requirements are reviewed by the Planning staff and presented to the Planning Commission with comment.
- Advisement of development concerns from the Planning Staff
 - o pre-meeting to discuss issues such as public safety concerns or access
 - road widths, drainage, driveways, etc.
 - o density
- Development requirements addressed when applicants come in for a permit
- Changes to regulations and the Comprehensive Plan update
- Time frame of 2 yrs to comply extension requests are listed in the consent agenda on the meeting agendas

City Planner Abboud and Public Works Director Keiser facilitated question and answers on the following:

- development versus platting
 - developments meeting existing regulations
 - o concerns in design of the development
- Public Works does not have a requirement to inform the Kenai Peninsula Borough(KPB)
- Process seems backwards in that the Commission sees a preliminary plat, then KPB, then it goes to Public Works
 - a surveyor is not an engineer but does his best to layout where on the plat roads and infrastructure may be placed
 - A developer will then have an engineer design the project and that is where they may run into problems
 - \circ $\;$ better regulations to address the land and neighboring property owners
- Appreciation for the comments provided by the neighboring property owners
 - process for the Commission to relay those concerns to Public Works for consideration in the development agreements
 - Comments are included in the record
 - Public Works is contacted by the property owners
- Opportunity to provide findings to the KPB concerning a plat
 - Legal representation for the plat considerations
 - City is not the final decider on the issue before the Commission

- Public comment period not a public hearing, so not quasi-judicial
 - CUPs are different in that the Commission has final decision making authority
- Clarification on what the term, "beneficial interest holder"
- Adequate noticing of property owners
- Public comments are important to the process

Chair Smith expressed his appreciation for the materials and discussion as it has provided clarification on the plat process and Commission duties.

12. INFORMATIONAL MATERIALS

- 12.A. **City Manager's Report** CM Report for January 23, 2023
- 12.B. 2023 PC Calendar

Chair Smith noted the informational items and opened the floor to comments or questions from the Commission. Hearing none, he offered comment on the increase in the number of calls answered by the Fire Department and inquired if the City Planner had any statistics as to the increase, such as the increase in population.

City Planner Abboud did not have any data on those numbers, he then commented on the items listed in the Commission Calendar were flexible and would be changed as needed. It was noted as a working document and there were only a few items that would always be addressed at specific times such as training and reappointments.

13. COMMENTS OF THE AUDIENCE

14. COMMENTS OF THE STAFF

City Planner Abboud did not have any comments.

Deputy City Clerk Krause commented it was along meeting but a very interesting meeting as well.

15. COMMENTS OF THE COMMISSION

Commissioner Barnwell expounded on the need for the city to have a wetlands management plan in place, expressed concerns over the amount of projects the city is taking on and commended the Public Works Department and Planning Department for all their hard work. He expressed that the plat tonight showed how the two departments can work with a developer to get things going in the right direction, it may not be perfect but it works.

Commissioner Stark expressed he was happy to be at the meeting and seeing everyone, that the agenda had some really encouraging stuff on it tonight, lot a good stuff was discussed. He noted that the Commission is charged with some difficult decisions that can be conflicting and frustrating. It was the one 020323 rk 10

thing he kept reminding himself with is that Homer is a town of 5800 people and it has done a pretty good job dealing with issues that bigger cities usually dealt with and it is one of the reason he asked at his very first meeting what each Commissioner's objective to being on this body because they each had to be fair and equitable to create the right environment for prosperity. He continued by stating it was encouraging that the Commission wants to understand the processes and the City planner explaining it and with the Public Works Director adding their part in the process explains how the collaboration works together and not against each other. Commissioner Stark stated it was a pleasure to be part of that process.

Commissioner Highland commented she was here to the last of the speakers.

Commissioner Conley expressed his appreciation for City Planner Abboud and Deputy City Clerk Krause keeping the Commission informed and in line following the rules. He echoed Commissioner Barnwell's comments regarding green infrastructure and that it would be worth a worksession or further discussion on ideas regarding development in Homer, especially seeing all those trees cut down, regarding putting in place guidelines.

Commissioner Venuti commented that it was a good meeting. He was hoping that the Mayor would have stuck around a little longer as he wanted some input on a concept that there is a causeway plan from Mud Bay out to the harbor. He inquired if the City Planner was aware of that proposal.

City Planner Abboud commented that everybody has a plan they could even be like Dubai and build islands that look like pine tree, but he thought it might of came out of the worksession that the Mayor was involved with the Port & Harbor Commission.

Chair Smith concurred and noted that it submitted to each of the Commissioners from the Clerk as it was forwarded to them by a member of the public that that was one proposal for the new port expansion project. It would be interesting to see how that is involved with everything. He expressed his appreciation towards the work that is done by the Staff and very grateful to have the Mayor participate. Chair Smith echoed each Commissioner sentiments on the items on the agenda tonight and more discussions on the Comp Plan for the near future.

ADJOURNMENT

There being no further business before the Commission, the meeting was adjourned at 9:30 p.m. The next Regular Meeting is Wednesday, February 15, 2023 at 6:30 p.m. A worksession is scheduled for 5:30 p.m. All meetings scheduled to be held in the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska and via Zoom webinar.

Renee Krause, MMC, Deputy City Clerk II

Approved: ______



AGENDA ITEM REPORT

City Planner's Report

ltem Type:	Informational Item		
Prepared For:	Planning Commission		
Meeting Date:	15 Feb 2023		
Staff Contact:	Rick Abboud		

Summary Statement:

2.13.23 Committee of the Whole

Comprehensive Plan and Code Update presentation – Ryan Foster Special Projects Coordinator

City Council Regular Meeting

Ordinance 23-02(A), An Ordinance of the City Council of Homer, Alaska Amending the FY23 Capital Budget by Appropriating an Amount not to Exceed \$70,000 Divided Equally Between the Homer Accelerated Roads and Trails (HART) Trails Fund and from the Land Reserves to Purchase a 4.53 Acre Parcel in the Bridge Creek Watershed Protection District. Aderhold. Introduction January 9, 2023, public hearing and second reading January 23, 2023.

Ordinance 23-xx, An Ordinance of the City Council of Homer, Alaska amending the FY23 Capital Budget by Appropriating an Amount not to Exceed \$650,000 from the General Fund Capital Asset Repair and Maintenance (CARMA) Fund for the purpose of Developing a new Comprehensive Plan and a Complete Update of the Title 21 Zoning and Planning Code for the City of Homer. City Manager. Introduction Feb 13 public hearing and second reading Feb 27.

Ordinance 23-xx, An Ordinance of the City Council of Homer, Alaska Amending Homer City Code Section 21.20, Town Center District to Correct Unintended Conflict of Uses. Planning Commission. Introduction Feb 13 public hearing and second reading Feb 27.

Resolution 23-0xx, A Resolution of the City Council of Homer, Alaska Expressing Support for the Realizing Equitable Accessible Connectivity in Homer (REACH) Project and Endorsing the City's Application to the FY23 Federal Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Planning and Design Grant of Homer's Non-Motorized Transportation Network. City Manager

Permitting Software

We have the system up with a training and live mode, getting ready for the first permits. We will likely spend a good part of the building season phasing into use of the system. We do have our client for initial submission lined up to use the system.

Transportation Plan

I plan to schedule a work session in early spring for the Commission to have a chance to provide input to the effort under way to update the Transportation Plan. A link to information and additional opportunity to give input may be found on the front page of the city website at the link below. <u>https://www.cityofhomer-ak.gov/publicworks/transportation-plan</u>

Comprehensive Plan Fast-forward and Title 21 Rewrite

We have selected a contractor to recommend to council. An ordinance to fund contract will be introduced at the City Council meeting of February 13 and a public hearing will be scheduled for February 27th, as will a resolution to approve the selection of the contractor.

Clearing and Grading

Special Projects Coordinator, Ryan Foster will be distributing a draft of regulation to be commented on by staff. This will be supplemental to a revision the design guidelines manual from Public Works which will address expanded drainage and storm water concerns that will likely add regulations to the development of private property, not just rights-of-way and easements. When this is in a more finalized form, the Planning Commission will be asked to review the documents and policies.

Housing Forum

The City of Homer is looking at participating in a housing forum. The agenda for the meeting is currently being formulated and we have a tentative date of March 25th. It will be the start of a conversation to identify issues and hopefully some follow up. More to come!

Safe Streets for All (SS4A)

We have been noticed that the United States Department of Transportation intends to award our joint grant application to pursue Safe Streets for All (SS4A) planning for the entire Kenai Peninsula Borough in the amount of \$960K.

Background: SS4A is a Federal IIJA grant program focused on roadway safety with the goal of zero deaths and serious injuries on our nation's roadways. Two types of SS4A grants are available: 1) Safety Action Plan Grants; and 2) Implementation Grants.

A Safety Action Plan identifies roadway safety issues and prioritizes strategies to improve roadway safety and eliminate fatalities and injuries for all users, including pedestrians, bicyclists and motorists. Eligible activities include conducting planning, design, and development activities in support of program goals.

SS4A Implementation grants are awarded for the purpose of developing projects and carrying out strategies identified in the Safety Action Plan. Implementation grants require that a community have a Safety Action Plan in place.

The grant is to be awarded to the Kenai Peninsula Borough and includes the cities of Kenai, Homer, Seldovia, Soldotna, and Seward as co-applicants. Upon adoption of an Action Plan, the cities and borough will be eligible to apply for SS4A implementation grants in future funding cycles. As scope of

Agenda Item Report Planning Commission February 15, 2023

the Master Transportation Plan does not include components of a safety action plan, SS4A activities will supplement the plan and provide additional opportunities to identify and fund projects to improve the safety of our local transportation infrastructure.

The program requires a 20% local match. The required match for the \$960k grant is based on a combination of the number of roadway miles and the total population in each area. Homer's match was estimated to be \$17,110 and may be met with cash and/or in-kind activities.

Old Town Road Improvements

Associate Planner, Bella Vaz assisted with a neighborhood meeting and provided the following recap.

City staff including Public Works Director Jan Keiser, Economic Development Manager Julie Engebretsen, and Associate Planner Bella Vaz, partnered with Bunnell Street Arts Center to host a neighborhood meeting to discuss road improvements in Old Town on Tuesday, February 7. In July 2022, City staff and their consultant, Nelson Engineering, asked the neighborhood's community members for ideas on what road improvements they would like to see in the Old Town area. At the February 7 meeting, Nelson Engineering presented design options that were drafted in response to that conversation. Design options included landscaping, parking, and sidewalks along Ohlson Lane and Bunnell Avenue. Residents and business owners had the opportunity to voice their concerns and provide feedback, and staff was able to gather valuable community input on the proposed project as a result of the meeting.

The meeting was attended by neighborhood residents and business owners who had suggestions on the proposed designs for the two streets. There was overall support of the construction of the sidewalk and parallel parking along Ohlson Lane from the group, so discussion was focused on the design of West Bunnell Avenue. Specifically, on how parking stalls could be aligned in the two blocks of West Bunnell Avenue and where crosswalks could be located. Representatives from Kinney Engineering, who are the City's consultants for the Transportation Plan, also attended the meeting. Kinney Engineering provided an overview and feedback on traffic calming and parking to meeting attendees. A component of this work in Old Town will be reflected in the Transportation Plan.

From some of the attendees, there was support for making the area more pedestrian-friendly and less vehicle-centric. Staff provided the opportunity of utilizing the upcoming comprehensive plan update and zoning code rewrite processes for community members to contribute walkability ideas to the overall vision of the community. More information from Public Works is to come on this project, as it is competing for resources with other needed infrastructure improvement projects in the city. Public Works Director Jan Keiser will be available to provide a presentation and answer questions in an upcoming work session to the Planning Commission.

EDC

Have not met again at the time of this staff report (meeting 2/14).

Agenda Item Report Planning Commission February 15, 2023

Commissioner Report to Council

2/27/23	
3/13/23	
3/27/23	

Attachments

Commission calendar



AGENDA ITEM REPORT

Forest Trails Subdivision Preliminary Plat

ltem Type:	Action Memorandum	
Prepared For:	Planning Commission	
Meeting Date:	01 Feb 2023	
Staff Contact:	Rick Abboud, City Planner	
Attachments:	Preliminary plat	
	Surveyor's Letter	
	Surveyor's Email Forest Trails Subd KPB - Exceptions	
	Public Works Memo	
	USACE JD Map	
	<u>Calvin & Coyle Trail Map</u>	
	Public Notice	
	<u>Aerial Map</u>	

Summary Statement:

Applicants:	Nick Botkin	Kenton Bloom, P.L.S.	
	Delta JL, LLC	Seabright Survey + Design	
	3397 Hollywood Oaks Dr.	1044 East End Road, Suite A	
	Fort Lauderdale, FL 33312	Homer, AK 99603	
Location:	1441 East End Road (East of Paul	Banks Elementary School)	
Parcel ID:	17903021		
Size of Existing Lot(s):	4.85 Acres		
Size of Proposed Lot(s):	13 Lots ranging from .231381 /	Acres	
Zoning Designation:	Rural residential District		
Existing Land Use:	Vacant		
Surrounding Land Use:	North: Commercial/residential/vacant		

Agenda Item Report Planning Commission February 1, 2023

	South: School lot
	East: School lot
	West: Conservation/residential
Comprehensive Plan:	Chapter 4, Goal 1, Objective A, Promote a pattern of growth
	characterized by a concentrated mixed-use center, and a
	surrounding ring of moderate-to-high density residential and
	mixed-use areas with lower densities in outlying areas.
Wetland Status:	There is a creek that has been determined to be a wetland.
Flood Plain Status:	Zone D, flood hazards undetermined.
BCWPD:	Not within the Bridge Creek Watershed Protection District.
Utilities:	City water and sewer are available.
Public Notice:	Notice was sent to 41 property owners of 35 parcels as shown on
	the KPB tax assessor rolls.

Analysis: This subdivision is within the Rural Residential District. This plat divides one lot into 13 lots and dedicates a right-of-way, drainage, and pedestrian easements.

Homer City Code 22.10.051 Easements and rights-of-way

A. The subdivider shall dedicate in each lot of a new subdivision a 15-foot-wide utility easement immediately adjacent to the entire length of the boundary between the lot and each existing or proposed street right-of-way.

Staff Response: The plat meets these requirements.

B. The subdivider shall dedicate in each lot of a new subdivision any water and/or sewer easements that are needed for future water and sewer mains shown on the official Water/Sewer Master Plan approved by the Council.

Staff Response: The plat meets these requirements.

C. The subdivider shall dedicate easements or rights-of-way for sidewalks, bicycle paths or other non-motorized transportation facilities required by HCC 11.04.120.

Staff Response: The plat meets these requirements. The recommendations in the Public Works Memo are being met. The applicant will be working with public works to provide a walkable area/path on the south side of the right-of-way, this will become part of the development agreement. Two pedestrian easements are dedicated to the school district property to the south.

D. The City Council may accept the dedication of easements or rights-of-way for nonmotorized transportation facilities that are not required by subsection (c) of this section, if the City Council determines that accepting the dedication would be Consistent with the adopted plans of the City.

Staff Response: The plat meets these requirements.

Preliminary Approval, per KPB code 20.25.070 Form and contents required. The commission will consider a plat for preliminary approval if it contains the following information at the time it is presented and is drawn to a scale of sufficient size to be clearly legible.

- A. Within the Title Block:
 - 1. Names of the subdivision which shall not be the same as an existing city, town, tract or subdivision of land in the borough, of which a plat has been previously recorded, or so nearly the same as to mislead the public or cause confusion;
 - 2. Legal description, location, date, and total area in acres of the proposed subdivision; and
 - 3. Name and address of owner(s), as shown on the KPB records and the certificate to plat, and registered land surveyor;

Staff Response: The plat meets these requirements.

B. North point;

Staff Response: The plat meets these requirements.

C. The location, width and name of existing or platted streets and public ways, railroad rights-of-way and other important features such as section lines or political subdivisions or municipal corporation boundaries abutting the subdivision;

Staff Response: The plat meets these requirements.

D. A vicinity map, drawn to scale showing location of proposed subdivision, north arrow if different from plat orientation, township and range, section lines, roads, political boundaries and prominent natural and manmade features, such as shorelines or streams;

Staff Response: The plat meets these requirements.

E. All parcels of land including those intended for private ownership and those to be dedicated for public use or reserved in the deeds for the use of all property owners in the proposed subdivision, together with the purposes, conditions or limitation of reservations that could affect the subdivision;

Staff Response: The plat meets these requirements.

F. The names and widths of public streets and alleys and easements, existing and proposed, within the subdivision; [Additional City of Homer HAPC policy: Drainage

easements are normally thirty feet in width centered on the drainage. Final width of the easement will depend on the ability to access the drainage with heavy equipment. An alphabetical list of street names is available from City Hall.]

Staff Response: The plat meets these requirements.

G. Status of adjacent lands, including names of subdivisions, lot lines, lock numbers, lot numbers, rights-of-way; or an indication that the adjacent land is not subdivided;

Staff Response: The plat meets these requirements.

H. Approximate location of areas subject to inundation, flooding or storm water overflow, the line of ordinary high water, wetlands when adjacent to lakes or non-tidal streams, and the appropriate study which identifies a floodplain, if applicable;

Staff Response: The plat meets these requirements.

I. Approximate locations of areas subject to tidal inundation and the mean high water line;

Staff Response: The plat meets these requirements.

J. Block and lot numbering per KPB 20.60.140, approximate dimensions and total numbers of proposed lots;

Staff Response: The plat meets these requirements.

K. Within the limits of incorporated cities, the approximate location of known existing municipal wastewater and water mains, and other utilities within the subdivision and immediately abutting thereto or a statement from the city indicating which services are currently in place and available to each lot in the subdivision;

Staff Response: The plat meets these requirements.

L. Contours at suitable intervals when any roads are to be dedicated unless the planning director or commission finds evidence that road grades will not exceed 6 percent on arterial streets, and 10 percent on other streets;

Staff Response: The plat meets these requirements.

M. Approximate locations of slopes over 20 percent in grade and if contours are shown, the areas of the contours that exceed 20 percent grade shall be clearly labeled as such;

Staff Response: The plat meets these requirements.

N. Apparent encroachments, with statement indicating how the encroachments will be resolved prior to final plat approval; and

Staff Response: The plat meets these requirements.

O. If the subdivision will be finalized in phases, all dedications for through streets as required by KPB 20.30.030 must be included in the first phase.

Agenda Item Report Planning Commission February 1, 2023

Staff Response: The plat meets these requirements. A cul-de-sac dedication was requested from the City of Homer, as the property to the east is owned by the Kachemak Heritage Land Trust and held for conservation and we would not expect to make a road connection through the property. The other properties to the east are developed on a cul-de-sac. The rest of the land is adjacent to a lot owned by the Kenai Peninsula School District in support of Paul Bank Elementary School. We do not find that any additional roadway connections are warranted.

Public Works Comments:

- 1. Existing code allows for a 50' radius for the cul-de-sac.
- 2. Request a 40' drainage easement based on the centerline of the drainage way.

A development agreement is required

Fire Department Comments: No comments

Exception Requests: The surveyor plans on requesting exception to borough code as described below.

20.30.130 A - We are requesting an exception for the minimum radius for Curve 1. The minimum radius per COH design standards is 150' and we are in conformance with that requirement. AK DOT wants to see the intersection of the proposed ROW and East End Road as far to the east as possible due to the proximity of Paul Banks Elementary School. This configuration allows the proposed ROW to meet East End Rd at a 90 degree angle while maximizing the distance from the Paul Banks entrance and minimizing the amount of acreage lost to the east.

We are also requesting an exception for the 90 degree angle in the proposed ROW centerline. The right angle turn will have a stop sign and will slow traffic into the subdivision, and allows for more standard rectangular lot configurations.

20.30.130 B – We are requesting an exception for the minimum 100-foot tangent required between Curve 5 & 6. The reverse curve is at the end of the road where there will be minimal traffic. This design brings the ROW closer to the midpoint of the east subdivision boundary line which splits the acreage more equally on either side of the ROW.

The City of Homer has no objections to the requests for exception described above.

Staff Recommendation:

Planning Commission recommend approval of the preliminary plat with the following comment.

1. The City of Homer does not object to requests for exception to code listed on this staff report.

Attachments:

Preliminary plat

Agenda Item Report Planning Commission February 1, 2023

Surveyor's Letter

Surveyor's Email Forest Trails Subd KPB - Exceptions

Public Works Memo

USACE JD Map

Calvin & Coyle Trail Map

Public Notice

Aerial Map

<u>NOTES</u>

<u>LEGEND</u>

🕕 FND 1" G.I.P.

● FND 5/8" REBAR

○ FND 1/2" REBAR

⊢ SET 2" AC 7968−S 2023 ◎ FND 3/4" IRON PIPE

⊕ FND 2" AC 7538−S 2018

.........

49 HK

Kenton T. Bloom

LS-7968

ALLER**

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ENGINEER

1. THE 15' FRONTING RIGHTS-OF-WAY AND THE 20' WITHIN 5' OF SIDE LOT LINES IS A UTILITY EASEMENT GRANTED THIS PLAT. NO PERMANENT STRUCTURES SHALL BE CONSTRUCTED OR PLACED WITHIN A UTILITY EASEMENT WHICH WOULD INTERFERE WITH THE ABILITY OF A UTILITY TO USE SAID EASEMENT.

2. ALL WASTEWATER DISPOSAL SYSTEMS SHALL COMPLY WITH EXISTING APPLICABLE LAWS AT THE TIME OF CONSTRUCTION.

3. NO ACCESS TO STATE MAINTAINED RIGHTS-OF-WAY PERMITTED UNLESS APPROVED BY THE STATE OF ALASKA DEPARTMENT OF TRANSPORTATION.

4. PROPERTY OWNER SHOULD CONTACT THE ARMY CORPS OF ENGINEERS PRIOR TO ANY ON-SITE DEVELOPMENT OR CONSTRUCTION ACTIVITY TO OBTAIN THE MOST CURRENT WETLAND DESIGNATION (IF ANY). PROPERTY OWNERS ARE RESPONSIBLE FOR OBTAINING ALL REQUIRED LOCAL, STATE, AND FEDERAL PERMITS.

5. THESE LOTS ARE SUBJECT TO CITY OF HOMER ZONING REGULATIONS. REFER TO HOMER CITY CODE FOR ALL CURRENT SETBACK AND SITE DEVELOPMENT RESTRICTIONS. OWNERS SHOULD CHECK WITH THE CITY OF HOMER PRIOR TO DEVELOPMENT ACTIVITIES.

DRAINAGE EASEMENT GRANTED THIS PLAT TO THE CITY OF HOMER. 7. NO STRUCTURES ARE PERMITTED WITHIN THE PANHANDLE PORTION OF THE FLAG LOT(S).

DEVELOPMENT TRENDS IN THE AREA, AND TOPOGRAPHY. 9. THERE IS A RIGHT OF WAY EASEMENT OF NO DEFINED LOCATION THAT AFFECTS THIS SUBDIVISION, GRANTED TO HOMER ELECTRIC ASSOCIATION, INC. RECORDED BK 29 PG 192 HRD.



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CH. BEARING	CH. LENGTH
C1	85.24'	150.00'	32°33'30"	N16°24'46"W	<i>84.10'</i>
C2	35.29'	20.00'	101°06'23"	S72°08'20"E	30.89'
С3	18.03'	120.00'	8°36'30"	S17°16'53"E	18.01'
C4	31.45'	20.00'	90°05'19"	S45°10'40"E	28.31'
С5	117.84'	200.00'	33°45'30"	S72°53'55"W	116.14'
С6	100.16'	170.00'	33°45'30"	N72°53'55"E	98.72'
C7	22.94'	50.00'	26°17'33"	N69°09'57"E	44.63'
C8	20.09'	50.00'	23°01'26"	S86°10'33"E	19.96'
С9	59.09'	50.00'	67°42'51"	N40°48'24"W	55.71'
C10	112.68'	50.00'	129°07'11"	N57°36`37"E	90.30'
C11	24.07'	25.00'	55°09'45"	S85°24'40"E	23.15'

SEABRIGHT SURVEY+DESIGN Kenton T. Bloom, P.L.S. 1044 East Road Suite A Homer, Alaska 99603 (907) 299-1091

seabrightz@yahoo.com

December 29, 2022

City of Homer 491 E Pioneer Ave Homer, AK 99603

RE: Preliminary Plat Submittal for "Forest Trails Subdivision"

Dear Planning Dept.,

We are pleased to submit the above reference preliminary plat for your review. Included in this submittal packet you will find:

- 2 full size plat copies
- 3 11x17 plat copies
- Signed (KPB) plat submittal form
- 1 11x17 asbuilt detail diagram
- \$1300 check for prelim review fee (1x \$1200 check + 1x \$100 check)

Please let us know if there are any concerns or clarifications we can address.

Cordially,

Kenton Bloom

Kenton Bloom, PLS Seabright Survey + Design

Kenton Bloom
Rick Abboud
Bella Vaz
Forest Trails Subd KPB Exceptions
Wednesday, January 11, 2023 1:51:00 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hi Rick,

Here are the exceptions that we plan to request upon our preliminary submittal of Forest Trails Subdivision to the Kenai Peninsula Borough. We have provided justification for these requests. Please feel free to provide any additional feedback. We look forward to further discussing the HCC design requirements for this subdivision next week.

20.30.130 A - We are requesting an exception for the minimum radius for Curve 1. The minimum radius per COH design standards is 150' and we are in conformance with that requirement. AK DOT wants to see the intersection of the proposed ROW and East End Road as far to the east as possible due to the proximity of Paul Banks Elementary School. This configuration allows the proposed ROW to meet East End Rd at a 90 degree angle while maximizing the distance from the Paul Banks entrance and minimizing the amount of acreage lost to the east.

We are also requesting an exception for the 90 degree angle in the proposed ROW centerline. The right angle turn will have a stop sign and will slow traffic into the subdivision, and allows for more standard rectangular lot configurations.

20.30.130 B – We are requesting an exception for the minimum 100-foot tangent required between Curve 5 & 6. The reverse curve is at the end of the road where there will be minimal traffic. This design brings the ROW closer to the midpoint of the east subdivision boundary line which splits the acreage more equally on either side of the ROW.

Cordially,

Katie Seabright Survey + Design 1-907-299-1580



<u>City of Homer</u>

www.cityofhomer-ak.gov

Public Works 3575 Heath Street Homer, AK 99603

publicworks@cityofhomer-ak.gov (p) 907- 235-3170 (f) 907-235-3145

Memorandum

TO:	Rick Abboud, City Planner
THROUGH:	Janette Keiser, PE, Public Works Director/City Engineer
FROM:	Aaron Yeaton, GIS Technician, Public Works Department
DATE:	January 12, 2023
SUBJECT:	Forest Trails Subdivision Pedestrian Amenities

- I. **Purpose.** The purpose of this memorandum is to make recommendations regarding non-motorized transportation amenities within the proposed Forest Trails Subdivision.
- II. **Overview.** The Forest Trails Subdivision is situated on the south side of East End Road between Paul Banks Elementary School and the Calvin and Coyle Trail. The East End Road sidewalk accesses the elementary school, but then transitions to the north side of East End Road via a crosswalk. The trail head for the Calvin and Coyle Trail is at the end of Mariner Drive, east of the subject development, but a portion of the Trail runs in property, owned by the Kachemak Heritage Land Trust immediately adjacent to the subject development.
- **III. Does this development trigger the need for non-motorized transportation?** The subdivision, as shown in the preliminary layout, is subject to HCC 11.04.120, which mandates that developers are required to provide amenities for non-motorized transportation in designated circumstances. In the case of the subject property, the triggering circumstances are:
 - (1) the property comes within 100 feet of an educational facility (Paul Banks Elementary School); and
 - (2) There is an existing non-motorized transportation facility on an adjacent property (the Calvin and Coyle Trails).

Requiring non-motorized transportation amenities satisfies the City's intent to improve connectivity and accessibility to schools, the greater community and local recreational opportunities as recommended in the Homer Non-Motorized Transportation Plan.

IV. What kinds of non-motorized transportation amenities should be provided?

- A. The preliminary plat shows a 10' wide pedestrian easement along the joint property line between Lots 6 and 7, connecting Cantrell Creek Road the south boundary of the subdivision, which is the northern boundary of the Land Trust property. A trail in this easement would connect the subdivision to the Calvin and Coyle Trail, via a short extension developed in the future by others. This would provide subdivision residents with easy access to this lovely trail system. (See Figures 1 and 2.)
- B. The preliminary plat shows a 10'wide pedestrian easement along the joint property line between Lots 3 and 4. A trail in this easement would connect the subdivision to Paul Banks Elementary, via a short extension developed in the future by others.
- C. Public Works does not believe a sidewalk on Cantrell Creek Road is warranted, but recommends that a widened shoulder be provided to accommodate pedestrians.
- D. While it would be beneficial to extend the existing sidewalk on the south side of East End Road to the intersection with Cantrell Creek, Public Works does not feel it is the developer's sole responsibility to provide this. The City work show the extension in the new Non-Motorized Transportation Plan as a preferred route and collaborate with the Developer and the AK Dept. of Transportation to realize it.

V. Recommendations.

- A. The 10' wide pedestrian easement between Lots 3 & 4 should be adopted.
- B. The 10' wide pedestrian easement contiguous with the proposed drainage easement that is shared between Lots 6 & 7 should be adopted.
- C. The developer should provide a widened shoulder along Cantrell Creek Road to accommodate pedestrian travel within the subdivision and to East End Road.
- D. The City and the Developer should work with the Kenai Peninsula Borough to provide pedestrian access through Parcel 17903018 to connect the western pedestrian easement with Paul Banks Elementary School.
- E. The City and the Developer should work with the Kenai Peninsula Borough and Kachemak Heritage Land Trust to provide pedestrian access through Parcels 17903018 and 17903056 to connect the western pedestrian easement with the Calvin and Coyle Trail.

Figure 1 Possible Sicewalk Extension Existing Crosswalk Possible Trail Cornection en Driv - Existing Scienalk Drainaço Podestrian Easements ApiTa Para B nive 111 1 768 787 よい - Carlo いたいであるという 퀿 事事 声に 1 į Rel 100 梁伯 U

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POA-2022-00431



= perennial stream (water of the U.S.; 625 linear foot)



Calvin and Coyle Nature Trail Map



ය 3925 Klondike Ave // Homer, Alaska 99603 // (907) 235-5263

Page 34 of

NOTICE OF SUBDIVISION

Public notice is hereby given that a preliminary plat has been received proposing to subdivide or replat property. You are being sent this notice because you are an affected property owner within 500 feet of a proposed subdivision and are invited to comment.

Proposed subdivision under consideration is described as follows:

Forest Trails Subdivision Preliminary Plat

The location of the proposed subdivision affecting you is provided on the attached map. A preliminary plat showing the proposed subdivision may be viewed at the City of Homer Planning and Zoning Office. Subdivision reviews are conducted in accordance with the City of Homer Subdivision Ordinance and the Kenai Peninsula Borough Subdivision Ordinance. A copy of the Ordinance is available from the Planning and Zoning Office. **Comments should be guided by the requirements of those Ordinances**.

A public meeting will be held by the Homer Planning Commission on Wednesday, February 1, 2023 at 6:30 p.m. In-person meeting participation is available in Cowles Council Chambers located downstairs at Homer City Hall, 491 E. Pioneer Ave., Homer, AK 99603. To attend the meeting virtually, visit zoom.us and enter the Meeting ID & Passcode listed below. To attend the meeting by phone, dial any one of the following phone numbers and enter the Webinar ID & Passcode below, when prompted: 1-253-215-8782, 1-669-900-6833, (toll free) 888-788-0099 or 877-853-5247.

Meeting ID: 979 8816 0903 Passcode: 976062

Additional information regarding this matter will be available by 5 p.m. on the Friday before the meeting. This information will be posted to the City of Homer online calendar page for February 1, 2023 at <u>https://www.cityofhomer-ak.gov/calendar</u>. It will also be available at the Planning and Zoning Office at Homer City Hall and at the Homer Public Library.

Written comments can be emailed to the Planning and Zoning Office at the address below, mailed to Homer City Hall at the address above, or placed in the Homer City Hall drop box at any time. Written comments must be received by 4 p.m. on the day of the meeting.

If you have questions or would like additional information, contact Rick Abboud at the Planning and Zoning Office. Phone: (907) 235-3106, email: <u>clerk@cityofhomer-ak.gov</u>, or in-person at Homer City Hall.

NOTICE TO BE SENT TO PROPERTY OWNERS WITHIN 500 FEET OF PROPERTY.

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VICINITY MAP ON REVERSE


<u>NOTES</u>

<u>LEGEND</u>

🕕 FND 1" G.I.P.

● FND 5/8" REBAR

○ FND 1/2" REBAR

⊢ SET 2" AC 7968−S 2023 ◎ FND 3/4" IRON PIPE

⊕ FND 2" AC 7538−S 2018

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49 HK

Kenton T. Bloom

LS-7968

ALLER**

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ENGINEER

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C10	112.68'	50.00'	129°07'11"	N57°36'37"E	90.30'
C11	24.07'	25.00'	55°09'45"	S85°24'40"E	23.15'
C12	91.41'	230.00'	22°46'12"	N78°23'34"E	90.80'







Planning 491 East Pioneer Avenue Homer, Alaska 99603

www.cityofhomer-ak.gov

Planning@ci.homer.ak.us (p) 907-235-3106 (f) 907-235-3118

Memorandum

Agenda Changes/Supplemental Packet

TO:PLANNING COMMISSIONFROM:RENEE KRAUSE, DEPUTY CITY CLERK IIDATE:FEBRUARY 1, 2023SUBJECT:SUPPLEMENTAL

9. PLAT CONSIDERATION(S)

9.A. Forest Trails Subdivision Preliminary Plat

Public Comment received

For the planning commission, I'll forward to Council.

Thanks!

From: Joel Cooper <joel@kachemaklandtrust.org>
Sent: Tuesday, January 31, 2023 5:54 PM
To: Melissa Jacobsen <MJacobsen@ci.homer.ak.us>
Cc: Marie McCarty <marie@kachemaklandtrust.org>; Dan Marsden <dan@kachemaklandtrust.org>
Subject: Public Comments for Forest Trails Subdivision Preliminary Plat

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Hi Melissa,

As per our phone conversation, I would like to submit the attached written comments for the Forest Trails Subdivision Preliminary Plat. Please distribute these comments to the City of Homer Planning Department, Planning Commission, Mayor and City Council. I will be attending the Planning Commission Worksession and Public Meeting accordingly.

Please let me know if you have any questions. Please acknowledge in this email that you have received these comments.

Many thanks!

Joel Cooper Stewardship Director/IT Specialist Kachemak Heritage Land Trust 315 Klondike Ave. Homer, AK 99603 (907) 235-5263 (Main Office) (907) 235-5331 (Direct Line) joel@kachemaklandtrust.org



Conserving the natural heritage of the Kenai Peninsula for future generations





January 31, 2023

Homer Planning Commission 491 East Pioneer Avenue Homer, AK 99603

Re: Kenai Peninsula Borough parcel # 179-030-21, a 4.85-acre parcel located at 1441 East End Road, Homer, Forest Trails Subdivision Preliminary Plat Review

Dear Planning Commission Members,

I am writing on behalf of Kachemak Heritage Land Trust (KHLT) as an adjacent landowner to the above-referenced parcel. KHLT is the owner of the Calvin & Coyle Woodland Park containing six parcels totaling 28.67 acres that is depicted in Figure 1 below. The northwestern boundary of parcel # 17903056 is adjacent to the proposed Forest Trails Subdivision.



Figure 1: Calvin & Coyle Woodland Park and Adjacent Parcels

Conserving the natural heritage of the Kenai Peninsula for future generations 315 Klondike Avenue • Homer, AK 99603 • ph: 907-235-5263 • fax: 907-235-1503 • www.kachemaklandtrust.org KHLT is not opposed to the development of private property but wishes to express its concern about the impact of the proposed development adjacent to one of its Ambassador Properties and hopes that there is an opportunity for mitigation of potential adverse impacts to the community-loved trail. Consensus of this region's ecological importance is best described in the Homer Soil and Water Conservation District's (HWSCD) 2013 City of Homer (COH) Beluga Planning Atlas, which labeled the Beluga watershed as the "*Wetland Heart of Homer*" (see Figure 2). KHLT submits its comments as part of its public comment for the KPB and COH mayors, councils, planning commissions and land developers to take into consideration when reviewing preliminary plats.



Figure 2: Bear Creek/Beluga Slough Watershed (*The Wetland Heart of Homer*). Source: HSWCD Beluga Planning Area Volume 1 (8/26/2014)

KHLT's primary goal for the Calvin & Coyle Woodland Park is to manage the land to benefit wildlife habitat and for public benefit. This includes preserving the surface resources, vegetative cover, wetland, hydrologic and other water quality values of the property in its natural condition. The KHLT property is primarily a wetland discharge slope with a small area identified as wetland kettle (Source: KPB). KHLT protects the natural resource values of the property in perpetuity by prohibiting any use of the property, including over-use, that conflicts with these inherent conservation values.

KHLT manages the 1.5 mile out and back trail with a lollipop loop on the southern part of the property (see Figure 3). KHLT works with the Kenai Peninsula School District to manage the trail (see Figure 2) on their parcel and the Alaska Department of Fish and Game (ADF&G) who manages the adjacent Homer Airport Critical Habitat Area (HACHA).

In addition, KHLT is bound to a North American Wetlands Conservation Act ("NAWCA") Grant Agreement which includes ensuring the long-term conservation of the property in accordance with the

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Grant Agreement and obtaining the consent of the U.S. Fish and Wildlife Service (USFWS) prior to the conveyance of any property interests.



Figure 3: Calvin & Coyle Woodland Park Trail System and Adjacent Paul Banks Elementary Trail System

KHLT manages 28 conservation easements totaling 2,496.59 acres and 18 fee-owned parks and preserves totaling 1,335.44 acres across the Kenai Peninsula. When managing these lands KHLT finds adjacent developments like these can impact the conservation values of these properties through unauthorized motor vehicle use, trail development, and tree cutting. An increase in littering also occurs. These developments also increase the potential for the spread of invasive species.

KHLT has the following concerns with the proposed plat:

- Increased impervious coverage upgradient to the Calvin & Coyle Woodland Park will affect the hydrology of the wetlands ecosystem of the park. The proposed development is very condensed with 13 lots ranging from 0.231 acres (10,051 ft²) to 0.381 acres (16,596 ft²) in a 4.85 acre parcel. A 60-foot-wide ROW totaling 1.087 acres (47,347 ft²) bisects the property ending with a cul-de-sac and 44.84 feet of land separating the cul-de-sac from the western boundary of KHLT parcel # 17903056.
- Inadequate riparian buffer and culverting of the 625 linear feet of stream channel running through the site that was documented by the U.S. Army Corps of Engineers in their October 28,

Page 3 of 10

2022 jurisdictional determination. This channel makes its way through Calvin & Coyle Woodland Park and terminates in the HACHA.

- Unauthorized trail development, motorized vehicle use, and tree cutting in the Calvin & Coyle Woodland Park.
- Increased potential for the spread of invasive species.
- Increased public use of Calvin & Coyle Woodland Park. This development will have a direct economic impact on KHLT's management of this park due to an increased potential for unauthorized motor vehicle use, trail development, tree cutting, and littering.

According to the COH Planning Department, the Forest Trails Subdivision Preliminary Plat parcel is zoned Rural Residential and would need to follow level one site development standards 21.50.020 Site development standards – Level one. These standards are found on the Homer City Code website: <u>https://www.codepublishing.com/AK/Homer/#!/Homer21/Homer2150.html#21.50</u>.

Based on the information and concerns described above, KHLT proposes the following recommendations as they pertain to the Forest Trails Subdivision Preliminary Plat.

- Reduce the size of the ROW to minimize the amount of impervious coverage.
- Require a minimum 50 feet of undisturbed natural forest riparian buffer of existing native vegetation on each side of the 625 linear feet of stream channel. Buildings and other features that require grading or construction must be set back at least 10 additional feet from the edge of the buffer. The Bridge Creek Watershed Protection District requires a 50 foot buffer. This stream channel drains into one of Homer's most important wetlands, "*The Wetland Heart of Homer*", and should require similar standards.
- Use level two site development standards to help mitigate the impacts to the down gradient wetlands. These standards are found on the Homer City Code website: https://www.codepublishing.com/AK/Homer/#!/Homer21/Homer2150.html#21.50.
- Require the use of weed free gravel and soil to reduce the chance of introducing invasive species.

Subdivision Process

KHLT was first contacted about the Forest Trails Subdivision Preliminary Plat on 1/9/2023 when staff from the City's Planning Department, contacted KHLT's Executive Director (ED) via email requesting a copy of the conservation easement for the property east of Paul Banks Elementary (Parcel # 17903056). The Executive Director asked that I follow up on this request.

I spoke with the City's Associate Planner on 1/9/2023 and explained to her that there was not a conservation easement held on parcel #17903056 and that this was one of six parcels that makes up the Calvin & Coyle Woodland Park. I also advised her that KHLT is required to draft a management plan as a nationally accredited land trust. KHLT completed a revision of this management plan and it was Board approved in August 2022.

We discussed the Forest Trails Subdivision Plat dated 12/2022 depicting the 60 foot ROW dead ending up against KHLT parcel #17903056. The Associate City Planner provided this plat via email during our discussion. The Forest Trials parcel is adjacent to the northwest corner of Calvin & Coyle Woodland Park. During this discussion the Associate City Planner mentioned that the Army Corps did a wetlands determination on the Forest Trails subdivision and provided me a copy of this determination via email on

1/10/2023. This determination identifies 625 linear feet of stream channel running through the Forest Trails Subdivision parcel. This steam runs year-round and after it exits the 4.85 acre Forest Trails Subdivision parcel, it makes its way through the Kenai Peninsula Borough (KPB) Paul Banks Elementary School parcel, to KHLT's Calvin and Coyle Woodland Park, and then terminates in the Homer Airport Critical Habitat Area (see Figure 7 flow paths map from the Kachemak Bay National Estuarine Research Reserve (KBNERR)). I told the Associate City Planner that KHLT would submit comments as it pertained to the Forest Trail Preliminary Plat and the potential impacts to the Calvin & Coyle Woodland Park and that I may have more questions.

KHLT's Executive Director informed me on 1/20/2023 that tree cutting had begun on Forest Trail Preliminary Plat parcel. I viewed the property on 1/24/2023 from East End Road and confirmed that tree cutting had begun and several trees in the center of the property had been felled.

KHLT staff drafted comments to be reviewed by its Land and Easement Committee at its meeting on 1/24/2023 to solicit additional input as to how this subdivision development might impact the hydrology and management of the Calvin & Coyle Woodland Park. KHLT received a Public Notice of Subdivision in the mail on 1/24/2023 and this notice included a Forest Trails Subdivision Preliminary Plat dated 1/2023 depicting the 60 foot ROW ending with a cul-de-sac and 44.84 feet of land separating the cul-de-sac from the western boundary of KHLT parcel # 17903056 and this was provided to the Committee prior to the meeting. The Vicinity Map included with this Public Notice depicts Calvin & Coyle Woodland Park and Paul Banks Elementary School on a map adjacent to the subdivision parcel. The Committee recommended that stewardship staff do on the ground documentation of the northwestern boundary of KHLT parcel # 17903056 and the stream corridor on 1/25/2023



Figure 4: Tree cutting activity along the western border of KHLT parcel # 17903056 and the Forest Trails parcel. Arrows point to surveyed boundary stake and flag. KHLT's parcel lies to the left of this line and the Forest Trails parcel to the right. (Source: KHLT, Photo taken 1/25/2023)

On 1/25/2023 KHLT's Stewardship Director and Coordinator made a site visit to KHLT parcel # 17903056 to document activity along its northwestern border and trace, viewed from KHLT's property, the steam channel described in the 10/28/2022 Army Corp Wetlands Determination (POA-2022-00431) from the Calvin & Coyle Woodland Park to the southern boundary of the Forest Trails Subdivision parcel. Figure 4 documents activity along the western border of KHLT parcel # 17903056. It appears that all trees in this area on the Forest Trails Subdivision parcel were cut up to the border of KHLT parcel # 17903056 and some of the felled material fell onto KHLT's parcel # 17903056. KHLT is reviewing this activity as it pertains to third-party violations.

Figure 5 below looks north into the Forest Trails Subdivision Preliminary Plat parcel from the KHLT parcel at the Army Corps determined 625 linear feet of stream channel and the vegetation removal that had already taken place in the buffer zone of the stream channel.



Figure 5: Looking north from the Paul Banks Elementary School parcel at the 625 feet of stream channel running through the Forest Trails Preliminary Plat parcel. (Source: KHLT, photo taken on 1/26/2023)

During KHLT's site visits on 1/25 and 1/26/2023, on KHLT's land, its stewardship staff attempted to walk from the second bridge shown in Figure 3 to the southern boundary of the Forest Trails Preliminary Plat parcel to spatially map the stream channel. KHLT staff could see the channel corridor connecting from Calvin & Coyle Woodland Park Nature Trail Bridge #2 to the southern end of the 625 linear feet of stream channel documented in the Army Corps wetlands determination. However, staff could not walk the channel because 5 moose were browsing and bedded down in the stream corridor. KHLT staff again attempted to walk the channel on 1/26/203 and encountered the same 5 moose defending this stream channel that feeds into the HACHA (Figure 6). Figure 7 shows the estimated flow paths of stream channels within Calvin & Coyle Woodland Park and adjacent parcels.



Figure 6: Arrow points to moose bedded down on stream corridor bank.

After reviewing the Public Notice of Subdivision provided by the City of Homer, speaking to the KPB Department and the City of Homer Planning Department, KHLT reviewed the regulatory process in both KPB and COH code for creating a subdivision. The site development activity took place prior to the Public Hearing and due date of the Forest Trails Subdivision Preliminary Plat Public Comments. KHLT is concerned that the order of sections of HCC are being implemented in an order that allows significant and potentially impactful development before the public comment period and the public hearing, rendering some of the public input essentially moot.

KHLT requests that 21.50.030 Site development standards – Level two be applied to this parcel to further protect the 625' jurisdictional stream and the down gradient properties. Most of the property's trees were cut down prior to the public hearing with an excavator with a tree cutting implement that has disturbed the topsoil. It is of concern to KHLT that 21.50.020 Site development standards – Level one, which are required for a zoned Rural Residential parcel¹, were not followed by the Homer Planning Department. The activity I observed has had an impact on the recommended buffer zone and compromised KHLT's public comments.

¹ <u>https://www.codepublishing.com/AK/Homer/#!/Homer21/Homer2112.html#21.12</u> Web accessed on 1/31/2023.

KPB code 20.25.050 D requires that "A vicinity map, drawn to scale showing location of proposed subdivision, north arrow if different from plat orientation, township and range, section lines, roads, political boundaries, and prominent natural and manmade features, such as shorelines or streams; "² be provided. The Vicinity Map² that KHLT received in the Public Notice of Subdivision did not depict the stream channel and the prominent natural (Figure 7) and manmade features (Figure 3). This stream runs year-round and after it exits the 4.85 acre Forest Trails Preliminary Plat parcel, it makes its way through the Paul Banks Elementary School parcel, to KHLT's Calvin & Coyle Woodland Park, and then terminates in the HACHA (Figure 7). These parcels will be impacted based on how this plat is approved. In addition, the Vicinity Map does not show the Homer Airport Critical Habitat Area, a critical parcel of this drainage. Although this is not adjacent to the Forest Trails Subdivision parcel, this is an important natural feature that could be impacted by development activities around the 625 feet of stream channel as it is down gradient. Without the required information on the Vicinity Map, those receiving notice have not been advised of the prominent natural features and may not consider commenting.



Figure 7: Estimated flow paths of stream channels within Calvin & Coyle Woodland Park and adjacent parcels (Source: Kachemak Bay National Estuarine Research Reserve 1/27/2023)

KHLT suggests that once the landowner submits a subdivision plat for COH Planning Department review and subsequent public hearing and comments that it was up to the City Planner to administer and enforce the Zoning Code³. It appears that HCC is silent as to when to administer and enforce 21.50.020 Site development standards – Level one during the plating process, which can make public comment occur too late in the process. Discretion could have been used to recognize that 21.50.020 Site development standards – Level one should be considered during the plating phase of the process as this was no longer a situation where a landowner can cut their trees on their private parcel of land but that a subdivision is being developed that can impact the adjacent landowners and the *prominent natural and manmade features* associated with adjacent parcels. KHLT requests that COH Planning Department work with the Homer City Council to draft HCC to make it explicitly clear as to when and what code to administer and

² The Vicinity Map is not the same as the Forest Trails Subdivision Preliminary Plat Map as per KPB code 20.25.050 D.

³ https://www.codepublishing.com/AK/Homer/#!/Homer21/Homer2190.html#21.90 Web accessed on 1/31/2023

enforce during the plating phase of subdivision development so that both the developer and the public are clear about when and how the process will be administered when requesting preliminary plat approval.

Buffers

Within the City Code there is no clear definition of a "*Buffer*". However, the concept of riparian buffers is not new. KHLT considers the riparian buffer of stream corridors a primary conservation value in the lands we protect and a main criteria considered in our due diligence process in stewarding land. Below is a cited definition of a "*Buffer*".

"Buffers are, by definition, natural vegetation left along the banks of a water body in the course of conducting a land-disturbing activity. This definition implies that the buffer has a finite width, starting at the water body, and ending at some point where the activity occurs. The alteration of the vegetation beyond the edge of the buffer means that the buffer boundary is exposed to conditions different from those in the natural forest. The edge of the buffer receives more sunlight, and is exposed to prevailing winds. From a design standpoint, then, in addition to the buffer width that is appropriate for the site conditions, buffer stability is an issue."

The key here in this definition is to maintain the natural vegetation in the buffer zone. KHLT recognizes that it is possible to clear all natural vegetation up to a stream edge and then replant it with native species but working with and leaving the natural vegetation in place provides a true natural buffer and stability for the given water body. KHLT is concerned that the ACOE jurisdictional stream channel of 625 feet has now been rendered meaningless because the landowner cleared most of the trees in this zone (see Figure 5).

Forest Trails Subdivision Pedestrian Amenities

According to the Memorandum from the COH Public Works Department to the City Planner included in this meeting packet, the Department considered HCC 11.04.120 Sidewalks and non-motorized transportation corridors. The memorandum provided maps depicting connector trails to KHLT's Calvin & Coyle Woodland Park Nature Trail and the Paul Banks Elementary School Trail System which KHLT helps to maintain.

KHLT maintains the trailhead and kiosk at the end of Mariner Drive. In June 2002, KHLT granted the City of Homer a permanent sanitary sewer easement along the northern boundary of parcel # 17903056. In exchange for granting the easement, the city pledged to construct a small parking pad in the Mariner Drive right-of-way for use by visitors of Calvin & Coyle Woodland Park. The trailhead and kiosk are on KHLT property.

KHLT is pro trail and pro private property rights. KHLT wants to work with the landowner of the Forest Trails subdivision, Paul Banks Elementary School and the KPB School District, and the COH to improve trail connectivity and accessibility to schools, the greater community and continue to provide local recreational opportunities as recommended in the Homer Non-Motorized Transportation Plan. As mentioned above, KHLT is concerned about the impact this subdivision development will have on the management of the Calvin & Coyle Woodland Park and know that this development will have a direct impact on the amount of stewardship staff time and money required to meet our management obligations.

⁴ <u>https://forestry.alaska.gov/Assets/pdfs/forestpractices/1LitBufferDesign8-7-00.pdf</u> Web accessed on 1/31/2023.

KHLT takes great pride in our stewardship program and is careful to take into consideration all expenses related to perpetual ownership of land used and loved by the public. If future conversations propose trail connections to the KHLT property, as a nonprofit organization, KHLT will need to have the funds available to manage the increased property use.

KHLT appreciates the opportunity to comment and would be happy to answer any questions.

Sincerely,

after

Joel Cooper, Stewardship Director

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From:	Devony Lehner
To:	Renee Krause
Cc:	Janette Keiser
Subject:	wetlands related to proposed Forest Hills Subdivision
Date:	Wednesday, February 1, 2023 3:23:09 PM
Attachments:	image.png
	image.png
	homer wetland complexes strategies poster reduced.pdf
	kenaiwatershed.org-Discharge Slope Wetlands.pdf

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Greetings, Renee,

I'd appreciate it greatly if a printout of this email could be a laydown at tonight's Planning Commission meeting and the email itself could be forwarded to all the Planning Commissioners. Thank you so much! I sincerely apologize that I just saw this topic on tonight's agenda.

I notice on the Planning Commission agenda for tonight (Item 9.A) that the Forest Hills Subdivision east of Paul Banks Elementary School will be discussed. I've worked on wetlands assessments and planning efforts in the Homer area for many years, and I wondered if the commissioners are familiar with the wetland planning map developed by the city when it retained wetland permitting functions. Local resident Mike Gracz, Ph.D. could inform commissioners of how this map was developed, but I thought I could at least share a copy of it for those who would be interested. The attached pdf can be enlarged as much as needed to be quite readable, and I've included a couple of screenshots from the enlarged map.

As the screenshots show, the proposed subdivision is within what is called the "West Beluga Slope" wetland area (an area of discharge slope wetlands--see attached pdf about Discharge Slope wetlands). The management recommendation for this area (as included on the wetland planning map) is shown below the aerial image.



West Beluga Slope

Public lands: Publicly owned lands should be preserved as undisturbed wetlands. Private lands: These should be prioritized and purchased over time for inclusion in a mitigation bank whose purpose is to preserve moose habitat. Development should be discouraged. A master plan should be developed for this area as it is a very important wetland complex, and it is probably the most threatened in the City of Homer.

I can provide more information about local wetlands assessments and management, but here I'll just refer the commissioners to a couple of publications that can be downloaded from the <u>Homer Soil and Water Conservation District publications page</u>, these are

- Managing Kenai Peninsula Wetlands: <u>https://www.homerswcd.org/user-files/pdfs/ManagingKPWetlands2014.pdf</u>
- and the two volumes for the Beluga Planning Area, an area that encompasses the proposed subdivision:
 - https://www.homerswcd.org/user-files/pdfs/Beluga-Planning-Area-Homer-Vol1.pdf
 https://www.homerswcd.org/user-files/pdfs/Beluga-Planning-Area-Homer-Vol2.pdf

I might also mention that the community "Drawdown" group during its first year focused on the value and importance of local wetlands, particularly peatlands.

Again, thank you so much, Renee!!

Devony Lehner

HOMER WETLAND COMPLEXES AND MANAGEMENT STRATEGIES

Moose Population and Movements Around Homer Moose have been abundant on the Kenai Peninsula for over 100 years (Lutz 1960). Moose are an important resource for hunters and are a desired spectacle for local wildlife viewers and tourists

Densities around the state vary according to the quality of the habitat, predation levels, and other factors. The moose population around the greater Homer area (south of the Anchor River to Kachemak Bay) is currently over 500 animals and is considered a high-density population (Schwartz and Franzman 1989) with about 3 moose per square mile. This Homer moose population is currently the most abundant and productive population on the Kenai Peninsula. Moose from this population likely act as a "source" population in providing dispersing individuals to areas of lower moose densities around the lower Kenai Peninsula (Labonte et al. 1998).

Moose have evolved and adapted to habitat changes influenced by fire (Spencer and Hakala 1964, Loranger et al. 1990) and other natural disturbances. While disturbances such as fire increase the quality and quantity of browse for moose over time with the regeneration of new plant growth, the habitat changes caused by human development can remove important moose forage, eliminate access to existing forage, and/or fragment available browse into small and disconnected areas.

Moose and humans have shared the landscape in various Alaskan communities for many years. Moose inhabit areas within Anchorage because there still is available habitat. However, human-moose difficult for moose, especially calves. The deep snow winters of 1991/92, 1994/95, 1997/98, conflicts continue to increase as the human population grows and the amount of moose habitat decreases. Moose have been radiocollared in Anchorage using GPS technology that records locations multiple times each day. The data have not been analyzed; however, moose in urban areas appear to spend most of their time in natural areas including parks, greenbelts, and undeveloped properties near developments (R. Sinnott, Anchorage-ADF&G biologist, pers. comm.). These "green areas" provide moose browse, cover to escape from human disturbance and to stay cool, bedding areas for rest and food processing, and undisturbed areas for calving.

Moose around Homer eat a wide variety of vegetation based on the nutritional quality and availability of the plant species. In the summer when vegetation is plentiful, moose eat leaves from birch and willow along with forbs, grasses, sedges, and aquatic plants (LeResche and Davis 1973). During the winter, food is often limiting and moose focus on twigs of limited nutritional quality such as birch, willow, and ornamentals planted around human residences. Willows are an integral part of the diet for moose especially in the winter. During the winter, when moose browse greater than 30% of the previous summers growth of willow stems, there can be an increase in the production of new stems the following year (Collins 2002). However, browsing over 80% of the previous years growth will increase the production of secondary plant compounds, which limits the amount of nutrition the moose receives from the plant (Collins 2002). Continued browsing of the new annual growth of a plant, such as paper birch, year after year can eventually kill the plant (Oldemeyer 1983). Every winter in Homer, most preferred willow species suffer nearly 100% browsing of the previous summers plant growth.

Moose spend much of their time along forest edges because of the availability of good browse and for avoiding human disturbance (Bangs et al. 1985). Utilization of moose browse species will increase with the severity of the winter snowfall (Collins 2002). Winter snow conditions are often severe in Homer. Deep snow conditions cover food sources and make traveling more energetically and 1998/99 resulted in severe over-browsing of the available moose habitat and caused the death of over 200 moose in and around the city of Homer due to malnutrition. Even in relatively mild winters such as 2005-06, over 10 moose died in residential areas in Homer during late winter due to malnutrition. a wise first step. These mortality totals do not include many moose that die due to malnutrition and are unreported or undetected.

residences.

Thomas McDonough Wildlife Biologist



Synopsis

In 2005-2006 representatives of the City of Homer, US Army Corps of Engineers, Environmental Protection Agency, US Fish & Wildlife Service, Kachemak Bay Research Reserve, Cook Inletkeeper, Kenai Watershed Forum, Natural Resources Conservation Service, and Alaska Department of Fish & Game met to assess Homer wetlands. After a thorough review of methods, a scoring protocol was developed and all wetlands were scored.

These strategies arose from that effort and are currently being used by some agency personnel to comment on Clean Water Act Section 404 wetland permits.

Beluga Lake

Prohibit fill in Beluga Lake or the two associated wetland polygons (docks are permitted).

Beluga Slough

Development in tidally influenced wetlands should be prohibited.

Beluga Slough Discharge Slope

Development should be encouraged in this core area of Homer. Mitigate for the loss of moose habitat. Further development north of Bunnel Avenue and east of Main Street should be discouraged. A goal of this plan is to bring private parcels in this area into conservation status. Development in tidally influenced wetlands should be prohibited

Bridge Creek Wetlands The wetland management strategy for this watershed is the same as the Bridge Creek Watershed Protection ordinance, which includes a prohibition on filling wetlands.

Diamond Creek Wetlands

Maintain large lot sizes. Maintain a 100 ft setback of natural vegetation along either side of Diamond Creek and its tributaries. Crossings should be perpendicular to the channel, via bridge or oversized culvert and involve the minimum amount of fill necessary for safety. Where uplands exist on a lot they must be used prior to filling wetlands. If more than 3% of wetlands on any lot are converted to hardened surface they must be compensated for with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Downtown wetlands

On City-owned parcels, maintain greenbelts incorporating storm water retention designs. Where uplands exist on a lot they must be used prior to filling wetlands. If more than 3% of wetlands on any lot are converted to hardened surface they must be compensated for with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

East Homer Drainageway This area should be targeted for preservation and restoration. Encourage purchasing of private lots by Kachemak Heritage Land Trust, Moose Habitat Incorporated and others. If possible, restore hydrology and repair or implement suitable storm water management measures along Kachemak Drive. Some fill may be allowed along Kachemak Drive.

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It is likely that a low-density moose population could survive within expansive human development with or without mitigating development and proactive planning for protecting moose habitat. However, mitigation measures to protect certain critical moose habitat patches in Homer will improve the long-term sustainability of our local moose population. The Homer moose population is currently a high-density population and the growth in the local moose population during the past 5-10 years has bolstered moose numbers in areas surrounding Homer. Moreover, failing to protect important habitats for moose in Homer will ensure a large proportion of the population will die due to malnutrition every winter. Negative moose-human interactions will also rise as moose increase their movements between available food patches and act defensively while feeding on small browse patches around human

The purpose of identifying important areas of moose habitat and mitigating development of these habitats is not to improve or enhance the moose habitat that currently exists. The purpose is to lessen the impact of habitat loss that is inevitable with development. The assumption is that the public wants the local moose population to be healthy and negative encounters between humans and moose to be low. A desired decrease in the moose population to reduce potential human-moose conflicts should warrant a detailed plan of moose reductions via hunting rather than a slow removal of their prime habitat in the city and subsequent mortality due to malnutrition when winter snow conditions are severe. If the direction of wildlife management is to maintain a healthy moose population, then an active habitat management program is required. Providing mitigation measures for the human development of high-quality moose habitat within the City of Homer is

Alaska Department of Fish & Game

3 Miles

East Beluga Discharge Accelerated runoff from hardened surfaces will be offset with swales and/or runoff

retention ponds. Site design should include hydrologic connectivity to upstream and downstream parcels. Moose habitat values are high throughout. Moose habitat should be preserved or mitigated. Development along the border with the East Homer Drainageway Complex should maintain an 85 ft buffer of natural vegetation.

Kachemak Kettle

Maintain a 100 ft buffer along the East Homer Drainageway. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Lampert Peatland

Maintain a 100 ft buffer around Lampert Lake. Mitigate for lost hydrologic, general habitat, and moose habitat functions in wetlands west of Lampert Lake. Discourage further development of wetlands east of Lampert Lake. Prohibit wetland filling more than 400 ft from Kachemak Drive.

Landfill Kettle

Loop Kettle

functions and moose habitat.

NE Slough

Restrict development to the south side of the wetlands and along the highway. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated. The peatlands should be preserved and buffered with a 50 ft setback of undisturbed natural vegetation as they are highly functional for water retention and filtering.

Loss of moose habitat should be mitigated.

Retain natural vegetation as is practicable.

Preserve existing wetlands for water quality

N. Paul Banks Discharge Overlook Park Encourage development here. Retain

natural vegetation as is practicable. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Ocean Kettle

Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Ocean Drive Kettle Retain natural vegetation as is practicable. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Outer Loop Kettle Retain natural vegetation as is practicable. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Public lands: Maintain in conservation status and manage according to site management plan. Private Lands: Maintain moose habitat by limiting fill to the minimum necessary for a residence and minimum driveway and parking. No ditching or changes to drainageways should be allowed. Locate roads out of wetlands and out of drainageways to the extent possible. Maintain a 100 ft setback of natural vegetation on either side of Overlook Creek.

Palmer Drainageway and Fan

Maintain a 100 ft setback of natural vegetation on either side of Palmer Creek. Crossings should be perpendicular to the channel via bridge or oversized culvert and involve the minimum amount of fill necessary for safety. All of these wetlands should be preserved. A wetlands bank with Moose Habitat Incorporated will target private parcels in this area, along with the East Homer Drainageway, for purchase and preservation. Wetlands within the City of Homer that have been targeted for moose mitigation are eligible to receive credits from this bank.



Raven Kettle &

Roger's Loop Depression Avoid wetland fill. Maintain the hydrologic integrity of drainageways and water retention and filtration capacity of the complex. Where uplands exist on a lot they must be used prior to filling wetlands. If more than 3% of wetlands on any lot are converted to hardened surface they must be compensated for with swales and/ or runoff retention ponds. Loss of moose habitat should be mitigated.

Runway Discharge

Within the airport boundary wetland hydrology should be maintained. Public lands: Those tracts outside the airport boundary should be maintained and managed for the values of the Homer Airport Critical Habitat Area. Private lands: Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Upper Woodard

On City-owned parcels, maintain greenbelts incorporating storm water retention designs. Retain as much natural vegetation on individual lots as is practicable. Where uplands exist on a lot they must be used prior to filling wetlands. If more than 3% of wetlands on any lot are converted to hardened surface they must be compensated for with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

West Beluga Slope

Public lands: Publicly owned lands should be preserved as undisturbed wetlands. Private lands: These should be prioritized and purchased over time for inclusion in a mitigation bank whose purpose is to preserve moose habitat. Development should be discouraged. A master plan should be developed for this area as it is a very important wetland complex, and it is probably the most threatened in the City of Homer.

West Homer Discharge Retain natural vegetation as is practicable. Accelerated runoff from hardened surfaces will be offset with swales and/or runoff retention ponds. Loss of moose habitat should be mitigated.

Discharge Slope Wetlands

kenaiwatershed.org/science-in-action/cook-inlet-wetlands/wetland-types/discharge-slope-wetlands



DISCHARGE SLOPE VEGETATION COMPONENTS

Artwork by Conrad Field

Mapping components of and common plants in Discharge Slope wetlands



Occurrence of Discharge Slope wetlands in the Cook Inlet Lowlands Mapping Area

Discharge Slope wetlands occur over hydric mineral soils where shallow groundwater discharges at or near the surface. Discharge Slopes typically occur at the transition between wetland and upland where the boundary can be indistinct. These wetlands often support high water tables only seasonally, and therefore can be difficult to identify. Shallow groundwater wells in the Mat-Su Valley indicate that sites with late-season water tables deeper than 150 cm can support hydric conditions sufficient to meet wetland criteria (Clark, 1995). Discharge Slopes are the most extensive geomorphic type on the Kenai Peninsula, and a Discharge Slope dominated by Lutz spruce (Picea X Lutzii) is the most common mapping component there. Especially on the southern Kenai Peninsula, extensive deposits of glacial till, which is saturated, but slowly permeable, support Discharge Slopes (see map figure, above). The unsorted till is most prevalent as terraces along the western front of the Caribou Hills physiographic subdivision of Karlstrom (1964). In other areas of the Basin these till deposits are not so extensive, and can be more permeable.





Lutz spruce with Barclay's willow and field horsetail at the margin of a small fen in the Caribou Hills.

A spruce and birch stand with a bluejoint – field horsetail understory on a kame toe slope in the Soldotna Creek watershed.





A thinleaf alder stand on a toe slope near the mouth of the Kenai River.

Lutz spruce with a rusty menziesia / field horsetail understory on a terrace riser foot slope above the large fen east of Anchor Point.

Discharge Slope components are named after dominant plant species. Broad areas at the toe-slope position of the western margin of the Caribou Hills on the Kenai Peninsula are dominated by Lutz spruce and alder and support near-surface groundwater discharge. In the area between Palmer and Houston, Discharge Slopes are frequently forested with Alaska paper birch (Betula neoalaskana) and/or white spruce (Picea glauca) with an understory of field horsetail (Equisetum arvense). Although the indicator status of paper birch (B. papyrifera) has been changed to facultative in the Cook Inlet Lowlands, it likely does not occur there. However, Alaska paper birch (B. neoalaskana), which is probably the most common species in the region, is listed as facultative upland on the 2013 list of plant indicator status, along with white spruce and Lutz spruce **(P. X lutzii)**, complicating wetland determinations on forested Discharge Slopes in the region. Further complications result because recent taxonomic changes suggest that much of the birch on the southern Kenai Peninsula is B. kenaica which has no status on the wetland plant indicator list (and therefore may be considered an upland plant). Good local knowledge, consideration of the position of the site in the surrounding landscape and augering to depth is sometimes required to accurately delineate these wetlands.



NWI and HGM

Discharge Slope wetlands are primarily classified in the US Fish and Wildlife Service National Wetlands Inventory (NWI) as forested palustrine wetlands (PFO). Forested wetlands were frequently overlooked on the NWI, which was mapped at 1:63,360. Shrub- and herbaceous-dominated Discharge Slopes are classified as PSS and PEM respectively.

The LLWW Hydogeomorphic classification of Tiner (2003) would classify most Discharge Slope wetlands as Terrene Slope groundwater-dominated Throughflow wetlands. If there is no wetland connected up slope, such as along upper terraces or stream valley walls, then they are Terrene Slope Outflow wetlands. A few have Paludified Slope wetland components, although paludification is uncommon, if present at all on the lowlands.



Plant Prevalence Index in Common Wetland Mapping Components

Box plots of Plant Prevalence Index (PI) in common wetland mapping components. Discharge Slope wetlands (highlighted in gray) exhibit uniformly high values for PI. Prevalence Index is calculated from the percent cover and the wetland indicator status of each plant found in a wetland plot. Lower values indicate a higher prevalence of plants assigned a wetland indicator status of obligate or facultative. Indicator status is assigned nationally, by state, and by regions within states. Prevalence

Index may be a better descriptor of the variability of the water table than one-time measurements of the actual position of the water table. Measurements are often made before the water table has had time to fully equilibrate, and are dependent on antecedent conditions. However, if Indicator Status is accurately assigned the plants present will integrate long-term average conditions.

Although Prevalence Index is a good proxy for water table position and variability in many settings, PI may be a less reliable indicator on Discharge Slopes. Lower values of PI should indicate a water table closer to the surface for a longer portion of the growing season. For example, an Index value equal to one indicates that the plot supported only wetland obligate plants (occur in wetlands greater than 99% of the time under natural conditions) and a Prevalence Index value greater than 3 suggests that the plot may not be a wetland for jurisdictional purposes. Prevalence Index may not be as reliable an indicator of water table depth and variation in Discharge Slope wetlands because the bimodal ecological distribution of many plants can complicate assignment of indicator status. For example, bluejoint reed grass and birch may grow over well-drained soils on south-facing slopes as well as on saturated toe-slopes at the margins of peatlands.. A single value for Prevalence Index is therefore impossible to assign for some plant species. The taxonomic changes discussed above further complicate accurate assignment of indicator status within regions.

However, box plots of water level measurements made during visits to Discharge Slope wetlands generally corroborate the PI values, showing that these wetlands most often occur at the transition between wetland and upland. Median water levels in Discharge Slope mapping components are often near 30 cm below the surface, the wetland cut-off.





A= alder (n=10), B= birch (n=18), C= bluejoint reed grass (Calamagrostis canadensis) (n=5), G= White spruce (Picea glauca) (n=5), L= Lutz spruce (Picea x lutzii) (n=108), M= black spruce (Picea mariana) (n=26), S = willow (Salix spp.) (n=15), Z = a single high elevation meadow on the upper slopes of Baldy Ridge, above Wasilla in the Matanuska Valley.

Note however, that some deviations are apparent. Compare the PI values to depth at black spruce Discharge Slopes (SM), for example. PI is low, but water level measurements are relatively deep. Alder Discharge Slopes (SA) have a shallow median water level, yet median PI is near 3.

Because of these problems with water level variation at the wetland/upland transition, other factors such as slope, aspect, and elevation are more important in driving differences among Discharge Slope wetlands. By contrast, water level variability is very important in peatlands (highlighted in blue in the first graph). Because water level variation is less important in Discharge Slope wetlands, plant species dominance was chosen in place of a hydrologic component to distinguish mapping components. Within the hydrogeomorphic setting of discharge slopes, plant species probably best reflect unique combinations of environmental conditions in different wetlands.

In the box plots, yellow boxes enclose the first through third quartile (where 50% of the data values lie); the gray bar is the median, and the whiskers extend to the last value within 1.5 times the inner quartile range. Values lying beyond 1.5 times the inner quartile range are plotted as hollow circles. The number of samples for each map component is given across the top.

Box plots of specific conductance (SC- blue) and pH (brown) in the common geomorphic types. A few values for specific conductance greater than 300 micro-Siemens/cm are not shown. Discharge Slope wetlands (highlighted in gray) have the highest median values for both pH and specific conductance when compared to wetlands in other common geomorphic settings in Cook Inlet Basin. The high values indicate that that groundwater connections to the surface are relatively strong.



Specific Conductance and pH of Common Geomorphic Types

In box plots, the boxes enclose the first through third quartile (where 50% of the data values lie); the horizontal bar in the box is the median value, and the whiskers extend to the last value within 1.5 times the inner quartile range. Values lying beyond 1.5 times the inner quartile range are plotted as hollow circles.

Wetland Indicators

Table 1. Wetland Indicators in Discharge Slope map components throughout the Cook Inlet Lowlands.								
Map Component	Peat Depth (cm)	Water Table (cm)	Redox features (cm)	Saturation (cm)	рН	Alkalinity mg/l as CaCO3	Specific Conductance µS/cm	Plant Prevalence Index
SA	90 (16)	26 (15)	23 (6)	3 (7)	6.2 (8)	39.0 (3)	177 (5)	2.92 (16)

SB	82 (19)	54 (19)	29 (15)	42 (18)	6.5 (10)	61.6 (2)	182 (9)	2.99 (23)
SC	57 (7)	71 (5)	24 (6)		7.0 (1)			2.93 (7)
SG	20 (5)	52 (5)	14 (4)	47 (4)	5.7 (4)	3.0 (1)	75 (4)	3.16 (5)
SL	31 (128)	38 (108)	26 (82)		5.4 (9)	4.8 (4)	49 (2)	3.05 (132)
SM	46 (40)	37 (32)	34 (15)	28 (24)	5.4 (12)	0.0 (4)	62 (10)	2.49 (40)
SS	43 (22)	27 (18)	28 (9)	9 (3)	6.7 (5)	84.3 (4)	259 (5)	2.72 (25)
SZ	23 (1)	1 (1)		1 (1)	6.0 (1)		18.4 (1)	2.35 (1)

Explanation:

- Numbers in parentheses indicate number of samples.
- Peat depth is a minimum, because some sites had thicker peat deposits than the length of the auger used (between 160 493 cm).
- Water table depth is a one time measurement. At sites with seasonally variable water tables this measurement reflects both the conditions that year, and the time of year.
- Redox features with deep depths typically indicate deeper peat deposits, which mask redox indicators so the depth corresponds to the peat thickness.
- pH and specific conductance measured in surface water or a shallow pit with a YSI 63 meter calibrated each sample.
- Plant Prevalence Index calculated based on Alaska indicator status downloaded from the USDA PLANTS database, which may use different values than the 1988 list.

Soils and Plant Communities

Table 2. Common soils and plant communities found in Discharge Slope wetlands.					
Map Component	COMMON <u>SOILS</u>	COMMON PLANT <u>COMMUNITIES</u>			
SA	Typic Cryorthents <u>BELUGA</u>	Alnus viridis ssp. sinuata / Equisetum arvense Alnus viridis ssp. sinuata / Equisetum palustre Alnus incana ssp. tenuifolia / Calamagrostis Paper birch – White spruce / Thinleaf alder			

SB	TYPIC CRYAQUENTS ESTELLE KICHATNA	Paper birch – White spruce / Thinleaf alder Paper birch – Black spruce / Thinleaf alder			
SC	BELUGA Typic Cryorthents	<u>Calamagrostis canadensis – Equisetum arvense</u>			
SG	STARICHKOF HISTOSOLS CRYAQUEPTS SOLDOTNA	Paper birch – White spruce / Thinleaf alder <u>Picea x lutzii / Salix barclayi / Calamagrostis canadensis</u>			
SL	STARICHKOF KILLEY DOROSHIN MUTNALA	<u>Picea x lutzii / Salix barclayi / Calamagrostis canadensis</u> <u>Picea x lutzii / Equisetum arvense – Calamagrostis</u> <u>canadensis</u> <u>Picea x lutzii / Menziesia ferruginea / Equisetum arvense</u>			
SM	HISTOSOLS <u>CRYAQUEPTS</u> <u>STARICHKOF</u>	<u>Picea mariana / Equisetum sylvaticum – Ledum palustre ssp.</u> <u>decumbens</u> <u>Picea mariana / Equisetum arvense – Betula nana</u>			
SS	<u>KILLEY</u> STARICHKOF DOROSHIN	<u>Salix barclayi / Rich</u> <u>Salix barclayi / Calamagrostis canadensis – Equisetum</u> <u>arvense</u> <u>Picea x lutzii / Salix barclayi / Calamagrostis canadensis</u>			
SZ	<u>CRYAQUEPTS</u>	UNDEFINED			
HISTOSOLS are any organic soils greater than 40 cm deep.					

Cation Chemistry



Cation chemistry by Geomorphic Component. Discharge Slope wetlands (highlighted in blue) have high cation concentrations compared to other Geomorphic Components. This indicates the strong groundwater discharge influence on porewater chemistry. Although calcium and silicon show the greatest concentrations, magnesium and iron concentrations in our area are high for natural waters. DW = Drainageway, K = Kettle; S = Discharge Slope; LB = Lakebed; SF = Spring Fen; RT = VLD Trough; R= Riparian; H = Headwater Fen; D = Depression.

Samples were collected from a surface pool where possible, otherwise from a separate shallow pit excavated to just below the water table. All samples were filtered through either a 0.2 micron filter using a disposable syringe, or pumped through a 0.45 micron filter using a peristaltic pump. Samples were acidified with ultra-pure nitric acid and kept cool until analysis on a direct current plasma spectrometer to about 5% accuracy (except K, 10-20% accuracy).

Discharge Slope Vegetation Components:

Map unit names are made of combinations of map components. A suffix 'c' indicates a created wetland, and a 'd' indicates a highly disturbed wetland.

SA: Dominated by alder, usually Alnus incana ssp. tenuifolia

- NWI: PSS1Bn,g
- HGM: Terrene Slope groundwater-dominated Throughflow

SB: Dominated by birch. Taxonomy of local birches is problematic; tree birches in this project have been designated Betula payrifera, realizing that B. Kenaica is widespread, and other taxa are probably present.

- NWI: PFO1Bn,g
- HGM: Terrene Slope Outflow

SC: Dominated by bluejoint reed grass (Calamagrostis canadensis).

- NWI: PEM1Bn,g
- HGM: Terrene Slope groundwater-dominated Throughflow

SG: Dominated by white spruce (Picea glauca); occurs primarily in the Matanuska Susitna Valley. Much of the spruce that is not black spruce (P. mariana) is Lutz spruce (Picea X Lutzii), a hybrid between the more continental white spruce and coastal Sitka spruce (P. sitchensis).

- NWI: PFO4Bn
- HGM: Terrene Slope Outflow

SL: Dominated by Lutz spruce (Picea X Lutzii), a hybrid between the more continental white spruce (P. glauca) and coastal Sitka spruce (P. sitchensis). Most common on the Kenai Peninsula, especially closer to maritime influence.

- NWI: PFO4,5Bn
- HGM: Terrene Slope Outflow, if adjacent to upland.

If wetlands above and below: groundwater-dominated Throughflow.

SM: Dominated by black spruce (Picea mariana).

- NWI: PFO4Bn,g
- **HGM**: Terrene Slope Outflow

SP: Dominated by Sitka spruce (Picea sitchensis), two wetland polygons in Seward.

- NWI: PFO4Bn
- HGM: Terrene Slope Outflow

SS: Dominated by willow, usually Barclay willow (Salix barclayi).

- NWI: PSS1Bn
- HGM: Terrene Slope groundwater-dominated Throughflow,

if wetlands above and below. If wetlands only below, then: Terrene Slope Outflow.

SZ: High elevation mountain meadows of various lush forb assemblages. Mapped only along the upper slopes on Baldy Ridge, above Wasilla.

- **NWI**: PEM1Bn
- HGM: Terrene Slope groundwater-dominated Throughflow

Table 3.Summary of and Cook Inlet Discharge Slope Map Unit occurrence.						
Map Unit	N	Hectares	% Polygons	% Area		
SA	70	288	0.25	0.15		
SAB	1	0.3	0.00	0.00		
SAC	20	167	0.08	0.09		
SAG	3	12	0.01	0.01		

SAL	50	604	0.21	0.32
SAM	3	20	0.01	0.01
SAS	9	50	0.04	0.03
SB	90	991	0.37	0.53
SBA	4	19	0.02	0.01
SBd	3	7	0.01	0.00
SBG	7	14	0.03	0.01
SBM	10	295	0.04	0.16
SC	38	206	0.16	0.11
SCA	20	114	0.08	0.06
SCAd	5	9	0.02	0.00
SCd	3	0.6	0.01	0.00
SCG	2	2.7	0.01	0.00
SCL	10	63	0.04	0.03
SCLd	7	7.9	0.03	0.00
SCS	20	107	0.08	0.06
SCSd	1	24	0.00	0.01
SG	59	861	0.25	0.46
SGA	4	84	0.02	0.04
SGB	19	123	0.08	0.05
SGC	3	69	0.01	0.04
SGM	9	105	0.04	0.05
SGS	4	15	0.02	0.01
SL	1463	18,715	6.08	9.97
SLA	66	635	0.27	0.34
SLC	7	49	0.03	0.03
SLCd	2	2.1	0.01	0.00
SLd	6	37	0.02	0.02
SLM	58	447	0.24	0.24

SLMd	2	2.9	0.01	0.00
SLS	336	3164	3.18	2.53
SLSd	1	0.7	0.00	0.00
SM	765	4851	3.18	2.53
SMA	5	34	0.02	0.02
SMB	31	200	0.13	0.11
SMC	1	1.7	0.00	0.00
SMd	7	29	0.03	0.02
SMG	24	121	0.10	0.06
SML	42	340	0.17	0.18
SMLd	1	5.9	0.00	0.00
SMS	9	55	0.04	0.03
SPS	2	6.7	0.01	0.00
SS	315	1580	1.31	0.00
SSA	17	109	0.07	0.06
SSC	29	176	0.12	0.09
SSG	3	15	0.01	0.01
SSL	272	2149	1.13	1.14
SSM	13	63	0.05	0.03
SZ	20	214	0.08	0.11



Review



Riparian Buffers as a Critical Landscape Feature: Insights for Riverscape Conservation and Policy Renovations

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Abstract: Riparian zones are critical for functional integrity of riverscapes and conservation of riverscape biodiversity. The synergism of intermediate flood-induced disturbances, moist microclimates, constant nutrient influx, high productivity, and resource heterogeneity make riparian zones disproportionately rich in biodiversity. Riparian vegetation intercepts surface-runoff, filters pollutants, and supplies woody debris as well as coarse particulate organic matter (e.g., leaf litter) to the stream channel. Riparian zones provide critical habitat and climatic refugia for wildlife. Numerous conservation applications have been implemented for riparian-buffer conservation. Although fixed-width buffers have been widely applied as a conservation measure, the effectiveness of these fixed buffer widths is debatable. As an alternative to fixed-width buffers, we suggest adoption of variable buffer widths, which include multiple tiers that vary in habitat structure and ecological function, with each tier subjected to variable management interventions and land-use restrictions. The riparian-buffer design we proposed can be delineated throughout the watershed, harmonizes with the riverscape concept, thus, a prudent approach to preserve biodiversity and ecosystem functions at variable spatial extents. We posit remodeling existing conservation policies to include riparian buffers into a broader conservation framework as a keystone structure of the riverscape. Watershed-scale riparian conservation is compatible with landscape-scale conservation of fluvial systems, freshwater protected-area networks, and aligns with enhancing environmental resilience to global change. Sustainable multiple-use strategies can be retrofitted into watershed-scale buffer reservations and may harmonize socio-economic goals with those of biodiversity conservation.

Keywords: riparian zones; riparian buffers; streams; rivers; riverscapes; watersheds; catchments; conservation

1. Introduction

Riparian zones are influenced by hydrodynamic forces in fluvial ecosystems (i.e., lotic systems, such as rivers and streams) and represent transitional aquatic-terrestrial interphase bordering these ecosystems, and as such have numerous functions. They connect terrestrial and aquatic habitats through surface runoff, subsurface flow, and flooding [1–3]. Riparian zones are characterized by saturated soils, elevated water tables, and a three-dimensional configuration, which extends laterally into the river basin, vertically into the riparian canopy and groundwater, and longitudinally along fluvial channels [1–4]. Through surface and subsurface hydrologic processes, riparian buffers colligate waterbodies with adjacent uplands and govern the exchange of energy and matter between aquatic and terrestrial ecosystems [3,5]. The three-dimensional configuration, mediation of energy and matter flow, habitat heterogeneity, and the unique biotic communities make riparian zones an integral constituent of riverscapes [6,7]. The constituents and conceptual framework of riverscapes vary considerably among various disciplines of applied and foundational ecology. Lotic systems and their biota, including the spatiotemporal dynamics (e.g., species-habitat and community-scale interactions) inherent to these systems,



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Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). nested within socioecological landscapes are collectively referred to as a riverscape [8,9]. While accommodating this broader viewpoint, riverscapes can be defined as spatially structured, hierarchically organized, heterogeneous habitat mosaics nested within the river continuum [10–14].

Natural disturbances in riparian systems enhance environmental complexity both spatially and temporally [3,15]. Through variable flow regimes, alternative erosion-deposition patterns, and channel migration, fluvial processes have sculpted riparian zones into landform mosaics with modified geomorphology and edaphic conditions [1,3]. Riparian vegetation is substantially structured by the hydrologic gradient (i.e., the variability in the duration, frequency, and timing of inundation). Interspecific differences in flood tolerance and moisture dependence produce spatial and temporal patterns in the riparian community composition and cover types along the hydrologic gradient [16]. Riparian zones have a disproportionate influence on the local ecosystem, yielding a multitude of ecosystem services, thus considered a keystone resource within the landscape [3,4,17].

Studies that have spanned across numerous global ecoregions have emphasized critical and complex functions of riparian zones, including regulation of aquatic thermal properties [3,4]; bank stabilization [1,17]; nutrient assimilation, silt and sediment retention [18,19]; groundwater recharge [3]; and input of woody debris and other allochthonous matter [1,15].

Given these complex ecosystem services and functions and extensive habitat degradation experienced by lotic systems, the scientific community has widely recognized the need for riparian zone conservation. Numerous natural-resource management and conservation authorities have implemented regulatory policies and established guidelines targeting riparian-buffer delineation. The biological effectiveness of existing policies is debatable, while such regulatory enforcement has received substantial criticism [20,21]. Existing policy standards in certain jurisdictions can be outdated, resulting in conflicts with the current scientific comprehension of riparian ecology. Originally intended to mitigate non-point source pollution, riparian buffers can be managed for wildlife conservation as well as to boost ecosystem functions [22,23]. Although the ecological role of riparian zones has been long recognized, scientific literature on riparian buffers mostly focuses on either a single taxon (e.g., fish, amphibians) or a handful of ecosystem functions (e.g., nutrient filtering, pollution remediation). We argue that a review of current literature on riparian systems will lay a foundation for a multi-taxa multi-functional focus on riparian-zone conservation, painting a holistic ecological framework to reinforce policies and regulatory actions. Many studies on riparian-buffer management are shoehorned towards specific localities or geographic regions. Thus, an overview of such region-specific approaches and their applicability across broader geographic contexts are both prudent and timely needs. In this review, specifically targeting temperate North American riparian systems, we intend to (i) explore their overall ecological benefits; (ii) discuss threats and conservation challenges; and (iii) synthesize conservation actions and policy reforms targeting riparian conservation. Our review will help conceptualize conservation potential and ecological values of riparian buffers and thereby provide a foundation to formulate novel conservation approaches to protect and manage riparian zones.

2. Riparian Buffers—A Nexus for Biodiversity

Riparian habitats represent a nexus of biodiversity where both species richness and density of wildlife are disproportionately high compared to nearby terrestrial habitats [1,24]. Many semi-aquatic and aquatic organisms, particularly those with complex life histories (e.g., amphibians), depend on riparian zones for a significant portion of their lifecycles [25–27]. Riparian zones in the United States account for <5% of the land area (15–50 million hectares) yet provide habitat for over 70% of vertebrate species and are thus considered a keystone habitat [28]. In the arid southwestern United States, riparian habitats account for <1% of the landscape yet are enriched with 80–90% of regional wildlife diversity [29]. Riparian zones exhibit high levels of species richness and diversity and provide habitats for numerous habitat specialists. Riparian systems can act as local refugia for species, thus serving as population sources to support recolonization of disturbed habitats, such as commercial timberlands [30,31]. Bats and birds use forested riparian corridors as flyways, foraging grounds, and roosting sites [32,33]. During the migratory season, the avifaunal richness of riparian zones is at least an order of magnitude higher than the nearby uplands due to increased foraging opportunities and overwintering sites [34]. Amphibian dependency on riparian buffers is pronounced in the Pacific Northwest of the United States, where 47 species are either obligate or facultative stream associates [35]. Many turtles are particularly dependent upon riparian buffers for dispersal, foraging, hibernation, and oviposition. Floral biodiversity, particularly bryophytes, pteridophytes, and herbaceous plants, is remarkably high in riparian buffers [36]. In northern hardwood forests, native vascular plant richness in riparian forests was remarkably higher compared to upland, interior forests, while invasive and ruderal species were less frequent in the former [37]. Marked floristic species turnover rate (beta diversity) between riparian buffers and adjacent uplands heightens species complementarity along the aquatic-upland gradient, which also generates a greater landscape-scale species richness (gamma diversity) [15].

3. Riparian Zones—Ecological Functions

3.1. Reciprocal Energy and Matter Subsidies

Riparian zones, particularly those with mature forests, supply copious amounts of organic matter and allochthonous input to fuel food-web dynamics in lotic systems (Figure 1). Forests provide an abundant supply of woody debris into rivers, which trap sediments, fine and coarse particulate organic matter, and silt, forming habitats and microsites for aquatic macroinvertebrates and fish [38,39]. Coarse particulate organic matter and fine particulate organic matter are the nutrient sources for detritivores and shredders, which in turn become profitable foraging resources for predatory vertebrates [40,41]. Through decomposition, microbial biofilms growth on woody debris yields dissolved and suspended organic matter [42], which is critical for buffering pH and sequestrating heavy metals [17].



Figure 1. Ecological structure, functions, and multi-tiered delineation of riparian buffers.

Often overlooked or undervalued, the biphasic life histories of many organisms drive aquatic-upland reciprocal energy and nutrient subsidies, highlighting an inextricable connection of the riparian zone to the river itself [43]. Shifting trophic dynamics from

allochthonous to autochthonous production and replacement of specialist feeding guilds (i.e., insectivores, predators) with generalist grazers has been documented after riparian zones have been harvested or otherwise degraded [44–46]. The ultimate consequences of such trophic shifts will likely lead to biotic homogenization where the species turnover and functional diversity of aquatic biodiversity from headwaters to lower reaches attenuate along the river continuum [47].

3.2. Critical Habitat, Channel Stabilization, and Nonpoint-Source Pollution Mitigation

Riparian vegetation supplies particulate organic matter in the form of leaf litter and woody debris of variable sizes and decay classes that structure geomorphology and habitat complexity of the aquatic core-forming microsites and refugia for aquatic fauna [17,40,41]. Woody debris resists erosive water currents and redistributes the flow throughout the riverbed resulting in mosaic patterns of erosion and alluvial depositions along river corridors, which further contribute to habitat heterogeneity [3,23]. Deep-water pools formed by debris dams provide critical habitats for spawning and refugia during low-flow seasons [48]. Further, the abundance of large within-stream woody debris is positively associated with turtle density, as it provides critical thermoregulatory sites [49,50].

By intercepting precipitation and slowing surface runoff, riparian buffers filter silt and sediments, heavy metals, agrochemicals, organic wastes, and pathogens, thereby preventing these contaminants from reaching the aquatic core or groundwater [17,19,39,51]. These buffering functions become crucial in urban and agricultural landscapes where nonpoint-source pollution via surface runoff intensifies during rainstorms [51,52]. The root masses of riparian vegetation assist in maintaining the physical structure of soil and reducing soil erosion [17,39]. Decelerated surface runoff enhances groundwater recharge through the riparian soils, even during storm surges [17,53]. Water quality metrics of buffered aquatic systems are more stable than unbuffered systems. For instance, enhanced siltation elevated peak discharge velocities, and channel incision was reported in unbuffered rivers. In contrast, buffered rivers contained the highest volumes of riverbed woody debris, lower sand/slit content, and reduced river discharge, as well as lowered fecal coliform and nutrient concentrations [54,55].

Riparian buffers intercept sedimentation and prevent the loss of interstitial spaces of stream beds, which represent critical habitat for aquatic organisms [31,53,56]. Buffered streams support a diverse aquatic macroinvertebrate community, including environmentally sensitive taxa [54]. In contrast, freshwater turtles inhabiting streams without adequate riparian buffering, particularly those dissecting urban landscapes, exhibit skewed sex ratios and age structures, reduced juvenile recruitment, heightened incidental mortality, and subsidized predation [56,57].

3.3. Climate Change Resistance and Resilience

Riparian zones are both spatially and temporally dynamic and stochastic; as such, riparian biota has evolved life-history strategies and adaptations under environmental variations, which may make them either more resilient or resistant to climate change [5]. Riparian vegetation exhibits a wide array of adaptive morphological and physiological traits—heterophylly (production of variable leaf forms in response to environmental conditions), heteroblasty (abrupt morphological changes in the ontogenetic development), variable-depth root systems, propagule dormancy, and persistence under variable disturbances (flooding, fluvial, fire) and soil conditions (increased salinity)—that confer resilience to extreme climates [5]. Riparian buffers create spatial connectivity across lateral, longitudinal, and vertical dimensions, which provides multiple pathways for species migrations in response to climate shifts [3,58,59]. Additionally, riparian buffers form climate envelopes with high humidity and thermal stability that function as climate refugia [42]. For instance, large trees typical of intact riparian zones create a continuous canopy, which intercepts solar radiation and regulates stream thermal properties [55]. Indeed, harvesting riverbank vegetation has often resulted in elevated average and maximum water temperatures, in-

creased diel fluctuations and incidences of thermal extremes, and erratic disruptions in seasonal thermal regimens [55,60].

4. Threats and Conservation Challenges

Streams and rivers are among the most imperiled habitats in the United States, as well as across the world [58,59,61]. The current estimates for the riparian-zone surface area of the United States range from 15–50 million hectares, of which >90% are degraded [29,62]. There is growing anthropogenic pressure on riverine ecosystems. In the conterminous United States, a significant proportion of the population dwells within 1-km of a river. Nevertheless, only 2% of stream reaches receive riparian protection [62]. Riparian protection remains uneven across the United States. For instance, compared to eastern North America or the Great Plains, riparian zones of the western United States receive enhanced protection where federal land stewardship ensures appreciable conservation attention. Nationwide, ~480,000 km of rivers exhibit degraded water quality, with impaired riparian buffering being at least partly responsible. Impaired riparian systems experience increased solar incidence, dry microclimatic conditions, and lack of environmental complexity, making them unfit for native wildlife, with the exception of a handful of urban exploiters, urban-adapted human commensals, and invasive species [63].

4.1. Anthropogenic Land-Cover Changes and River Modifications

As ecosystem functions of riparian zones rely heavily on fluvial processes, anthropocentric alterations fundamentally influence riparian dynamics [36]. To facilitate navigation, irrigation, and mitigate threats of catastrophic flooding, rivers have undergone drastic modifications with channelization, diversion, and impoundment, which impacts the riparian zone [36,64,65]. In the United States, there are over 2 million dams that influence nearly 90% of regional drainage basins, disrupting both longitudinal and lateral connectivity [66]. For example, permanent upstream floodplain inundation, downstream sediment and nutrient deprivation, damped hydrologic variability, and downstream peak flow attenuation lead to major modifications in the riparian structure and function [29,63]. Dams also impede downstream hydrochory and plant propagule recruitment, which subsequently suppresses riparian vegetation [67,68].

Channelization and bank-stabilization structures sever the connection between the riparian zone and the in-stream habitats, which prevents recruitment of riparian vegetation, disrupts the riparian microhabitat structure, lowers the riparian water table reduces the frequency of overbank flow, and homogenizes shoreline complexity [29,34]. Channelized river corridors lack soft sandy riverbed substrates, sandbars, and large downed wood, which are critical for basking and nesting turtles [64]. Cumulative effects of flow regulation, drainage, and floodplain reclamations transform anastomosing, meandering, and braiding rivers into oversimplified single-tread channels that are severed from riparian zones [65].

Loss of riparian forest cover is particularly notable in anthropogenic landscapes. Biotic homogenization—reduced species turnover across environmental gradients—as a consequence of urbanization was observed across American riverscapes [69,70]. Declining riparian forest cover changes aquatic productivity, such as the prolific growth of exotic species and filamentous algae at the expense of unicellular phytoplankton and non-vascular plants [47,61]. The proliferation of these primary producers neither contributes to food webs nor is exploited by consumers [42,71]. Sporadic changes in seasonal river temperatures resulting from loss of streamside vegetation can negatively impact juvenile development among fish and trigger adverse behaviors, such as untimely migration and phenological mismatches [23,42].

4.2. Recreation-Based Degradation

Given unique aesthetic and scenic values, recreation-based development and activities (whitewater rafting, canoeing, swimming) are often concentrated within riparian zones [72,73]. Proximity to large rivers is among the most demanding landscape features sought by recreational developers as well as amenity migrants for secondary and vacation homes [74,75]. Snag removal and vegetation clearance in the riparian zone to boost recreational and scenic values led to declining diversity among turtles in the northern Midwest [38]. Increased cover of invasive and weedy species is frequently observed in riparian zones impacted by human disturbances [34]. For instance, invasive plant species were found to be absent from river reaches where the surrounding land use was largely undisturbed and exhibited greater complexity in vegetation structure, suggesting that these reaches were more resistant to invasion than reaches, which have experienced degradation [76]. Deliberate introduction of exotic species as landscape ornaments is partly responsible for such biological invasions, at least in the early phases of establishment outside the native range. Riparian corridors are conduits for plant propagules, therefore, riparian zones are particularly vulnerable to plant invasions. Recreational activities enhance the human footprints in riparian zones (e.g., vegetation removal, changes in natural land-cover, simplification of the structural complexity) as well as the fluvial channel (e.g., modifications in the riverbed and bank geomorphology), which can further exacerbate biological invasions [76].

4.3. Resource Overuse

Land development in the riparian zones and floodplains increases the acreage of impervious surfaces, which alter local hydrodynamics and fluvial processes. Riparian forests are high in aboveground biomass, making them particularly susceptible for commercial timber harvesting [1]. Logging or clearcutting within the buffer zone can lead to localized extirpation of riparian specialists [36,48]. Additionally, the paper, pulp, and biofuel industries are also attributed to intensified silvicultural practices within the United States. River corridors have been historically used as effective conveyers of harvested timber. However, to facilitate convenient access to river channels to transport timber to sawmills downstream, riparian vegetation and within-stream wood are often removed [77]. River valleys historically were and continue to be targeted by mineral harvesters, particularly for gold mining, resulting in the clearcutting of riparian vegetation as well as the excavation of streambed substrates [59,73]. Indeed, ecosystems within the riparian zone have been and continue to be set on courses exceeding their historical norms due to anthropogenic influences relating to resource overuse [78].

4.4. Agriculture and Farming

Due to high productivity and soil fertility, riparian habitats across the United States have been converted to row-crop farms nationwide [34]. Moreover, nutrient-rich soils of the riparian zones of large, sluggish rivers and dependable access to water have led to the transformation of such riparian zones into extensive croplands [73]. Given high productivity and access to water and shade, riparian zones attract livestock, which results in overgrazing of riparian vegetation and soil compaction. Setting aside forested buffers for conservation is economically costly, thus farming operations usually encroach the riparian zone, resulting in the conversion of diverse native riparian flora into monocrop stands.

4.5. Challenges in Riparian Conservation

Much of America's riparian zones are located within privately owned lands. Unfortunately, many of these landowners prioritize profit over sustainability [39,73]. Streams and rivers crossing private lands, especially low-order reaches, receive little to no legislative protection [79]. Land managers of local jurisdictions are often underinformed about riparian functions and biodiversity, hence policies emerging from local authorities are unlikely to generate tangible conservation benefits [52]. Taking riparian lands out of production and re-vegetating buffers are prohibitively expensive, thus, regulations on riparian zones are often resisted by farmers [52,80]. Consequently, riparian conservation policies in the United States are often distilled into politically palatable decisions driven by what private landowners are willing to concede [17].
5. Conservation Efforts

Maintaining intact riparian zones has long been recognized as a crucial element in biodiversity conservation. During the last few decades, riparian-buffer conservation has undergone paradigm shifts where sustainable resource use, endangered species conservation, landscape-scale connectivity, and climate resilience were incorporated into conservation planning [35,63,81].

5.1. Local Scale and Fixed-Width Buffer Zones

Fixed-width buffer zones are the most popular approach to riparian conservation, where decisions were primarily made at the state level, resulting in significant variations in buffer widths (12–52 m) throughout the United States [77]. The site-specific widths for riparian buffers were often estimated based on the maximum height of dominant plant species along the riverbanks. This baseline may be increased based on the aquatic or terrestrial community targeted for conservation. For instance, fish-bearing perennial rivers may have a buffer zone that is twice the height of the tallest tree height (~90–145 m) [82]. The scientific reasoning behind this baseline remains questionable. Nonetheless, the greater buffer-width variations stipulated by different local land managers for protection of the same target species, communities, or ecosystem functions within similar ecoregions is a significant conservation concern [20].

An array of multi-layered vegetation strips has been recommended to mitigate nonpointsource pollution in streams associated with commercial farmlands (Figure 1). Multi-layered vegetation strips generate a gradient of structural complexity, thereby maintaining multidimensional niches for numerous taxa, including specialist foraging guilds [83]. For example, a vegetation strip dominated by graminoids and herbaceous vegetation has a rapid biomass turnover rate and thus helps restore biologically optimal soil structures. Multi-layered approaches recommended for the United States include a relatively undisturbed old-growth forest (4.5–11 m wide) closest to the stream channel, followed by managed shrub-mixed woodland layer (4-23 m wide), and a graminoid-dominant herbaceous strip mixed with shrubs and scrubs (6–8 m wide) (Figure 1) [3,18,84]. The innermost strip regulates water temperature, enhances habitat complexity and bank stability, and supplies woody debris to the aquatic core while providing critical wildlife habitats for conservation-dependent biota [40,41]. The middl e strip assimilates nutrients, retains fine sediments, and enhances groundwater recharge. The outermost strip acts as a physical barrier to storm-water runoff, reducing erosion and retaining silt, sediment, and agrochemical contaminants. Conservation Buffer Initiative—which stems from the United States Department of Agriculture Conservation Reserve Program—advocates a three-tiered design comprising perennial grasses, two rows of shrubs, and 4-5 rows of mature woody plants for rivers flowing through farmlands [85].

Numerous taxon-specific fixed-with buffer zones have been proposed for wildlife conservation in the United States. For example, buffer zones ranging from 43–290 m have been recommended for the conservation of 95% of herpetofaunal communities [20]. A forested riparian buffer of 150 m is recommended for the conservation of most North American riverine turtles, especially to support their seasonal navigations [38]. This fixed-width buffer becomes untenable for species with complex and wide-ranging life histories. For example, threatened species of riparian turtles may seek refugia as far as 400 m from the river channel they inhabit [38]. Surprisingly, fixed-width buffer zones intended to support macroinvertebrate, fish, and avian species are often smaller than those recommended for herpetofauna, ranging from a minimum of 30 m (macroinvertebrates and fishes) to 175 m (specialized forest birds) [33,86,87]. Similarly, 100–200 m riparian buffers are effective in protecting passerine assemblages and stabilizing populations of area-sensitive songbirds [88]. However, bank stability, protection of water quality, and channel heterogeneity may be achieved by much smaller buffer widths (10–130 m) and may account for >90% of regional vascular floristic richness [35,37]. Nevertheless, large buffers (>100 m) serve multiple purposes, such as mitigation of edge effects on nesting birds while providing habitats for riparian-dependent herpetofauna and small mammals [86,89,90].

Fixed-width buffers gained popularity mostly due to their administrative and operational simplicity but are ineffective to sustain ecosystem functions, metacommunity dynamics, and upland habitat associations of semiaquatic fauna [37,77]. Such singular, generic buffers are often homogenous in habitat structure and incongruent with natural processes, thereby over-simplifying riparian zones' bio-physical complexity [53]. For instance, in Canadian boreal forests, fixed-width buffers are at least partly responsible for fire suppression. Small-width homogenous buffers take longer to recover from extreme climatic disturbances and are susceptible to species invasions, insect outbreaks, and forest pathogens. Concerning multi-layered buffers, maintaining the prescribed vegetation structure may warrant intensive management interventions, which can be both financially and logistically challenging.

5.2. Watershed Scale and Variable-Width Buffer Zones

Fixed-width buffer zones are readily employable, sufficiently simple for on-ground delineation, and only warrants management interventions at the local scale. In contrast, variable-width buffer zones are more operationally complex and may necessitate land management beyond the local scale yet are effective at reaching desired conservation goals and may generate lasting benefits across broader spatial extents. For instance, watershedwide buffer zones are compatible with systematic conservation planning designed for both freshwater and terrestrial ecosystems and align with overreaching environmental themes applicable to riverscapes. Resilience to global environmental change, prevention of nonpoint-source pollution, restoration of trophic dynamics and the riverscape continuum, mitigation of "urban stream syndrome," and augmentation of amphibian and fish biomass in urban and agricultural watersheds can be harmonized with watershed-wide riparian conservation [11,53,64,91]. At the watershed scale, buffered riparian zones support species migrations, assist movements of dispersal-limited species, augment metapopulation dynamics, thereby relieving small, declining, or isolated populations from inbreeding depression, genetic drift, and demographic stochasticity [81,92,93]. For example, streams within extensively forested watersheds yielded enhanced growth and breeding activities, greater body condition, and greater densities of rare salamanders [94]. In anthropocentric landscapes or disturbance-prone watersheds, buffered streams provide refuge for terrestrial source populations [30,31,95]. Watershed-wide riparian buffers established along a northsouth orientation or elevation gradients can function as latitudinal migratory corridors aiding poleward or altitudinal range shifts in response to climate change [84].

Buffer zones delineated at the watershed scale restore connectivity integral for rivers and wetlands, including fourfold eco-hydrological dynamics: (1) lateral interactions between aquatic cores and the uplands as well as among different aquatic cores and wetlands; (2) longitudinal dynamics along the river continuum; (3) vertical linkages among the surface water, groundwater and atmosphere; and (4) temporal changes including wetland successions and modifications in channel geomorphology, hydroperiods and flow regimes [11,43,59]. Hence, watershed-wide buffer zones complement biological, hydrological, and geomorphological processes. Effective delineation of watershed-wide buffer zones requires policies that transcend administrative boundaries, focus beyond local scale conservation targets, and warrant participatory management of different jurisdictions and conservation authorities.

5.3. Determinants of Watershed-Scale Buffer Delineation

The magnitude, spatiotemporal extent, and importance of ecological functions of riparian zones depend on both large-scale watershed-wide regional properties and small-scale local habitat characteristics [96]. Thus, the delineation of riparian buffers should be a synergistic product of both local and watershed-scale factors.

Local-scale determinants include channel slope, local topographic relief, riverbank vegetation structure (e.g., stem density, basal area, vegetation successional stages), soil properties, and channel geomorphology [37,53]. Numerous field studies indicated a non-linear relationship between required buffer widths and increasing slope as well as soil erosivity, underpinning the importance of site-specific conditions in delineating buffers [17,23]. Stream order, stream width at bankful discharge, annual discharge regimes, channel dynamics (lateral channel migration and formation of oxbow or scroll lakes) and planform (the quasi-equilibrium channel morphology created by concentration or dissipation of energy and sediment movements), and floodplain complexity should also be considered [58,81,97]. For instance, buffers zones of headwater streams should be sufficiently extensive to protect riverbank seepage formations where the groundwater table approaches the surface. Concerning middle- and higher-order streams, conventional flood-risk assessments [86,87] can be utilized to determine buffer widths, thereby deterring development and industrial farming in flood-prone riparian zones. As private land managers and entrepreneurs are risk aversive, delineating high-risk flood zones as local-scale riparian buffers will carry unintended conservation benefits.

Among watershed-wide determinants—watershed size, basin-wide ecosystem processes, regional geography and climate, current and historical land-use land-cover (the extent of impervious surfaces and modified land-cover types), floodplain characteristics (presence, distribution and types of wetlands), hydrologic connectivity, spatial and temporal distribution of pollutant sources, and types of pollutants—should be accounted when delineating buffer dimensions [11,54,60]. Further, the sociocultural and socioeconomic dimensions cannot be ignored when determining the size and extent of riparian buffers, as local stakeholders must be able to connect the benefits of setting aside tracts of land with their needs and interests [78]. Riparian zones have long been shaped by both human (landuses and resource extractions) and natural (e.g., climatic, hydrological, geomorphological, fluvial, and biological) processes. Recognizing this multidimensional co-construction will also highlight riparian buffers as an integral component of fluvial ecosystems, which may create a favorable attitude from various sectors (e.g., farmers, agroindustry, policy makers, land-use planners, and land developers) towards riparian-buffer conservation [78]. Thus, watershed-scale buffer delineations must weigh in on anthropocentric uses and values of riparian ecosystems. Both at local and watershed-scale, regional and local wildlife communities that associate riparian buffers as a critical habitat should be factored in as well. Watershed-scale buffer zonation should consider the upland dispersal and migration distance of semiaquatic fauna, which is critical for species with complex life cycles where both breeding migrations and post-natal dispersal occur over long distances [85,95,98,99].

Riparian buffers in managed timberlands should be determined based on harvest regimes, based on the total size of harvested area versus acreage of the unharvested forests in the watershed, harvesting methods, and stand age structure [31,80]. Rivers and wetlands embedded in landscapes with a prolonged land-use past, such as cattle grazing and industrial agriculture, require a lengthy recovering period as well as ample riparian reservations. Thus, land-use legacies, as well as disturbance histories across the watershed, are also critical determinants of buffer zone allocation [54,96]. Legacies resulting from anthropogenic alterations (e.g., riparian timber harvest) induce lasting changes in the entire river corridor (e.g., complete transformation of channel structure and fluvial dynamics), creating alternative states with impoverished ecosystem services [100]. Watershed-scale buffers designed to protect and restore riparian biodiversity and ecosystem functions can be more effective if the lasting effects of historical legacies are recognized.

5.4. Designs for Watershed-Scale Riparian Buffers

Olson et al. [35] proposed watershed-wide buffer conservation, which accounts for lateral and longitudinal linkages of riparian biodiversity as well as riparian-zone ecosystem functions. With the emphasis on cross-ridgeline connectivity to accommodate faunal movements among headwater streams, this conceptual model advocate for wider (200–

400 m) buffers. Olson and Burnett [84] designated ridgeline forests with a high density of headwater streams as "linkage corridors" to facilitate cross ridgeline connectivity of local biota. Dispersal aside, ridgeline forests were habitats for endemic species and harbored stable populations of native vertebrates [35,84]. Attributed to this dual function (dispersal and refugia), we proposed that "linkage corridors" be retrofitted into a riparian-buffer network. If strategically designated with ideal spatial configuration within a watershed, "linkage corridors" enhanced metapopulation interactions and assist safe passage during drought-induced movements and provided access to climate refugia in headwaters.

A two-tiered, riparian buffer design was conceptualized for headwaters of the Pacific Northwest, which can reconcile both commercial land-use operations (logging) and wildlife (amphibian) conservation [89]. Referred to as the "spaghetti-meatball approach," this design comprises non-random alternating configurations of narrow (40-150 m) and wide (400–600 m) buffers [35,92]. The narrow, long buffer strips ("spaghetti") running alongside streams encompass the moist-mesic riparian microclimates via "stream effect" while protecting strictly-aquatic and bank-dwelling species. When protected areas or other critical and rare habitats (e.g., ephemeral wetlands, fluvial lakes, old-growth stands, tributary junctions) neighbor the river channel, particularly at ridgetops, wider buffers ("meatballs") can be applied to enhance the structural heterogeneity and resource availability of the riparian environments. Narrow "spaghetti buffers" are sufficient to confer bank stability and filter runoff, thus making them suitable for streams dissecting timberlands and farmlands. High-value conservation targets, such as stream reaches with a high density of microendemic or threatened species, local hotspots of diversity, and bioclimatic refugia can benefit from "meatball buffers". The "spaghetti-meatball" design also harmonizes economically profitable, yet sustainable land uses with freshwater biodiversity conservation, hence applicable to watershed-scale riverscape conservation.

Riverscapes are spatially complex fluvial systems mosaics of habitat types and environmental gradients, interconnected by dendritic networks with unique spatial configurations and structures that differ markedly from most terrestrial systems and other aquatic systems [11,41]. The spatially heterogeneous structures of the riparian environment (including the floodplains), riparian biotic communities, and matter and energy exchange are particularly important attributes of riverscapes [7,65]. We argue that watershed-wide riparian-buffer conservation will effectively capture all critical attributes of the riverscape.

We recommend the implementation of riparian-habitat conservation criteria by Semlitsch and Bodie [25] and Olson et al. [35] to delineate buffers along river channels at the watershed scale, yet caution against abiding by the suggested buffer widths as canonical rules (Figures 2–4). Instead, we encourage re-tailoring variable buffer widths based on the spatial configuration of critical riverscape elements (i.e., floodplains, isolated channels) and niche dimensions of riparian-dependent biota of the regional species pool. The riverscape is the template for both between-habitat species turnover (beta diversity) and landscape-scale community diversity (gamma diversity); the latter metrics are prudent biodiversity targets representative of the entire riverscape [81]. Incorporating niche dimensions of riparian biotas, such as the lateral navigation distance of both philopatric and vagile species when delineating riparian zones, will make these buffers more biologically productive [90].

Hereto, we first highlight the immediate riparian zones as both core habitats of the riverscape and keystone structures of the watershed (hereafter, critical riparian core), ergo propose the first tier of buffer delineation throughout the drainage system alongside both main stems and tributaries (both perennial and ephemeral), provisionally extending into the floodplain to envelope riparian wetlands and wetland-obligate communities. These buffers can be locally distended at confluences or to connect the river channel with neighboring wetlands. The first tier should be designed to buffer the stream channel from atmospheric and terrestrial stressors, protect water sources, and enhance habitat associations of riparian and semiaquatic biota. Second, we propose delineating a critical terrestrial core beyond the critical riparian core. This second tier will promote metacommunity dynamics [91] and subdue edge effects [101]. To enhance wildlife permeability, we advise restrictions

on both exploitative (subdivision or infrastructure developments, agriculture, grazing, and clearcutting) or non-consumptive (recreational) uses within the critical riparian core while permitting specific land uses (agroforestry, permaculture, forest gardening, selective logging) within the critical terrestrial core.



Figure 2. Fixed buffer widths applied to a single mainstem river corridor following multi-tiered buffer widths recommended by Semlitsch and Bodie [25].



Figure 3. A variation of the Spaghetti-meatball buffer-zone delineation with variable buffer widths as recommended by Olson et al. [35,89] applied to the mainstem river corridor, including the tributaries to the mainstem.



Figure 4. Variable buffer widths applied to stream channels (mainstem and tributaries) and streamassociated wetlands at the watershed scale. Increased riparian buffer widths are applied to regions with high conservation potential and other critical hydrological or ecological features to protect infertility ecosystem structure and functions.

Greater habitat heterogeneity that satisfies natural and life history requirements of riparian obligates is critical in a watershed-wide buffer delineation. Thus, we advocate the inclusion of multiple landscape elements—hibernacula, climatic refugia, high-quality foraging and nesting grounds, heterogeneous wetland complexes with variable hydroperiods, aquatic habitats that offer complementary resources, and a variety of upland habitats—into both riparian and terrestrial core habitats [93]. Moreover, we contend inclusion of forest remnants, commercial timberlands, silvopastoral systems, traditional farmlands, and restored habitats into the critical terrestrial core to reinvigorate beta and gamma diversity and to refuel metacommunity interactions and ecosystem processes [42,102].

5.5. Habitat Management within Buffer Zones

Harvested riparian zones should be characterized by mixed-aged riparian vegetation, vertical stratification, and variable successional stages, thus providing habitats for both seral and climax communities [48,103]. To promote habitat heterogeneity in the riparian buffers where historical disturbances (flooding, fire, debris flow) are suppressed, sustainable forestry operations based on various shelterwood harvesting methods, such as selective thinning in variable-sized patches, and partial cuts may generate spatial patchiness resembling natural disturbances [36,48,83]. Here, it is imperative to mimic historical disturbance regimes in terms of frequency, duration, magnitude, and spatial patterns [103]. Management decisions should weigh in the system resilience, legacy effects (historical fire regimes and grazing), climate conditions (average precipitation), and susceptibility to extreme events (windstorms, floods). A multi-use approach with regulated timber harvesting and extraction of non-woody products in designated riparian buffers will also harmonize conflicts between conservation authorities and resource users [104].

Riparian timber harvest can be connected to the multi-tiered buffer approach we proposed. No logging should be permitted within the immediate riparian zone adjacent to the stream channel (critical riparian core). Variable and transitional timber management operations forming an environmental gradient with respect to stem density, basal area, canopy closure, stand maturity, and species of interest can be permitted in outer tiers (critical terrestrial core). We urge for minimal use of machinery and motor vehicles, which leads to soil compaction and other disturbances. Availability, diversity, and size of forest-floor cover objects in the riparian buffer are crucial for ameliorating the ill-effects of logging as these cover objects preserve cool, moist microclimatic conditions for forest floor fauna [95]. Thus, we caution against salvage logging or residue removal [35,84]. However, if adequate forest-floor cover exists, some of the logging residuals can be placed alongside banks as microsites to harbor riparian vertebrates and vegetation propagules [96].

To restore longitudinal and lateral connectivity through riparian management, removal of dams, dikes, and levees is imperative to reunite river channels with floodplains and reengineer natural fluvial (meandering, braiding, anastomosing) dynamics [16,96]. Breaching artificial bank stabilization structures such as ripraps also helps restitute surfaceto-groundwater movements as well as hydrologic and sediment regimes that are critical for healthy ecosystem functions of riparian zones [16,105]. Dam removal also restores both coarse- and fine-scale geomorphic features, natural flow regimes, and plant successional processes that constitute critical riparian habitats (e.g., floodplain conditions, riparian food webs, plant-community dynamics) and reduce the establishment and persistence of exotic plant species in the riparian zone [16,106,107]. Natural resource managers should estimate site-specific risks of dam removal on riparian zones (e.g., sediment aggradation on riverbanks, habitat homogenization by reducing the variability of bed elevations, biological invasions) for making informed decisions on post-restoration monitoring to detect negative impacts and implement mitigatory measures [97,105]. To improve riparian buffering functions (flood and discharge mitigation, groundwater recharge, and bioremediation), we recommend restoration of floodplain wetlands, which is particularly necessary following dam removal [108]. In impaired (urban and agricultural) watersheds with contaminated runoff, these floodplain wetlands can be an ecologically sound alternative to artificial drainage ponds.

Restoring degraded riparian zones may require the introduction of site-appropriate topsoils and subsoils with adequate soil-particle size distributions and organic matter since plant propagule recruitment, microbial remedial processes, and groundwater movements are functions of soil properties [16]. Introduction of natural cover objects across the riparian buffers in forms of woody debris in variable size and decay classes might be warranted [30,109]. We discourage "landscape manicuring"—removal of downed or standing deadwood for aesthetics and navigation. Spatial arrangement and retention of dead standing trees (snags), rock outcrops, and other vertical geological formations warrant attention as such structures serve as keystone resources for riparian fauna [98]. As degraded riparian zones are species-depauperate and periled with exotic invasions, re-introduction of foundation species (e.g., willows (Salix spp.)) and ecosystem engineers (e.g., American beavers (Castor canadensis)) as well as controlling exotic and invasive species can accelerate recovery with enhanced resilience [82,104,105].

6. Policies and Protection of Riparian Buffers

Numerous United States environmental policies contribute to riparian-buffer conservation [79]. These laws take effect via three mutually nonexclusive avenues: (1) direct acquisition or supporting acquisition of lands and waterways for buffer delineation; (2) restrictions on resource exploitation in riparian environments; and (3) develop environmental standards and guidelines to mitigate water pollution based on buffer-zone management. Herein, we will briefly review a selection of these policies, including their effects and recommendations for enhancing their impact on riparian systems.

Empowered with legislative authority on wetland and riverine buffers, the Clean Water Act (CWA) aims to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Administered by the Environmental Protection Agency (EPA) and Army Core of Engineering, the CWA recognizes pollution mitigation and provision of wildlife habitats as critical functions of riparian buffers, thus, mandates avoidance and minimization of damage to riparian zones [99,110]. We advocate that CWA's specifications on total maximum daily load, the maximum amount of a pollutant permissible in a waterbody to maintain acceptable water-quality standards, be leveraged for buffer delineation as a measure against nonpoint-source pollution [53]. We urge the CWA to recognize the riparian buffer as a "critical habitat complementary to the aquatic core" while underscoring the functional nexus between intact riparian zone and biological integrity of aquatic core habitats, thereby advocating restoration and delineation of riparian buffers as a mitigation strategy [25,26].

Administered by Fish and Wildlife Service and National Oceanic and Atmospheric Administration, the Endangered Species Act (ESA) has the potential to secure riparian environments as "critical habitats" for endangered or threatened species [111]. We encourage the inclusion of the "critical habitat" concept into a panoptic "critical riverscape" perspective to encapsulate watershed-wide environmental complexity and functional diversity inherent to riparian zones. For riparian conservation, we propose that the ESA targets umbrella species such as riparian obligates and riparian-dependent species, particularly those characterized by longevity, delayed reproductive maturity, elevated egg/larval mortality, and high sensitivity to anthropogenic disturbances [112].

Mandated by the United States Department of Agriculture (USDA), the National Forest Management Act (NFMA) requires a minimum of 30 m buffer around perennial rivers and lakes and prohibits land uses that impair water quality or fish habitats [34]. As corroborated by our review, the 30-m minimum threshold might suffice conservation of a subset of stream biota (e.g., headwaters) but is insufficient to maintain upland associations of most riparian communities. In lieu of our variable buffer-width standards, we recommend employing local and watershed-scale biophysical determinants to prescribe variables both buffer widths and length to assure watershed-wide continuity.

The National Wild and Scenic Rivers Act (NWSRA, Departments of Interior and Agriculture) aims to preserve "free-flowing" rivers with remarkable ecological and nonconsumptive (aesthetic and recreational) values [39,88]. The NWSRA recommends a 400 m riparian buffer along designated rivers flowing through federal lands [113]. Given the conservation potential of these rivers, we suggest remodeling NWSRA to recognize the main stem, tributaries, and floodplains (including floodplain wetlands) of designated rivers collectively as "wild and scenic riverscape corridors" while identifying buffers as "critical life zones" of the entire watershed.

Significant extents of riparian zones in the United States are located within private lands. Further, most land development occurs within local jurisdictions where the decision-making officials are likely uninformed about local biodiversity, ecological principles, or sustainable economic benefits associated with riparian buffers [114]. As such, we highlight the urgency to educate local officials as well as private landowners on watershed-scale buffer designs [73]. To cultivate responsible stewardship among public and local officials, we recommend the introduction of citizen-science projects tailored to generate locale-specific long-term data on riparian biodiversity and ecosystem processes, which provide a scientific basis for decision making [30,115]. We also encourage repurposing citizen science as a communication hub among scientific communities, town officials, and private landowners, particularly to disseminate novel approaches on riparian conservation [43]. To enhance public buy-in, we also recommend the adoption of charismatic or flagship species that symbolize riparian habitats (e.g., river otters (*Lontra canadensis*) [102].

For watershed-wide riparian conservation to take effect, rewarding land stewards who adopt riparian best management practices are effective and prudent [78]. Administered by the USDA through the Farm Bill, a number of such programs, Conservation Reserve Program, Conservation Easements, and Environmental Quality Incentive Program, have demonstrated success in optimizing conservation potential and environmental benefits in productive agricultural lands [116]. Program participants offset environmentally sensitive lands from production and establish resource-conserving native plant species in exchange for rental payments, tax breaks, and financial and technical support for improving farming operations [85]. Our recommendations herein include educating farmers on agricultural

benefits through the use of riparian buffers (e.g., flood and erosion prevention) and remodeling incentive programs for recreational entrepreneurs, the timber industry, and non-timber extraction ventures. Given the multitude of ecosystem functions originating from riparian buffers—groundwater recharge, water-quality enhancement, game species conservation, aesthetic and scenic values—we recommend enhancing incentives through Payments for Ecosystem Services for land stewards participating in riparian-buffer conservation [115].

Policy reforms for watershed-scale riparian-buffer conservation will require a paradigm shift from a conventional reach-based perspective to a more inclusive ecosystem-centered approach tailored for the conservation and restoration of hydrogeomorphological processes with the emphasis on ecological integrity and biological dynamics of rivers [117,118]. Herein, the riparian buffers should allocate more physical space to facilitate channel mobility (e.g., lateral migration, meandering) and seasonal flooding [106,118]. Such policy frameworks not only ensure sustainability and resilience of riverine biodiversity but also mitigate flood and erosion risks. Hydrogeomorphology-influenced policies have been successfully implemented in Europe and Canada [107,117]. These legislative frameworks piggyback on the notion of risk aversion (erosion and flooding) as well as ecological integrity, thus are palatable for multiple stakeholders while affording protection to critical riparian features (e.g., floodplain wetlands) and exclude development and detrimental human activities from the riparian buffers. When implemented at watershed scale, these process-driven conservation actions warrant minimal management interventions over time yet are suitable for enhancing the resilience of lotic ecosystems against global environmental change. In addition, such policies simultaneously address multiple regulatory and conservation goals such as the Habitats and Water Framework Directives of the European Union and the Clean Water and Endangered Species Acts in the US [118].

We advocate that policy reforms recognize riparian buffers not only as "critical life zones" or "core habitats" but also a vital riverine and riverscape elements crucial for biodiversity conservation and ecosystem functions [62,104]. Watershed-scale riparian conservation is appropriate for the conservation of aquatic biota, management of all forms of freshwater habitats, and resolution of competing for anthropocentric interests [11,61]. As inter-state and among-municipality collaborations are pivotal to watershed-scale conservation, we suggest that both federal and state funding mechanisms encourage such cross-jurisdictional partnerships. It is of critical importance that policymakers and scientists are cognizant of the sociocultural dimension in management decisions, as overly simplistic approaches to addressing the perceptions, needs, and interests of local communities are likely to result in conservation impasses [78]. Ultimately, if the knowledge gained through research is unable to be contextualized in a manner, which can be readily assimilated and applied, efforts, which would otherwise preserve and enhance ecosystem structure and function while simultaneously meeting the needs of the local populous are likely doomed to failure. Longitudinal and lateral dimensions inherent to watershed-wide riparian reserves will account not only local species richness (alpha diversity) but also between-habitat species turnover (beta diversity) and landscape-scale diversity (gamma diversity) [34]. We encourage state and federal conservation authorities to use these biodiversity metrics to rationalize conservation-focused decision-making.

7. Conclusive Remarks

We advocate for watershed-scale delineation of variable-width riparian buffers with multiple conservation and management objectives in place of conventional reach-scale, uniform-width approaches. Watershed-wide riparian conservation should draw from a robust ecological knowledge base and conform to the dynamics of riparian-zone ecosystem structure and functions, especially with respect to life and natural histories of local and regional species. Herein, we stress the need to protect diverse arrays of habitats lentic, lotic, and wetland systems as well as floodplains and upland environments—to preserve landscape-scale heterogeneity, thereby configuring and enhancing connectivity. Riparian buffers are cornerstones for landscape-scale conservation planning and pave a pathway for not only riverscape conservation but also for freshwater protected-area networks. The incongruity between freshwater versus terrestrial protected areas has frequently emerged as a significant conservation challenge, yet little action has been taken to remedy this problem. Riparian buffers define an ecologically meaningful nexus between both stream channels and terrestrial environments, protect and buffer core aquatic habitats, and provide critical resources for biota along the aquatic-terrestrial continuum. Hence, riparian-buffer conservation and management, particularly when implemented at the watershed scale, may have the potential to harmonize disparate conservation goals pertinent to freshwater and terrestrial protected areas.

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Extensive scientific research documents that vegetated strips of land along waterways provide extensive water quality and other environmental and economic benefits.

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Introduction

Scientific research clearly documents that riparian buffers, *particularly forested buffers and those along headwater streams*, deliver tremendous benefits. Through the interaction of their soils, hydrology, and biotic communities, riparian buffers serve many important physical, biological, and ecological functions (Klapproth, 2009).

Definition

Riparian buffers are the lands and assemblages of plants bordering rivers, streams, bays and other waterways. They directly affect and are directly impacted by the aquatic environment. Buffers have high levels of soil moisture, experience frequent flooding, and are populated by plant and animal communities that are adapted to life along the water. The boundary between the buffer and adjoining uplands is gradual and may not be well defined (Klapproth, 2009).

Degradation

The USDA Forest Service estimates that over one-third of the rivers and streams in Pennsylvania have had their riparian buffers degraded or altered, a sobering statistic when the value of their functions is considered (DEP, 2006).

Benefits

Scientific research clearly documents that riparian buffers, *particularly forested buffers and those along headwater streams*, deliver tremendous economic, ecological and other benefits. Among these benefits, riparian buffers:

- protect the quality of the water we drink;
- intercept <u>non-point source</u> pollutants carried by surface water runoff and remove the excess nitrogen, phosphorus and other substances that can pollute water bodies;
- stabilize stream banks and minimize erosion;
- decrease the frequency and intensity of flooding and low stream flows;
- prevent sedimentation of waterways;
- through shading, reduce swings in stream temperatures and prevent elevated temperatures harmful to aquatic life;
- provide food and habitat for wildlife of the land, water and air and allow for wildlife movement within natural corridors; and
- replenish groundwater and protect associated wetlands.

Width

The width needed for a riparian buffer to be effective depends on a number of factors, but, in general, the wider the buffer, the greater the benefits delivered.

Forested Versus Grass Buffers

Forested riparian buffers provide substantially more and better ecosystem services than grass buffers (Burgess, 2004). The roots of herbaceous and woody plants



strengthen the stream bank and prevent stream bank erosion. Roots and downed trees slow the flow of stormwater and form a physical barrier to the stream or river, which allows sediment to settle out and be trapped. The forest canopy shades water, moderating water temperature. The plants are an important source of woody material in streams, which provides habitat and food for aquatic wildlife. They also provide quality habitat and food for terrestrial wildlife. These services are discussed in detail below.

Headwaters

As described in the Headwater Streams section below, research demonstrates that healthy riparian buffers along headwaters streams, both perennial and intermittent, deliver exceptionally high ecological value.

Buffer Functions

The following sections highlight key ecosystem services delivered by riparian buffers:

- reducing erosion;
- filtering sediment;
- filtering pollution;
- providing shade to moderate water temperatures;
- providing habitat; and
- storing water and reducing flooding.

Reduce Erosion

Riparian buffers reduce erosion, which both conserves topsoil and lessens the amount of sediment in streams and rivers. A buffer's roots of herbaceous and woody plants strengthen the stream bank by going through the topsoil and into a stream bank's weathered or fractured bedrock and other more stable strata. This increases the stream bank cohesiveness and adds a tensile strength that can resist shear stresses on stream bank soil (Castelle, 2000).

Filter Sediments

Riparian buffers filter sediment from stormwater runoff, reducing the amount of sediment in streams and rivers. Tree roots and downed trees slow the flow of surface water and form a physical barrier, which allows sediment to settle out and be trapped. Several studies have shown the effectiveness of riparian buffers in filtering sediment, including:

- In Blacksburg, VA, when 9.1m and 4.6m wide orchard grass buffers were exposed to shallow, uniform waterflow, they removed an average of 84% and 70% of incoming suspended solids respectively (Dillaha, Renea, Mostaghimi, & Lee, 1989).
- Over a 100-year period (1880-1979), a riparian zone of a coastal plain agricultural watershed in Georgia accumulated an estimated 190,667 to 283,276 pounds of sediment per acre per year (Lowrance, Sharpe, & Sheridan, 1986).
- In North Carolina, the movement of runoff was measured through two types of riparian buffers: a grass buffer and a buffer composed of grass, weeds and small shrubs that became an area with hardwood trees. The buffers reduced sediment load in the runoff by 60% to 90%. The effectiveness of the filters varied with the erosiveness of the watershed and storm intensity (Daniels, 1996).

Filter Pollutants

Filter Sediment, Trap Pollutants

Filtration of sediment is also important for removing chemical pollutants that bind to sediment. For example, excess phosphorus binds to soil and is found primarily in the top few inches of the soil, which are very susceptible to erosion. Trapping sediments is the most effective way to reduce non-point source pollution (Bongard, 2009).

Vegetation Removes Pollutants

Riparian vegetation removes metals, nutrients, and other chemicals from runoff via plant uptake and by facilitating bacterial degradation of the pollutants (Castelle & Johnson, 2000). Although narrow buffers can generally remove sediment in runoff, wide buffers are needed for effective nutrient removal (Dabney, Moore, & Locke, 2006).

The removal of nitrogen, a major pollutant of many watersheds, from runoff occurs almost exclusively in watersaturated zones where abundant organic matter is present. Bacteria in the buffer use nitrogen as an energy source, converting it to gas. Plant roots also absorb nitrogen in groundwater and use it for plant growth. Buffers act as a nitrogen sink when it is taken up by trees and stored in their biomass.

Multiple studies have shown that buffers are effective in removing pollutants from water:

• A study of 16 streams in eastern Pennsylvania found that forested streams were far more efficient at re-

moving key pollutants from water than non-forested streams. In the case of nitrogen pollution, 200-800 times more nitrogen reached the stream in the nonforested segments than reached the stream in the forested segments (Chesapeake Bay Foundation, n.d.).

- In Coastal Plain, Georgia, researchers measured agricultural runoff through a 38-meter riparian buffer. The riparian buffer lowered the concentrations of atrazine and alachor by a factor of 20. Atrazine and alachor are both commonly used herbicides. Atrazine is among the most common contaminants in American reservoirs and other sources of drinking water (Duhigg, 2009).
- The degradation of the herbicide metachlor before it reaches water bodies is given extra importance because it does not readily break down in aquatic environments. It is, however, metabolized in the soil by microorganisms. It reaches water bodies by soil leaching and surface runoff. In Mississippi, the halflife of the herbicide metachlor was 10 days in a vegetated buffer as compared to 23 days in an adjacent bare field. This was likely due to a higher level of organic matter and microbial activity in the riparian strip. The enhanced degradation of metachlor in buffers may limit how much reaches water bodies (Staddon, Locke, & Zablotowicz, 2001).
- In northern Baltimore County, MD, Minebank Run flows past residential areas, corporate offices, the Baltimore beltway, a high school, and a county park before reaching the Gunpowder River. For decades, heavy volumes of stormwater running off of impervious surfaces, like roads, rooftops and parking lots, have impacted the stream. Restoration efforts included widening the riparian buffer with over 3,000 new trees and 6,000 shrubs. The restoration work, which affected nearly 3.5 stream miles, prevents up to 50,000 pounds of sediment from entering the stream annually and reduces the stream nitrogen levels by 25-50% (Lutz, 2006).

Cool Streams and Moderate Temperature Swings

The trees of riparian buffers shade the water, moderating water temperature. Temperature is a critical influence in aquatic ecosystems, affecting both the physical and biological characteristics of the stream. Changes in temperature can decrease stream biodiversity and impede animal growth. Increases in summer temperatures can increase the susceptibility of fish to pathogens; decrease food availability; alter the feeding activity and body metabolism of fish; inhibit spawning, and block spawning runs into streams (Castelle and Johnson, 2000). At the same time higher stream temperatures reduce the amount of dissolved oxygen in water; they also increase the metabolic rate of aquatic animals, increasing their oxygen needs.

In small streams, the presence of a forest canopy greatly affects the intensity of light reaching the surface of the stream. Depending on the season, light intensity in a shaded area of a stream can be 30 to 60% less than that of an exposed area (Sweeney, 1992). By limiting the amount of solar radiation that can reach a stream, trees limit both the daily fluctuations in stream temperature and the maximum stream temperatures reached (Bongard, 2009). A British Columbia study found that streams without buffers have temperatures up to 1-2 °C higher than those with buffers (Rayne, Henderson, Gill, & Forest, 2008). A study from Washington State found that non-buffered streams have maximum temperatures 2.4 °C higher than those with buffers (Pollock, Beechie, Liermann, & Bigley, 2009). In Oregon, studies of stream temperatures following the removal of riparian vegetation found that maximum stream temperatures both increased by 7 °C and occurred earlier in the summer. (Shifts in the timing of maximum temperatures, with greater increases in early summer stream temperatures, can impact sensitive stages of aquatic animals.)

Water Temperature and Chemical Toxicity

Increased water temperature increases the toxicity of many chemicals, such as ammonia. Ammonia is an inorganic form of nitrogen. It is present in water in two forms, un-ionized (NH3), which has a relatively high toxicity, and ionized (NH4+), which has a relatively negligible toxicity. As water temperatures increase, more of the ammonia is converted to the toxic un-ionized ammonia form (EPA, 1995). Polluted runoff is a large source of ammonia and nitrogen to streams (EPA, 1995). When riparian buffers are not preserved, both their ability to remove nitrogen from runoff and their ability to maintain lower water temperatures and prevent it from converting to its unionized ammonia form are lost.

Provide Habitat

Aquatic Habitat

Large woody debris is an essential part of stream life. It provides fish habitat and changes the stream's physical condition. Organic matter from riparian buffers, such as



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leaves, twigs, logs and stems that fall from the buffer into the water are a main source of food for aquatic macroinvertebrates. Aquatic macroinvertebrates are animals without a backbone, are visible with the naked eye and spend all or part of their life in the water. These animals, which include worms, mollusks, insects and crustaceans, consume the wood and the biofilms (bacteria, fungi, and algae) that form on it (Pitt & Batzer, 2011), serving as a vital link in the food web between the producers (e.g. leaves, algae) and higher consumers, such as fish.

The wood from buffers also traps additional leaf litter and wood. Macroinvertebrates use the wood as habitat, living inside the wood, under residual bark, and on surfaces that protrude out of the water. Some insects use the protruding surfaces as sites to emerge into adults or to lay eggs (Pitt & Batzer, 2011). A study of 16 streams in eastern Pennsylvania found that forested stream segments have over six times the amount of large woody debris than do grass buffered streams, even though two-thirds of the grass buffered streams were immediately downstream of forested areas (Sweeney, 1992)

Forested riparian buffers are also essential for maintaining stream and river bottom habitat. Most of the biological activity in stream ecosystems takes place on inorganic (sand, gravel, cobble, etc.) and organic (leaves, woody debris, etc.) materials on stream bottoms. Networks of tree roots, the organic debris from buffers and the variety of sizes of cobble and gravel these trap can increase the overall size of bottom habitat more than a thousand times when compared to a bare mineral soil bottom in a grassbuffered stream (Sweeney, 1992). In addition, where riparian buffers have been deforested, streams are narrower because of encroachment by herbaceous plants, mostly grasses, that would have been shaded out under forest cover, causing an additional loss of river bottom habitat (Sweeney, 1992).

Deforestation of a section of a riparian buffer can change stream bottom habitat and influence biodiversity, even if the deforested section is still vegetated. In southern Appalachia, 12 streams with deforested, but vegetated, buffers were studied. The deforested sections were up to 5.3 km long. The stream segments studied were all downslope of watersheds with at least 95% forest cover. As the length of deforested sections increased, habitat diversity decreased and riffles became filled with fine sediments (Jones, Helfman, Harper, & Bolstadt, 1999). As the length of the nonforested segments increased, overall fish abundance decreased, though the number of non-native species increased. Even in heavily forested areas, clearing a 1-3 km stretch of forested buffer was found to have substantial impacts on fish assemblages (Jones, Helfman, Harper, & Bolstadt, 1999).

Terrestrial Habitat

A broad range of mammals, birds, reptiles and amphibians rely on riparian buffers for habitat. Riparian buffers are core habitat for many semi-aquatic and terrestrial <u>ecotone</u> species, such as salamanders, frogs, turtles, minks, beavers and otters, and these species require a buffer that is both long and wide. Long stretches of riparian buffer also serve as wildlife travel corridors. Many birds, such as herons, fishers, eagles, and ospreys, as well as some mammals, rely on forested buffers for both habitat and resting places. These birds hunt for fish in the water and nest in adjacent forests.

For buffers to provide adequate habitat for forest dependent songbirds, they must be wide. Several studies have shown that bird species richness increases in buffers that are at least 100 meters wide and that the presence of forest dependent songbirds decreases dramatically when buffers are less than 50 meters (Bongard, 2009). For more information on the importance of protecting species richness, see the guide <u>Biodiversity</u>.

Store Water and Reduce Flooding

Riparian buffers, especially forested buffers, absorb rainwater, which recharges ground water supplies and allows storm runoff to be released more slowly. This reduces the intensity and frequency of flooding as well as allows for more water flow in streams during dry periods.

Minimum Buffer Width Needed

The minimum width needed for an effective riparian buffer depends on the function you want the buffer to serve. For example, sediment can be physically filtered out of stormwater faster than dissolved nitrogen, which requires bacterial transformation to remove it. Thus, a narrower buffer would be needed to remove sediment than that needed to remove dissolved nitrogen. Scientific studies have shown that efficient buffer widths range from 10 feet for bank stabilization and stream shading to over 300 feet for wildlife habitat. (Hawes & Smith, 2005). Necessary widths will also vary depending on site conditions, such as soil type, slope and adjacent land use and other factors. (Hawes & Smith, 2005) In *Riparian Buffer Zones: Functions and Recommended Widths* (Hawes and Smith, 2005), the authors summarize the results of scientific studies, identifying the buffer widths needed for a buffer to effectively serve particular functions; they report the following ranges:

Erosion/sediment control	30 feet to 98 feet			
Water quality:				
Nutrients	49 feet to 164 feet			
Pesticides	49 feet to 328 feet			
Biocontaminants	30 feet or more			
(e.g. fecal matter)				
Aquatic habitat:				
Wildlife	33 feet to 164 feet			
Litter/debris	50 feet to 100 feet			
Temperature	30 feet to 230 feet			

Regarding terrestrial habitat, research suggests a range of 30 to 1,640 feet. However, because the habitat needs for terrestrial wildlife vary widely, the authors do not believe it is feasible to capture the needs of all species with a uniform buffer size. They recommend reviewing information about specific animals in the targeted area as well as land conservation work at adjacent and nearby lands.

Headwater Streams

Definition

Headwater streams are the smaller tributaries that carry water from the upper reaches of the watershed to the main channel of the river. They are rarely named and are often so small that it takes little effort to jump across them. While there is no universally accepted definition of headwaters, they are often defined as first and second order streams. A stream with no tributaries, recurring or perennial, is a first order stream. When two first-order streams come together, they form a second-order stream. The Stroud Research Center defines headwaters as "tributary streams, intermittent streams, and spring seeps" (Kaplan, Bott, Jackson, Newbold, & Sweeney, 2008).

Ubiquity and Vulnerability

Headwaters represent 50-70% of the total stream miles in the U.S. (Fritz, Johnson, & Walters, 2008). Nearly everyone in the United States has a headwater stream within a mile or two of their home, leaving headwaters close to human activities such as urbanization, dams and diversions, water withdrawals, point and non-point source pollution, deforestation, and agriculture (River Keeper, 2005). The small size of headwater streams, along with their integration into the landscape, makes them highly vulnerable to degradation (Kaplan et al., 2008).

Headwater streams are not as resilient as larger streams because they lack sufficient water flow to transport and dilute sediment and pollution (Kaplan et al., 2008). Forested buffers are needed to remove pollutants from stormwater before they reach the stream. The aquatic wildlife of headwaters are usually coldwater adapted (Kaplan et al., 2008), and therefore rely on the temperature moderation effects of riparian trees. Riparian buffers are essential to the provision of food for both the headwaters themselves, and the resulting downstream food web. Riparian vegetation provides up to 90% of the organic matter (food) necessary to support headwater stream communities (Cummins & Spengler, 1978).

Essential to the Health of Water Ecosystems

Water quality, biodiversity, and ecological health of freshwater systems depend on the ecosystem services of healthy headwater streams (Kaplan et al., 2008). According to Lowe and Likens (2005),

There is no doubt that it is important to safeguard lowland sites, but it is difficult to see how any conservation action with a goal of protecting the longterm ecological integrity and ecosystem services of natural systems, whether aquatic or terrestrial, can succeed without a foundation of intact and functional headwaters.

Headwaters are the source of much of the water, gravel, wood, and nutrients that flow through the stream network and eventually to the ocean (USDA, 2008). Headwaters can help to keep sediment and pollutants out of the stream system's lower reaches. (Kaplan et al., 2008).

Recycling organic carbon contained in the bodies of dead plants and animals is a crucial ecosystem service and is the basis for every food web on the planet (Meyer et al., 2003). In freshwater ecosystems, much of this recycling happens in small streams and wetlands (Meyer et al., 2003). This recycling process makes nutrients more biologically available to organisms downstream (Meyer et al., 2003). Headwater streams have been found to be significantly more efficient at breaking down the larger organic materials of dead plant and animals into nutrients usable to small animals, such as mayflies and caddis flies. The nutrients then work their way through the food web into larger animals downstream such as trout and birds. The processing of organic carbon in headwaters also prevents



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large amounts of organic material from being taken downstream, where the decomposition of large quantities could deplete dissolved oxygen levels and kill or harm aquatic life (Meyer et al., 2003).

Owing to favorable microclimate and availability of water, headwaters provide habitat for distinct assemblages of plants and animals (USDA, 2008). Hydrological conditions of many headwaters, which include running seasonally and drying out in the summer, periodically flowing underground, and frequent cascades and obstacles, lead to a lack of fish, which provides habitat that many amphibians can thrive in. Headwaters act as <u>refugia</u> for riverine species during specific life-history stages and critical periods of the year, such as warm summer months (Lowe & Likens, 2005).

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Related Resources at ConservationTools.org

Library Categories

Riparian Buffer

Riparian Buffer Protection Ordinances

Water Quality

Featured Library Items <u>Model Riparian Buffer Protection Overlay District</u>

Model Riparian Buffer Protection Agreement

Related Guides

Impacts of Natural Land Loss on Water Quality

Riparian Buffer Protection Via Local Regulation

Riparian Buffer Protection Agreement

<u>A Scientific Foundation for Shaping Riparian Buffer Protection</u> <u>Regulations</u>

Experts

<u>Wesley R. Horner</u>, Senior Advisor for Water Resources, Brandywine Conservancy <u>Bernard W. Sweeney, Ph.D.</u>, President, Director, Senior Research Scientist, Stroud Water Research Center

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Submit Comments and Suggestions

The Pennsylvania Land Trust Association would like to know your thoughts about this guide: Do any subjects need clarification or expansion? Other concerns? Please contact Andy Loza at 717-230-8560 or <u>aloza@conserveland.org</u> with your thoughts. Thank you.

Acknowledgements

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Colcom Foundation

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The Science Behind the Need for Riparian Buffer Protection

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AGENDA ITEM REPORT

Ordinance 22-42(S-3) and Representative Development Agreement

ltem Type:	Informational Item
Prepared For:	Planning Commission
Meeting Date:	15 Feb 2023
Staff Contact:	Rick Abboud

Introduction

The Chair requested to have the 'sidewalk ordinance' in a report. Since the issue of reconsideration has not been moved on, I am including an examination of the item in a separate staff report. I have also included documents used in a development agreement execution to demonstrate our process of developing and accepting required improvements.

Analysis

At the last meeting, I included a report on the role of the Commission in regards to providing comments to the borough on preliminary plats. As part of the preliminary plat process, we review requirements for the development of non-motorized transportation elements. These elements are to be constructed as part of the subdivision agreement required and administered by the Public Works Department. The buildout of improvements is an administrative process that incorporates the requirements found in title 11 and the other applicable documents such as, the Design Criteria Manual for Streets and Storm Drainage and/or the Trail Design Criteria Manual.

As part of the last review, I included the recommendation by Public Works for non-motorized elements to be included in the subdivision agreement. These improvements were endorsed and even came at the suggestion of the developer. Public Works has discussed these improvements with the developer and believes that they will fit within the proposed dedication and are appropriate. No objection was made by the developer at the meeting. I fully expect the developer to construct a walking path adjacent to the right-of-way (ROW) in accordance with the standards of the Trail Design Criteria Manual. If the developer does not construct the improvements and pass Public Works inspection, they will not gain approval of the final plat.

The ordinance incorporates the measures to determine the applicability of non-motorized transportation elements. Section 22.10.050, line 107 requires the applicant to incorporate and construct "applicable means for non-motorized transportation" (line 118). Title 11 was amended to include "non-motorized routes required" (line 45). These are the standards that Public Works uses to make recommendations for facilities. Sidewalks are required outright in the Central Business, Urban Residential, and Residential Office Districts. When the subdivision is located outside of these districts

Agenda Item Report Planning Commission February 15, 2023

the other elements cited will be considered for applicability. This was the case for the Forest Trails Subdivision, which is located in the Rural Residential District.

Perhaps there was some confusion as to the process and requirements for development of nonmotorized elements. A sidewalk or pathway may be incorporated into the space dedicated for the ROW. I have never seen a plat note for a sidewalk or pedestrian path in a ROW and there should be no need, as the ROW and subdivision will not be accepted if it is not developed or guaranteed prior to final plat. We could better document more details of the requirement as part of the staff report (adopted by the Commission) and include more pointed comments to the borough (although we do identify when a development agreement is required in the staff report). A plat note would not be appropriate for a final plat, as it would technically never make it there if the improvements were not accepted. In the worst case scenario, the plat would 'die' after the extensions from the borough were exhausted and the lot would remain as subdivided prior to platting.

Included in the attachments is an executed subdivision agreement to provide an example of the process. This is the process Public Works uses for the applicant to gain acceptance of the required improvements. Once the improvements are accepted, the applicant may gain a final plat. After the final plat is recorded, we can accept zoning permit applications for the development of the new lots.

Attachments:

ord 22-42s-3 signed Barnett's South Slope Sub Quiet Creek Park Unit 3 Final for KPB Review 20201104 Conditional Final Acceptance - signed Final Acceptance - Barnett's South Slope Subdivision - Quiet Creek Park -Phase III.docx - signed Cert of Compliance Phase three - signed Quiet Creek (Phase III) Construction Agreement - fully executed

		Page 3 of 23
1 2	CITY OF HOMER HOMER, ALASKA	
3 4	OPDINANCE 22-42(S-3)	Davis/Erickson
5	ORDINANCE 22-42(3-3)	
6	AN ORDINANCE OF THE CITY OF HOMER ALASKA AMENDIN	IG
7	HOMER CITY CODE SECTIONS 11.04.120, 22.10.050 AND 22.10.0	51
8	TO SPECIFY WHEN NEW STREETS ARE REQUIRED TO PROVID	DE
9	FOR NON-MOTORIZED TRANSPORTATION.	
10		
11	WHEREAS, The Homer Non-Motorized Trails and Transportation Plan	n states that "All
12	new road construction projects will include facilities designed for non-motorized	transportation,"
13	which "may include slaewalks, safe crossings, separated/shared pathways, wi	ae outsiae lanes,
14	pavea shoulders and scriped, signed bikeways , and	
16	WHEREAS. The City of Homer has not been consistently requiring po	edestrian access
17	when new streets are being approved, in part because city code as currently f	ormulated, does
18	not clearly require sidewalks, but rather only easements for sidewalks, and e	ven then only on
19	certain streets specified in a long-outdated map; and	
20		
21	WHEREAS, Numerous new roads have been built in town in the past s	everal years that
22	lack any type of non-motorized transportation facility; and	
23	WUEDEAC, the City Council desires to implement its surrent as	in, declarations
24	whereas, the City Council desires to implement its current pol	and
26	regarding standards for non-motorized transportation in new developments,	anu
27	WHEREAS. The City is in the process of updating the Master Transport	ation Plan and a
28	Non-Motorized Transportation Plan, which will address standards regarding	non-motorized
29	transportation in new developments more comprehensively; and	
30		
31	WHEREAS, Any new standards will not be applied retroactively to the	projects already
32	approved by the City of Homer; and	
33		
34	NOW, THEREFORE, THE CITY OF HOMER ORDAINS:	
35		
30	Section 1. HCC 11.04.120 Sidewalks and non-motorized transportation	i corridors is
38	nereby amended to read as follows:	
39	11.04.120 Sidewalks and non-motorized transportation corridors.	
40		

a. **Purpose.** The purpose of this section is to enhance public safety, convenience and mobility 41 42 through the development of non-motorized transportation routes for access to places of public assembly, recreational, cultural, civic, educational and business activities. 43 44 45 b. Non-motorized routes required. A new street to be accepted by the City for maintenance shall be required to include dedicated facilities, within the property over which the street will 46 traverse and at the developer's cost, for non-motorized transportation, such as a sidewalk, 47 path or trail, unless specifically exempted, where any of the following conditions exist: 48 49 There is an existing non-motorized transportation facility on an adjacent 1. 50 property, ROW or easement that could be extended to, and along, the new street. The new street connects to, or comes within 100 linear feet, of an existing 51 2. destination, which provides recreational, cultural, civic, educational services or 52 53 business activities. 54 3. The Homer 1986 Master Streets & Roads Plan, the 2005 Homer Non-Motorized Trails and Transportation Plan (NMTTP), or the City of Homer Non-Motorized 55 Transportation and Trails 2022 Implementation Plan (2022 TIP), shows a non-56 motorized route connected to, or along, the new street. 57 The new street lies within an Area of Interest, as shown in the 2022 TIP or its 58 4. 59 successor documents. 60 The new street lies within the Central Business District, Urban Residential Zone 6. or Residential Office District. 61 62 c. **Exceptions.** Exceptions to the requirements of this Chapter may be approved by the City 63 Manager or designee for good cause shown including, but not limited to, the following 64 circumstances: 65 66 67 1. The topography or other pre-existing physical conditions do not allow a nonmotorized transportation route to be constructed per the Homer Design Criteria Manual, if a 68 69 sidewalk, or the Homer Trails Design Manual, if a path or trail. 70 2. A means of non-motorized transportation is not warranted because: 71 There is no route for non-motorized transportation that would connect a. to any recreational, cultural, civic, educational services or business activities. 72 The existing and projected population density, for the property through 73 b. 74 which the new street will traverse is, pursuant to the most recent version of the Homer 75 Comprehensive Plan, lower than the population densities projected for the Central Business District, Urban Residential Zone or Residential Office District. 76 77 3. No alternative non-motorized transportation route is possible. 78 d. Drainage or Utility Easements. Non-motorized transportation routes may be installed in 79 utility or drainage easements, so long as the Public Works Director determines that sufficient 80 81 space, topography and other physical conditions allow for joint use.

Page 3 of 5 ORDINANCE 22-42(S-3) CITY OF HOMER

82

83 e. **Design/Construction Standards.** Any non-motorized facility developed under this Chapter 84 shall be designed and constructed in accordance with the Trail Level Design Parameters, set 85 forth in the current version of the City of Homer Trail Manual – Design Criteria and constructed in accordance with the applicable provisions of the current version of the City of Homer 86 Construction Standards. The Trail Level shall be (i) appropriate for the site-specific 87 88 application, considering the nature of the destinations that will be connected by the route, 89 expected usage, topography, drainage, and maintenance, and (ii) subject to the City's 90 approval.

91

92 f. Betterments. In the event the City desires to provide a non-motorized facility to a design or
93 construction standard that goes beyond what the developer is required to provide, the City will
94 reimburse the developer for the actual, documented cost of the upgrade.

95

g. Developer's Option. In the event a developer is not required to provide non-motorized
facilities but choses to do so anyway, the City will accept the non-motorized facilities for
maintenance, when the new street is accepted, so long as the non-motorized facilities are
designed and built in accordance with the City standards.

100

h. Liberal construction. The provisions of this chapter shall be construed liberally so as topromote its purpose.

103

106

108

Section 2. Homer City Code Section 22.10.050 Improvement requirements is herebyamended as follows:

- 107 22.10.050 Improvement requirements General.
- a. The Kenai Peninsula Borough shall not release any final plat for a subdivision in the City for
 filing at the State Recorder's office until the subdivider or developer of the subdivision either
 enters a subdivision agreement for, or constructs and obtains written City approval of, the
 following improvements, according to the standards and procedures required under HCC Title
 11:
- 1151. Streets in all rights-of-way dedicated by the plat;1162. All other utilities and public improvements to be constructed in the rights-of-way and117easements dedicated by the plat, including water, sewer, electric, communications,118and gas lines, and applicable means for non-motorized transportation; and

3. Abandonment or relocation of existing water or sewer service lines required due to
 conflict with new or relocated property lines, as required by the Public Works
 Department.

- b. The Commission may exempt a plat from the provisions of subsection (a) of this section asprovided in HCC 22.10.040.
- 125

122

126 c. The subdivider shall be required to dedicate street rights-of-way according to the standards 127 and specifications of Chapter 11.04 HCC and the City of Homer Design Criteria Manual. The 128 subdivider shall be required to dedicate ROW or easements required to support non-motorized 129 transportation facilities required by HCC 11.04.120. Beyond a minimum of 60 feet, the 130 subdivider may agree to a note attached to said subdivision plat providing sufficient setback 131 to allow future expansion of the right-of-way without removal of improvements. Horizontal 132 alignments are subject to City review; the City may require realignment of streets on proposed 133 plats if the alignments do not conform to Chapter 11.04 HCC and the Design Criteria Manual. 134 Final plat approval shall thus be subject to the approval of horizontal alignments by the City 135 Public Works Engineer.

136

d. All street, utility main improvements and means for non-motorized transportation to be
constructed as part of a subdivision agreement shall be constructed according to the
procedures of Chapter 11.20 HCC. The City shall accept no such improvements unless a
subdivision agreement is executed prior to construction of such improvements.

141

e. All streets constructed as part of a subdivision improvement project shall be monumentedaccording to the procedures of Chapter 11.20 HCC (HCC 11.20.090(d)).

144

145 Section 3. Homer City Code Section 22.10.051 Easements and rights-of-way is hereby146 amended as follows:

147

148 22.10.051 Easements and rights-of-way.

149

a. The subdivider shall dedicate in each lot of a new subdivision a 15-foot-wide utility easement
 immediately adjacent to the entire length of the boundary between the lot and each existing
 or proposed street right-of-way.

153

b. The subdivider shall dedicate in each lot of a new subdivision any water and/or sewer
easements that are needed for future water and sewer mains shown on the official
Water/Sewer Master Plan approved by the Council.

157

c. The subdivider shall dedicate easements or rights-of-way for sidewalks, bicycle paths orother non-motorized transportation facilities required by HCC 11.04.120.

160

d. The City Council may accept the dedication of easements or rights-of-way for non-motorized
 transportation facilities that are not required by subsection (c) of this section, if the City
 Council determines that accepting the dedication would be consistent with the adopted plans
 of the City.

166 Section 4. This ordinance is of a permanent and general character and shall be included 167 in the City Code.

ENACTED BY THE CITY COUNCIL OF HOMER, ALASKA, this 14th day of November, 2022.

CITY OF HOMER

KEN CASTNER, MAYOR

177 ATTEST:

178 179

180

176

168 169

170 171

MELISSA JACOBSEN, MMC, CITY CLERK

181 182

- 183 YES: 5
- 184 NO: D
- 185 ABSTAIN:
- 186 ABSENT: L
- 187
- 188 First Reading: 10.24.22
- 189 Public Reading: \\-\u.zz
- 190 Second Reading: 11.14.22
- 191 Effective Date: 11.15.22



NOTES

1. BASIS OF BEARING FOR THIS SURVEY IS FROM THE PLAT OF BARNETT'S SOUTH SLOPE SUBDIVISION QUIET CREEK PARK UNIT 2 (HM 2018-40).

2. ALL LOTS WITHIN THIS SUBDIVISION ARE SUBJECT TO CITY OF HOMER ZONING REGULATIONS. REFER TO THE HOMER CITY CODE FOR ALL CURRENT SETBACK AND SITE DEVELOPMENT RESTRICTIONS. OWNERS SHOULD CHECK WITH THE CITY OF HOMER PLANNING DEPARTMENT PRIOR TO DEVELOPMENT ACTIVITIES.

3. THE FRONT 15 FEET ALONG RIGHTS-OF-WAY AND THE FRONT 20 FEET WITHIN SIDE LOT LINES IS A UTILITY EASEMENT, NO PERMANENT STRUCTURES SHALL BE CONSTRUCTED OR PLACED WITHIN A UTILITY EASEMENT WHICH WOULD INTERFERE WITH THE ABILITY OF A UTILITY TO USE THE EASEMENT.

4. THESE LOTS ARE SERVED BY CITY OF HOMER WATER AND SEWER.

5. NO STRUCTURES ARE PERMITTED WITHIN THE PANHANDLE PORTION OF THE FLAG LOTS. THERE ARE LIMITATIONS ON FUTURE SUBDIVISION OF THESE LOTS DUE TO ISSUES REGARDING ACCESS, DEVELOPMENT TRENDS IN THE AREA, AND TOPOGRAPHY FOR FLAG LOTS 7, 8, 57, 60 AND 64.

6. THERE IS A 15 FOOT WIDE NATURAL GAS EASEMENT CENTERED ON THE NATURAL GAS PIPELINES INSTALLED UNDER, OVER, UPON AND THROUGH THIS SUBDIVISION GRANTED TO ENSTAR NATURAL GAS COMPANY RECORDED JUNE 7, 2018 (HM 2018-001611-0). A PORTION OF THE GAS LINES HAVE NOT BEEN INSTALLED AS OF THE RECORDING OF THIS PLAT.

7. THESE LOTS ARE AFFECTED BY EASEMENTS OF RECORD WITH NO DEFINED LOCATION GRANTED TO HOMER ELECTRIC ASSOCIATION (BK 318, PG 927 HRD, BK 48, PG, 77 HRD AND BK 90, PG 166 HRD).

8. TRACTS A AND B ARE PUBLIC AREA "NATURE RESERVES" GRANTED THIS PLAT TO THE CITY OF HOMER.

9. THERE ARE 20 FOOT WIDE DRAINAGE EASEMENTS CENTERED ALONG THE EXISTING CREEKS, GRANTED PER PLAT 2018-40, HOMER RECORDING DISTRICT. THE EXISTING DRAINAGE EASEMENTS ARE SUBJECT TO HOMER CITY CODE. APPROXIMATE LOCATIONS ARE SHOWN.

10. PROPERTY OWNERS SHOULD CONTACT THE ARMY CORPS OF ENGINEERS PRIOR TO ANY ON-SITE DEVELOPMENT OR CONSTRUCTION ACTIVITY TO OBTAIN THE MOST CURRENT WETLANDS DESIGNATION (IF ANY).

11. DRAINAGE SUBJECT TO PREVIOUS SEASONAL INUNDATIONS: UPHILL DEVELOPMENT MAY CHANGE DRAINAGE PATTERNS AT ANY TIME.

12. ALL WASTEWATER DISPOSAL SYSTEMS SHALL COMPLY WITH EXISTING APPLICABLE LAWS AT THE TIME OF CONSTRUCTION.

13. EXCEPTIONS WERE GRANTED TO KPB 20.20.030 (PROPOSED STREET LAYOUT REQUIREMENTS) AND 20.20.120 (STREET CURVE REQUIREMENTS) BY THE KENAI PENINSULA BOROUGH PLAT COMMITTEE AT THE MEETING OF MARCH 10, 2014.

14. THERE IS A 30 FOOT WIDE PUBLIC WATER LINE EASEMENT GRANTED BY PLAT 2018-40 HOMER RECORDING DISTRICT TO THE CITY OF HOMER. THE EASEMENT IS THE 30 FEET SOUTH OF THE CENTERLINE OF NELSON AVENUE.

LINE TABLE

	DEARING	DISTANCE
L1	S 42°21'05" W	145.27 '
L2	S 20°16'08"E	86.45'
L3	S 19°26'00" W	139.78'
L4	S 12°27'55" W	92.97'
L5	S 75°44'04" E	63.13'
L6	S 83°12'56" E	156.06'
L7	S 50°46'46"E	174.02'
L8	S 3°46'02"W	65.42 '
L9	N 34°42'07" W	76.82 '
L10	N 17°20'57"E	150.00'
L11	N 17°20'57"E	172.13'
L12	N 17°20'57"E	150.00'
L13	N 71°26'58" W	87.15 '
L14	N 11°22'35"W	88.76'
L15	N 62°33'10" E	37.64'
L16	N 16°06'16" W	39.66'
L17	N 0°15'00"W	63.63'
L18	N 27°01'07" W	92.49'
L19	N 0°11'38"W	86.48'
L20	N 32°15'00"W	11.09'
L21	N 32°15'00"W	11.09'
L22	N 39°21'07"E	54.17 '
L23	N 39°21'07"E	9.22'
L24	N 39°21'07"E	9.22'
L25	N 32°15'00"W	11.09'
L26	N 85°23'57"W	73.98 '
L27	S 16°18'24" E	61.66'
L28	S 79°50'53" W	14.10'
L29	N 6°29'13" W	60.12'
L30	N 79°50'53" E	10.26'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	CHORD BRNG	CHORD DIST
C1	98.02,11"	20.00'	34.22'	N 40°57'40" W	30.20'
C2	7°28'56"	170.00'	22.20'	S 79°28'32" E	22.18'
C3	9°20'58"	230.00'	37.53'	N 67°54'54" W	37.49'
C4	20'35'28"	230.00'	82.66'	N 52°56'41" W	82.21'
C5	10°23'57"	230.00'	41.75'	N 37°26'59" W	41.69'
C6	32°45'34"	170.00'	97.20'	N 48°37'48" W	95.88'
C7	6°45'48"	170.00'	20.07'	N 68°23'28" W	20.06'
C8	6°45'04"	170.00'	20.03'	N 75°08'54" W	20.02'
C9	11°43'34"	170.00'	34.79'	N 84°23'13" W	34.73'
C10	58°00'00"	200.00'	202.46'	N 61°15'00" W	193.92'
C11	39'36'07"	200.00'	138.24'	N 70°26'57" W	135.50'
C12	18°23'53"	200.00'	64.22'	N 41°26'57" W	63.95'
C13	33°21'24"	200.00'	116.44'	N 48°55'42" W	114.80'
C14	52°56'13"	260.31'	240.51'	N 12°53'00" E	232.04'
C15	11°47'07"	230.00'	47.31'	N 84°21'27" W	47.23'
C16	16°16'47"	230.00'	65.35'	N 70°19'30" W	65.13'
C17	78°27'47"	20.00'	27.39'	N 78°35'00" E	25.30'
C18	23°02'30"	230.31'	92.62'	N 27°49'52" E	92.00'
C19	17°52'37"	230.31'	71.86'	N 7°22'19" E	71.57'
C20	50°44'42"	20.00'	17.71'	N 26°56'20" W	17.14'
C21	92°52'51"	50.00'	81.05'	N 5°52'16" W	72.47'
C22	58°54'21"	50.00'	51.41'	N 70°01'20" E	49.17'
C23	23°41'44"	50.00'	20.68'	N 68°40'37"W	20.53'
C24	30°17'41"	50.00'	26.44'	N 41°40'55" W	26.13'
C25	62°31'34"	50.00'	54.56'	N 4°43'43" E	51.90'
C26	39°41'18"	20.00'	13.85'	N 16°08'51" E	13.58'
C27	43°02'55"	290.31'	218.12'	N 17°49'39" E	213.03'
C28	78°27'47"	20.00'	27.39'	N 0°07'13" E	25.30'
C29	6*51'40"	230.00'	27.54'	N 35°40'50" W	27.53'
C30	22.13'47"	170.00'	65.96'	N 43°21'54" W	65.54'
C31	8.14'08"	370.00'	53.18'	S 83°57'57" W	53.14'
C32	6.11'36"	430.00'	46.48'	N 82°56'40" E	46.46'







www.cityofhomer-ak.gov

Public Works 3575 Heath Street Homer, AK 99603

publicworks@cityofhomer-ak.gov (p) 907- 235-3170 (f) 907-235-3145

August 24, 2021

RE: Conditional Final Acceptance – Initiation of Warrenty Period Barnett's South Slope Subdivision Quiet Creek Park – Phase III

Dear Mr. Neal:

Based on Public Works Inspector Jean Hugues' "walk-through" of the above-referenced project on August 24, 2021, except for minor deficiencies documented in the Punch List, the improvements are Substantially Complete. Accordingly, this letter is notice of the City's Conditional Final Acceptance with an effective date of August 25, 2021.

Per our Construction Agreement, the following items must be completed before the City issues Final Acceptance. When these items are complete, I will so inform the City's Planning/Zoning Department and you may proceed with application for City permits, such as zoning, water/sewer, and driveway.

- Monumentation and As-Built Drawings: Developer shall place or replace all lot corners and monuments. Such monumentation shall be in accordance with the standards established by the City. No later than sixty (60) days after the final inspection and certification, Developer shall provide City with as-built drawings (one hard copy 11' x 17", and electronically in pdf. and AutoCad formats) for each improvement. The as-built drawings shall be stamped by a professional engineer registered under the laws of the State of Alaska, certifying the improvements, which were installed/constructed, are accurately depicted in the as-built drawings.
- <u>Certificate of Compliance</u>: The Developer shall furnish the City with a Certificate of Compliance for the work performed under this Agreement in the form prescribed by the City's Standard Specifications. Attached is the required certification form.
- 3) Installation of Non-City Owned Utilities: Based on documentation you have provided, HEA has installed electrical service to all lots and you have paid for the installation of Enstar natural gas services to all lots, with gas installation expected before freeze-up. Based on this documentation, the City agrees that each non-City-owned utility has certified that the required improvements will be installed and are acceptable.
- 4) <u>Warrenty Guaranty</u>: Per our Construction Agreement, the Developer shall warrant against any failure or defect in design, construction, material or workmanship, which is discovered no more than one year from the date the City notifies Developer of the acceptance of the improvements. The Developer will be required to provide a Warranty Guaranty in the amount of 10% of the estimated cost of the improvements. The estimated cost of the improvements is \$326,232, which means the required Warrenty Guaranty amount is \$32,623.

Also, the Developer shall pay a deposit toward the City's costs, which may be incurred during the Warranty Period in an amount determined by the Public Works Director, but not to exceed \$2,063. The amount of this deposit is determined to be \$2,000. This brings the total dollar amount, which must be provided for the Warranty Period is \$32,623 + \$2,000 = \$34,623.

We can use the existing Warranty Deed, which you put up for Phase II, as the Warranty Guaranty for Phase III. Please provide documentation of the value of the Lot 60, for the file.

5) <u>Plan Review/Inspection Deposit</u>. You provided a deposit towards the City's cost of reviewing, approving, coordinating and inspecting the improvements. Once we finalize the costs, in the next few weeks, the balance of the deposit will be returned to you.

Call me at 907-435-3141 if you have any questions regarding the close out of this project.

Yours Very Truly;

CITY OF HOMER

Jan Keiser

Janette ("Jan") Keiser, P.E. Public Works Director

Enclosures: Certificate of Compliance Form

CERTIFICATE OF COMPLIANCE

Barnett's South Slope Subdivision Quiet Creek Park – Phase III

I (we) hereby certify that all work has been performed and materials supplied in accordance with the approved plans, specifications for the above subdivision improvement work.

DATED this ____ day of August, 2021.

DEVELOPER

By:_____

Tony Neal

Title: <u>Authorized Agent</u> Echo Trading Company, LLC

۰.

Pebblicoldeorks

Homer, AK 99603



City of Homer

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publicworks@cityofhomer-ak.gov (p) 907- 235-3170 (f) 907-235-3145

August 26, 2021

RE: Final Acceptance – Initiation of Warranty Period Barnett's South Slope Subdivision Quiet Creek Park – Phase III

Dear Mr. Neal:

This letter serves notice of Final Acceptance.

Based on Public Works Inspector Jean Hughes' "walk-through" of the above-referenced project on August 24, 2021, except for minor deficiencies documented in the Punch List, the improvements are Complete. Accordingly, this letter is notice of the City's Final Acceptance. I will so inform the City's Planning/Zoning Department so you may proceed with application for City permits, such as zoning, water/sewer, and driveway.

- 1) Monumentation and As-Built Drawings: Completed.
- 2) Certificate of Compliance: Completed.
- 3) Installation of Non-City Owned Utilities: Completed.
- 4) Warranty Guaranty: Completed.

Yours Very Truly;

CITY OF HOMER

Lamette Kjinen

Janette ("Jan") Keiser, P.E. Public Works Director

CERTIFICATE OF COMPLIANCE

Barnett's South Slope Subdivision Quiet Creek Park - Phase III

I (we) hereby certify that all work has been performed and materials supplied in accordance with the approved plans, specifications for the above subdivision improvement work.

DATED this <u>day of August</u>, 2021.

DEVELOPER By: Tony Neal Title: <u>Authorized Agent Member - Manager</u> Echo Trading Company, LLC



GPI

CONSTRUCTION AGREEMENT Barnett's South Slope Subdivision Quiet Creek Park – Phase III

This Agreement made and entered into by and between the **City of Homer**, Alaska, a Municipal Corporation, hereinafter called the "City"; and **Echo Trading Company**, **LLC**, P.O. Box 3368, Homer, Alaska 99603, hereinafter called the "Developer";

WITNESSETH:

The Contractor, hereby agrees, at his own cost and expense, to do all the work and furnish all the materials, tools, labor and all appliances, machinery and appurtenances necessary for completion of the approved project all in full compliance with the Contract documents referred to herein as:

Barnett's South Slope Subdivision Quiet Creek Park (Phase III) Road, Drainage, Water, Sewer and Other Utility Improvements

- a) The City of Homer 2011 Standard Construction Specifications
- b) Work Schedule & Quality Control Plan
- c) Storm Water Pollution Prevention Plan (SWPPP)
- d) Any required Local, State and Federal regulatory and environmental permits
- e) KPB approved preliminary plat (Quiet Creek Park)
- f) Final approved road, drainage, water, and sewer drawings entitled:

Barnett's South Slope Subdivision Quiet Creek Park Sanjay Court Road, Drainage, Water and Sewer Improvements by Bishop Engineering Final Construction Plans Dated: May, 2018

which are hereby referred to and by reference made a part of the Contract as fully and completely as if the same were fully set forth herein.

In consideration of the performance of the work as set forth in these Contract Documents, the City agrees to accept ownership of the water, sewer, and road improvements and all associated appurtenances upon completion and acceptance of all items as listed further in this agreement.
SUBDIVISION IMPROVEMENTS REQUIRED

The Developer is required to complete the minimum following improvements:

- a) Gravel roads: <u>Siri Court</u> Nelson Avenue to Road Sta. 58+20 (26' top width) constructed to City standards.
- b) 8" water mains fronting all lots, with fire hydrants (every 500') constructed to City standards; 1" water services to all lots
- c) 3" small diameter low pressure sewer mains fronting all lots, 1-1/4" sewer services to all lots.
- d) Drainage improvements including roadside ditches, cross culverts, permanent erosion control.
- e) Power and natural gas service to all lots.
- f) Monumentation per platting requirements and the Design Criteria Manual
- g) Signage, including stop and street name signs.

TIME IS OF THE ESSENCE

Unless otherwise expressly provided herein, time is of the essence for each and every term, covenant and condition of this Agreement.

CONTRACT COMPLETION TIME

The Contractor agrees to complete the project (Phase II), in all respects by December 31, 2022.

PERMITS, LAWS AND TAXES

Developer shall acquire and maintain in good standing all permits, licenses, platting approvals and other entitlements necessary to its performance under this Agreement. All action taken by Developer under this Agreement shall comply with all applicable statutes, ordinances, rules and regulations. Developer shall pay all taxes, permit and license fees, fines, and judgments pertaining to its performance under this Agreement.

RELATIONSHIP OF THE PARTIES

A. Neither by entering into this Agreement, nor by doing any act hereunder, may Developer or any engineer, contractor or subcontractor of Developer be deemed an agent, employee or partner of City, or otherwise associated with City other than, in the case of Developer, as an independent contractor. Developer and its contractors and subcontractors shall not represent themselves to be agents, employees or partners of City or otherwise associated with City other than, in the case of Developer, as an independent contractor. Developer shall notify all its contractors and subcontractors of the provisions of this section. B. By entering into this Agreement, the City does not thereby become a party to a construction contract. This Agreement is not a contract for public works or for public construction, but rather it sets the conditions that must be met for approval of a final subdivision plat. The City shall have no obligation to pay any of Developer's contractors, subcontractors, suppliers, materialmen or laborers.

Contractor Responsibilities:

The contractor, prior to final acceptance of the project for ownership and maintenance by the City, shall satisfactorily complete the following items.

- 1. Developer shall be solely responsible for the faithful performance of all terms, covenants and conditions of this Agreement, notwithstanding Developer's delegation to another of the actual performance of any term, covenant or condition hereof.
- 2. Developer shall indemnify and hold City harmless from any loss, claim, action, demand, fine, judgment, cost or expense arising from any act or omission, related in whole or in part to this Agreement, of Developer, his agents, employees or contractors. The liability assumed by Developer pursuant to this section includes, but is not limited to, claims for labor and materials furnished for the construction of the improvements.
- 3. The Developer, at his own expense, shall provide all materials, equipment, labor and other appurtenances necessary to complete the project in accordance with the approved plans.
- 4. The Developer shall provide all surveying necessary to complete the project.
- 5. Pay for all material testing and provide all field testing results.
- 6. Furnished at Developer's expense all plans, reports, drawings, or other documents that this Agreement requires Developer to provide the City.
- 7. Restore all disturbed land surfaces and drainage ways.
- 8. Arrange to have power and natural gas installed to service the subdivision prior to final acceptance of the improvements.
- 9. Pay for the City's cost associated with plan review and approval, construction inspection, and agreement administration costs.

City Responsibilities:

The City, in conjunction with the project plans and specifications shall:

- 1. Periodically, during the construction phase, inspect the project to ensure compliance with the approved project plans and specifications.
- 2. Accept the completed project for ownership and maintenance upon final inspection and acceptance of the construction.
- 3. Issue a notice to the Kenai Peninsula Borough that all required improvements are in place to allow for final recording of the plat.

RECORDING OF THE FINAL PLAT

Developer shall be solely responsible for all platting of the property. The final plat for the subdivision or any portion thereof shall not be recorded until Developer met all conditions of this agreement (or provides a performance guaranty for work not completed in a form approved by the City).

COST REIMBURSEMENT (ON-SITE IMPROVEMENTS)

The Developer will not seek cost reimbursement from the City for any portion of this project.

INSURANCE

The Developer shall procure and maintain in force during the term of this agreement all General Liability, Workmen's Compensation and Comprehensive Automobile Liability Insurance in the following amounts:

I.	General Liability	
	Single Limit	\$2,000,000
	Aggregate	\$4,000,000
II.	Workman's Compensation	\$1,000,000
III.	Comprehensive Automobile Liability (including all owned, hired and non-owned	\$1,000,000 vehicles).

ACCEPTANCE OF IMPROVEMENTS

City shall not accept the improvements until all the requirements of this section have been met.

Monuments and As-Built Drawings

Upon completing the improvements, Developer shall place or replace all lot corners and monuments within the subdivision. Such monumentation shall be in accordance with the standards established by City.

No later than sixty (60) days after the final inspection and certification, Developer shall provide City with record drawings (one hard copy 11' x 17", and electronically in pdf. and AutoCad formats) for each improvement. The as-built drawings shall be certified by a professional engineer registered under the laws of the State of Alaska to represent accurately the improvements as actually constructed.

Certificate of Compliance

Developer shall furnish City with a certificate of compliance for the work performed under this Agreement in the form prescribed by the City's Standard Specifications.

Conveyance of Easements and Rights-of-Way to City

Developer shall convey to City any easement, right-of-way or other property interest necessary to allow access to City improvements to operate, maintain or repair-City improvements not shown on the plat. Developer may condition the conveyance upon City's acceptance of the improvements.

Inspection

- A. Upon receiving notice that Developer has completed the improvements, City shall schedule a final inspection of the improvements. City may inspect all improvements and any other work in dedicated easements or rights-of-way.
- B. A non-city-owned utility may inspect any phase of work on an improvement of which it is to assume control.
- C. City or appropriate non-city-owned utility shall inform Developer in writing of any deficiencies in the work found in the course of its inspection.
- D. Developer, at its own expense, shall correct all deficiencies found by inspections under subsections A. or B. of this section. Upon receiving notice that the deficiencies have been corrected, City or appropriate non-city-owned utility shall re-inspect the improvements.

- E. City or appropriate non-city-owned utility may continue to re-inspect an improvement until Developer has corrected all deficiencies in the improvement.
- F. After a final inspection has revealed that all improvements and other work in dedicated easements and rights-of-way meet City standards, and each non-city-owned utility that is to assume control of an improvement certifies that the improvement or improvements are acceptable to it, and Developer has furnished the as-built drawings required. City shall notify Developer that all improvements have been accepted in writing.

CONSEQUENCES OF ACCEPTANCE OF IMPROVEMENTS

City's final acceptance of City improvements constitutes a grant to City of all Developer's right, title and interest in and to City improvements.

DEVELOPER'S WARRANTY

A. Developer shall warrant the design, construction materials and workmanship of the improvements against any failure or defect in design, construction, material or workmanship which is discovered no more than two years from the date City notifies Developer of the acceptance of the improvements (except where significant defects are repaired during the warranty period, period for those repairs extends one year from repair date). This warranty shall cover all direct and indirect costs of repair or replacement, and damage to property, improvements, or facilities of City or any other person caused by such failure or defect or in the course of repairs thereof, and any increase in cost to City of operating and maintaining a City improvement resulting from such failures, defects or damage.

B. Developer's warranty shall not extend to any failure or defect caused solely by changes in design, construction or materials required by City.

C. Except as provided in subsection B. of this section, the fact that City takes any action or omits to take any action authorized in this Agreement, including but not limited to operation or routine maintenance of the improvements prior to acceptance, or surveillance, inspections, review or approval of plans, tests or reports, shall in no way limit the scope of Developer's warranty.

D. Any subcontractor, manufacturer or supplier warranty assigned by Developer to City shall name City as beneficiary of the warranty, and shall commence on the date of acceptance by City, not on date of shipment, installation or other date.

WARRANTY GUARANTY

A. To secure Developer's performance during the warranty period, the Developer will be required to provide a warranty guaranty.

B. The amount of the warranty guaranty shall be the percentage of the estimated cost of all improvements determined by the following table:

Estimated Cost of	Percent to Secure
All Improvements	Warranty
less than \$500,000	10.0%
\$500,000 - \$1,000,000	7.5%
more than \$1,000,000	5.0%

CITY'S REMEDIES UNDER WARRANTY

A. City shall notify Developer in writing upon its discovery of any failure or defect covered by the warranty. City shall notify Developer before conducting any test or inspections to determine the cause of the failure or defect, and shall notify Developer of the results of all such tests and inspections.

B. Developer shall correct any failure or defect covered by the warranty within thirty (30) days of receiving notice of the failure or defect from City. Developer shall correct the failure or defect at its own expense and to the satisfaction of City.

C. If Developer fails to correct the failure or defect within the time allowed by subsection B. of this section, City may correct the failure or defect at Developer's expense. If Developer fails to pay City for the corrective work within thirty (30) days of receiving City's bill therefor, City may pursue any remedy provided by law or this Agreement to recover the cost of the corrective work.

D. Notwithstanding subsections A and B, City may take immediate action to correct any failure or defect that City determines poses a substantial risk to the public health, safety or welfare. In such case, City shall notify Developer of the failure or defect and the City's action as soon as possible. Developer shall pay City for such corrective work. If Developer fails to pay City for the corrective work within thirty (30) days of receiving City's bill therefor, City may pursue any remedy provided by law or this Agreement to recover the cost of the corrective work.

COMPLETION OF PERFORMANCE - RELEASE OF WARRANTY

A. City shall inspect the improvement at or before the end of the warranty period and before releasing any warranty guaranty then in effect. Developer shall correct any failure or defect in the work revealed by the inspection.

B. On Developer's satisfactory performance of all its obligations under this Agreement, City shall execute a written statement acknowledging such performance and shall release any remaining security posted by Developer under this Agreement.

SUBMITTALS

After execution of this Agreement, a Notice to Proceed by the City of Homer will be issued prior to commencement of work associated with the water, sewer, and road improvements. Prior to issuing the Notice to Proceed, the Developer must submit to the City:

- Final cost estimate for all improvements
- Material Submittals for approval
- Inspection Fee of 2.5% of the engineer's estimate (see below)
- Approved flushing/testing plan for the water line installation.
- Final, approved, stamped Road plans (Reviewed against ACS/HEA/Enstar Design)
- ADEC Approval of Water and Sewer plans
- Work Schedule
- Quality Control Plan
- SWPPP
- Corps Permit

CONSTRUCTION INSPECTION FEE

The Developer shall pay the City's actual cost associated with the reviewing, approving, coordinating and inspecting improvements required to be completed under a subdivision agreement. The City's cost shall include, but is not limited to, preparation of this agreement, administering the agreement, plan checking, surveillance, and administrative overhead.

Prior to the issuance of a notice to proceed with construction to the Developer, the Developer shall pay a deposit toward the City's costs based upon the estimated cost of the improvements to be constructed under this construction agreement as follows:

Estimated Construction Cost	Deposit
\$10,000 or less	\$300
Over \$10,000 up to \$50,000	4% of the estimated costs
Over \$50,000 up to \$150,000	3% of the estimated costs
Over \$150,000 up to \$500,000	2.5% of the estimated costs
Over \$500,000	\$13,000

Deposits shall not bear interest. The deposits shall be held in a separate account and disbursed only as authorized by the Public Works Director

After the City finds the subdivision improvements meet City specifications, it shall determine its costs to date. If costs exceed the total deposits received, the Developer shall pay the balance to the City prior to final acceptance of the improvements. If the deposit exceeds the costs, the City shall refund the balance to the Developer.

Prior to acceptance of completion by the City, the Developer shall also pay a deposit toward the City's cost incurred during the warranty period under the subdivision agreement in the amount determined by the Public Works Director, but not to exceed \$2,000.

If at any time the City finds its costs exceed the total deposit received, the City may periodically bill and receive payment from the Developer for those actual incurred costs in excess of the amount of deposit.

IN WITNESS WHEREOF.	we, the parties hereto.	each herewith subscribe the same this
12 days Cat	,0000	sand here with Subseries the Sume tins
day or	_, 2020	

CITY OF HOMER

By:

Title: <u>Public Works Director</u> City of Homer, Alaska DEVELOPER

By:_

Title: <u>Mumber – manua</u> Echo Trading Company, L

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

THIS IS TO CERTIFY that on this <u>13</u> day of <u>Natenber</u>, 20<u>5</u>, **Jan Keiser** appeared before me, the undersigned Notary Public, known to me to be the Public Works Director of City of Homer, Alaska, a municipal corporation organized and existing under the laws of the State of Alaska, and he acknowledged to me that he executed this **Construction Agreement** on behalf of said City of Homer for the uses and purposes therein set forth.

)) ss.

)

)

IN WITNESS WHEREOF, I have hereunto set my hand and seal the day and year first hereinabove written.



Notary Public in and for Alaska, My Commission Expires: 04/28/2023

THIRD JUDICIAL DISTRICT

THIS IS TO CERTIFY that on this <u>13</u> day of <u>Nucenber</u>, 2019, Tony Neal appeared before me, the undersigned Notary Public, and he acknowledged to me that he executed this **Construction Agreement** as the Developer for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first hereinabove written.

NOT NOT

Notary Public in and for Alaska My commission expires: <u>10 (21/</u>23

PLANNING COMMISSION 2023 Calendar

	AGENDA ITEM DEADLINES	MEETING DATE	COMMISSIONER SCHEDULED TO REPORT	CITY COUNCIL MEETING FOR REPORT*	ANNUAL TOPICS/EVENTS	
JANUARY	12/14/22 Public Hearing Items 12/16/22 Preliminary Plat Submittals 12/23/22 Regular Agenda Items	01/04/23		Monday, 01/09/23 6:00 p.m.	•	
	12/28/22 Public Hearing Items 12/30/22 Prelim Plat Items 01/06/23 Regular Agenda Items	01/18/23		Monday 01/23/23 6:00 p.m.	•	
FEBRUARY	01/11/23 Public Hearing Items 01/13/23 Prelim Plat Items 01/20/23 Regular Agenda Items	02/01/23	Highland	Monday 02/13/23 6:00 p.m.	 PC Training on Legislative vs Quasi-Judicial decision Developing and Writing Decisions & Findings 	S
	01/25/23 Public Hearing Items 01/27/23 Prelim Plat items 02/03/23 Regular Agenda Items	02/15/23		Monday 02/27/23 6:00 p.m.	•	
MARCH	02/08/23 Public Hearing Items 02/10/23 Prelim Plat Items 02/17/23 Regular Agenda Items	03/01/23		Monday 03/13/23 6:00 p.m.	AK APA Conference	
	02/22/23 Public Hearing Items 02/24/23 Prelim Plat Items 03//23 Regular Agenda Items	03/15/23		Tuesday 03/28/23 6:00 p.m.	•	
APRIL	03/15/23 Public Hearing Items 03/17/23 Prelim Plat Items 03/24/23 Regular Agenda Items	04/05/23		Monday 04/10/23 6:00 p.m.	HNMTTP ReviewComp Plan Review	
	03/29/23 Public Hearing Items 03/31/23 Prelim Plat Items 04/07/23 Regular Agenda Items	04/19/23		Monday 04/24/23 6:00 p.m.	•	
MAY	04/12/23 Public Hearing Items 04/14/23 Prelim Plat Items 04/21/23 Regular Agenda Items	05/03/23		Monday 05/08/23 6:00 p.m.	Transportation Plan Review	
Page	04/26/23 Public Hearing Items 04/28/23 Prelim Plat Items 05/05/23 Regular Agenda Items	05/17/23		Monday 05/22/23 6:00 p.m.	•	
148 01 130 130	05/17/23 Public Hearing Items 05/19/23 Prelim Plat Items 05/26/23 Regular Agenda Items	06/07/23		Monday 06/12/23 6:00 p.m.	• Reappointment Applications will be sent out	

	05/31/23 Public Hearing Items	06/21/23	Monday	•
JUNE	06/02/23 Prelim Plat Items		06/26/23	
	06/09/23 Regular Agenda Items		6:00 p.m.	
	06/28/23 Public Hearing Items	07/19/23	Monday	Reappointment Application Due
JULY	06/30/23 Prelim Plat Items		07/24/23	Spit Comp Plan review
	07/07/23 Regular Agenda Items		6:00 p.m.	
	07/12/23 Public Hearing Items	08/02/23	Monday	Election of Officers
AUGUST	07/14/23 Prelim Plat Items		08/14/23	 Training - City Clerk's Office
	07/21/23 Regular Agenda Items		6:00 p.m.	
	07/26/23 Public Hearing Items	08/16/23	Monday	Capital Improvement Plan
	07/28/23 Prelim Plat Items		08/28/23	
	08/04/23 Regular Agenda Items		6:00 p.m.	
	08/16/23 Public Hearing Items	09/06/23	Monday	Economic Development Visitor
SEPTEMBER	08/18/23 Prelim Plat Items		09/11/23	
	08/25/23 Regular Agenda Items		6:00 p.m.	
	08/30/23 Public Hearing Items	09/20/23	Monday	•
	09/01/23 Prelim Plat Items		09/25/23	
	09/08/23 Regular Agenda Items		6:00 p.m.	
	09/13/23 Public Hearing Items	10/04/23	Monday	 Floodplain or other Hazard regulation Overview
OCTOBER	09/15/23 Prelim Plat Items		10/09/23	
	09/22/23 Regular Agenda Items		6:00 p.m.	
	09/27/23 Public Hearing Items	10/16/23	Monday	•
	09/29/23 Prelim Plat Items		10/23/23	
	10/06/23 Regular Agenda Items		6:00 p.m.	
	10/11/23 Public Hearing Items	11/01/23	Monday	Annual Meeting Schedule Approval
NOVEMBER	10/13/23 Prelim Plat Items		11/27/23	
	10/20/23 Regular Agenda Items		6:00 p.m.	
	11/15/23 Public Hearing Items	12/06/23	Monday	• Review Commission Bylaws, Policies and Procedures
DECEMBER	11/17/23 Prelim Plat Items		12/11/23	Town Center Plan Review
	11/24/23 Regular Agenda Items		6:00 p.m.	

*The Commission's opportunity to give their report to City Council is scheduled for the Council's regular meeting following the Commission's regular meeting, under Agenda Item 8 – Announcements/ Presentations/ Borough Report/Commission Reports. Reports are the Commission's opportunity to give Council a brief update on their work. Attend via Zoom or in Person.

Office of the City Manager 491 East Pioneer Avenue

491 East Pioneer Avenue Homer, Alaska 99603





www.cityofhomer-ak.gov

citymanager@cityofhomer-ak.gov (p) 907-235-8121 x2222 (f) 907-235-3148

Memorandum

TO:	Mayor Castner and Homer City Council
FROM:	Rob Dumouchel, City Manager
DATE:	February 9, 2023
SUBJECT:	City Manager's Report for February 13, 2023 Council Meeting

Juneau Trip

Special Projects Coordinator Jenny Carroll, Port Director Bryan Hawkins, and I traveled to Juneau to continue to spread the word regarding Homer's large vessel harbor expansion project and other City priorities. Our lobbyists at J&H Consulting were able to connect us with numerous legislators, we also we able to spend time with Rear Admiral Moore of the Coast Guard, Department of Transportation Commissioner Anderson, and Department of Environmental Conservation Commissioner Brune. We wrapped up our trip with a visit to the Marine Exchange of Alaska discussing ways we could partner to use their data to support our port expansion project (and have since followed up and are working on ideas for a vessel data visualization project). A full accounting of our meetings is included in a supplemental report provided by J&H Consulting which is attached to this report.



Top: Senate Finance Co-chair Stedman stops to chat with the Homer Delegation Bottom: City staff meets with DOT Commissioner Anderson and key staff

Meeting with Representative Peltola and Staff

The City of Homer had its first official meeting with our new congressperson via Zoom. Mayor Castner, Special Projects Coordinator Jenny Carroll, and Port Director Bryan Hawkins participated from the Harbor Office, I called in from Anchorage, our lobbyists joined from Juneau, and Representative Peltola and staffer Logan Basner spoke with us from Washington D.C. We had an opportunity to discuss priority City projects and begin to build our relationship with Representative Peltola's office. We look forward to hosting her in person sometime in the near future!



Port Expansion General Investigation

Contracts required to get the Army Corps of Engineers' general investigation underway are circulating the District office for approvals. We have been in frequent contact with Army Corps staff. The expectation is that an agreement should be ready for local signatures in the next two or three weeks.

Port Expansion Design Charrette

In my last report, I remarked on the charrette led by Corvus Design and hosted by the Port & Harbor Commission. We used this as an opportunity to check in with stakeholders, refresh the conceptual imagery, and keep the port conversation top-of-mind as we prepare to enter the next phase of the project (Army Corps general investigation). Corvus has since generated two concepts based on stakeholder feedback. As a reminder, they are concepts and there is no "official" design at this time. Expect to see more concepts in the future as part of the project's environmental review (National Environmental Policy Act regulations require the Corps to evaluate reasonable alternatives including a "no action" alternative). We won't have a firm design target until we complete the Army Corps' general investigation process.



Airport Lease Renewal

The City of Homer is nearing the end of the 30 year land lease for the Homer Airport Terminal. The Alaska Department of Transportation (DOT) owns the land and the City owns the building. Staff is working on a 5 year renewal, and Council can expect a resolution at a future meeting. The City is hoping to apply for a substantial grant to make upgrades at the airport, at which time a new longer term (30 year) lease will be negotiated. In the meantime, this five year renewal will allow the City and sub-lessees to stay in good standing with DOT.

Community Assistance Funding

I received notice that the Division of Community and Regional Affairs (DCRA) has set Homer's FY24 Community Assistance Program (CAP) funding level at \$75,591.21. In recent years this award has ranged anywhere from \$76k-\$177k. For FY24, I am suggesting that we again set aside this funding for ADA projects and coordinate with the ADA Advisory Board on needed projects once the funds are received.

Old Town Road Improvements Conversation

The City partnered with Bunnell Street Arts Center to host a neighborhood meeting to discuss road improvements in Old Town on Tuesday, February 7. In July 2022, City staff and their consultant, Nelson Engineering, asked the neighborhood's community members for ideas on what road improvements they would like to see in the Old Town area. At the February 7 meeting, Nelson Engineering presented design options that were drafted in response to that conversation. Design options included landscaping, parking, and sidewalks along Ohlson Lane and Bunnell Avenue. Residents and business owners had the opportunity to voice their concerns and provide feedback, and staff was able to gather valuable community input on the proposed project as a result of the meeting.



Safe Streets for All Program Grant Award

We have been noticed that the United States Department of Transportation intends to award a Safe Streets for All (SS4A) grant to the Kenai Peninsula Borough in the amount of \$960,000. Homer, along with Kenai, Soldotna, Seward, and Seldovia were partners in this grant application.

SS4A is a Federal IIJA grant program focused on roadway safety with the goal of zero deaths and serious injuries on our nation's roadways. Two types of SS4A grants are available: 1) Safety Action Plan Grants; and 2) Implementation Grants. A Safety Action Plan identifies roadway safety issues and prioritizes strategies to improve roadway safety and eliminate fatalities and injuries for all users, including pedestrians, bicyclists Page 123 of 136

and motorists. Eligible activities include conducting planning, design, and development activities in support of program goals.

SS4A Implementation grants are awarded for the purpose of developing projects and carrying out strategies identified in the Safety Action Plan. Implementation grants require that a community have a Safety Action Plan in place. The grant is to be awarded to the Kenai Peninsula Borough and includes the cities of Kenai, Homer, Seldovia, Soldotna, and Seward as co-applicants. Upon adoption of an Action Plan, the cities and borough will be eligible to apply for SS4A implementation grants in future funding cycles. As scope of the Master Transportation Plan does not include components of a safety action plan, SS4A activities will supplement the plan and provide additional opportunities to identify and fund projects to improve the safety of our local transportation infrastructure.

The program requires a 20% local match. The required match for each of the partners is based on a combination of the number of roadway miles and the total population in each area. Homer's match was estimated to be \$17,110 and may be met with cash and/or in-kind activities. Our staff will be working with the Borough to determine how our match will be met and bring that information back to Council at a later meeting.

Attachments: Employee Anniversaries

Overview of Homer Lobbying Activity Jan 16-Feb 1 by J&H Consulting Old Town Part 2 Flyer Thank you letter from Bunnell Street Art Center Small Business District Report

Office of the City Manager 491 East Pioneer Avenue

Homer, Alaska 99603



www.cityofhomer-ak.gov

City of Homer

citymanager@cityofhomer-ak.gov (p) 907-235-8121 x2222 (f) 907-235-3148

Memorandum

- TO: MAYOR CASTNER AND CITY COUNCIL
- FROM: Andrea Browning
- DATE: February 13, 2023
- SUBJECT: February Employee Anniversaries

I would like to take the time to thank the following employees for the dedication, commitment and service they have provided the City and taxpayers of Homer over the years.

Jenny Carroll	Admin	7	Years
Morgan Tracy	Police	6	Years
Kevin Co	Library	4	Years
Tyler Jeffres	Police	4	Years



SCHEDULE FOR THE CITY OF HOMER January 26th - February 2nd, 2023

The Homer team's Bryan Hawkins, Jennifer Carroll, and Robert Dumouchel visited with state and federal representatives to discuss the City of Homer's priorities. The following topics were discussed at the meetings listed below:



Meeting with Rear Admiral Moore and Staff at USCG Facility

Introductions and congratulations.

Large Vessel Harbor: \geq Overview of the large vessel harbor expansion project, new concept designs, GI investigation, timeline, and secured funding, construction funding needed. Emphasized the importance of this project to the region and state and that it is the number one priority of the community. In most meetings, much of the conversation was about this project.

Spit Road Erosion

Mitigation: Described the project and why it is needed to protect critical infrastructure on the Homer Spit and how it is a symbiotic project with the large vessel harbor. Discussed the need for funding for a GI study. Requested that the state work in partnership with the Army Corps of Engineers (USACE) and the City of Homer to implement the long-term erosion mitigation and maintenance plan to mitigate and stabilize erosion conditions on the Homer Spit. Updated DOT and DEC on this project and solicited interest in leveraging additional IIJA funding for the project. There is a lot of interest in this project.

- Slope Stability: Described the problem of steep slopes and bluffs in Homer that cause instability in the soils and land and the impacts that has to the community. Outlined the four projects which will utilize existing wetlands as green infrastructure to store water like a sponge and use native vegetation to slow runoff and treat contaminants, making downstream waters cleaner. This in turn will help protect both City and State of Alaska transportation interests. Provided an update on the status of grant applications to complete some portions of this project, including purchase of peat lands. Told DOT&PF that State funds are requested to help complete the Kachamek and Beluga Slough Wetland Treatment systems that have some grant fund support. There was a lot of interest in this project from the Department of Environmental Conservation.
- Non-Motorized Transportation: Provided a description and a status update on the project including the pursuit of a Federal RAISE Planning grant to support pre-development activities to bring some of Homer's priority non-motorized transportation network to construction ready status. Requested a DOT support letter and a letter of support from our local and federal delegation.
- Importance of funding Municipal Harbor Grant Fund in upcoming State budget; the program was left unfunded by Governor Dunleavy; important funds for leveraging Federal dollars for port & harbor projects.

January 26th, 2023 (Thursday)

1 – 2:00 p.m. prep with Homer Team and Mayor Castner for meeting with Congresswoman Peltola

January 27th, 2023 (Friday)

9:00 – 10:00 a.m. Homer team and Mayor Castner with Congresswoman Peltola and Logan Basner, staff by ZOOM

Notes: Due to voting, the time with Congresswoman Peltola was limited to ten minutes but introductions and congratulations were made and initial connections were established. Her staff spent considerable time getting briefed on all of Homer's projects.

January 30th, 2023 (Monday)

11:00 a.m. – 12:30 p.m. Strategy session, prepare for visits, go over presentations – meet at Lemon Tree 1:30 p.m. Sen. Stevens, Senate President

Notes: The two big issues are increasing education funding (that solution needs to happen this year), and solving the retirement issue, which he sees as a two-year fix. Interested in the Governor's carbon bill but needs to see the details and thinks it will take longer to see revenue from the plan. Supports Port Expansion project but uncertain about capital funding this year. The capital budget may just be state match to federal projects.

2:00 p.m. Katrina Matheny (Senator Steven's CAPSIS manager) with Jennifer Carroll for a deeper dive on all six legislative capital requests.

3:00 p.m. Sen. Olson, Finance Co-Chair

Notes: Cautions about shortfall in revenues this year. Supports a system of ports around the State. 4:00 p.m. Rep. Mina, Transportation and Health Committees

Notes: Very interested in the green infrastructure projects.

4:30 p.m. Rep. McCabe, Transportation Chair, Community and Regional Affairs Vice-Chair, Resources and Fisheries member

Notes: Very interested in researching about a regional port authority.

4:45 p.m. Rep. Carpenter, Way and Means and Legislative Budget and Audit Chair and Tribal Affairs, Judiciary, State Affairs, Military and Veteran's Affairs member

Notes: Very interested in port project. Asked some good questions.

January 31, 2023 (Tuesday)



Meeting with Representative Vance and her aide, Jake Almeida

8:30 a.m. Sen. Dunbar, Community and **Regional Affairs Chair, and Resources** Committee Notes: Worried about impact to Port of Anchorage 9:00 a.m. Rep. Schrage, Minority leader, Rm. 104 9:30 a.m. Sen. Kaufman, Transportation Chair and Resources Committee Notes: Interested in construction schedules and project development process, firm numbers. 10:15 a.m. Rep. Josephson, Finance and Legislative Budget and Audit member 10:30 a.m. Sen. Bjorkman, Community and Regional Affairs and Labor and **Commerce** Committee *Notes: Supports projects, concerns* about housing to accommodate port growth. Not sure about capital funding

this year.

11:00 a.m. Rep. Hannan, Finance Committee 12:30 p.m. Rep. Vance, Judiciary and Fisheries Chair, Tribal Affairs and Transportation member, local representative

Notes: Would like to highlight Homer port and other ports in the Transportation Committee. Interested in the number of vessels mooring out of state, if we can get numbers and impacts. Supports project and commends recent outreach and public input regarding it. Very engaged.

1:30 p.m. Sen. Hoffman, Co-Chair Finance

Notes: Concern about available capital funding this year. Likes the approach to fund over several years.

2:00 p.m. Sen. Merrick

Notes: interested in positive economic impact to state and would like numbers. Worried about impact to Port of Anchorage, it is in her district and one of her higher priorities.

2:30 – 3:30 p.m. US Coast Guard, Rear Admiral Moore, Jesse Houck, External Affairs, Mr. McCabe, Chief of Staff, Mr. Fitzwater, Attorney, Legal Department

Notes: Any port or harbor development the USCG is involved. Bryan asks for someone to shadow the project from the USCG. Moore says yes, will have his Chief of Staff assist in finding a designated staff member. (Jesse Houck sent contact from USCG Civil Engineering Unit in Juneau to Jenny Carroll.) Discuss Hickory and its new placement with a natural float to tie up and how that will be better for the ship and crew. Reviewed the new conceptual drawings. New ship will be the Aspen. No plan to move it from Homer or to decommission it, it is back in service. Discuss depths found in the harbor. Discussed Homer as a turnaround station for new FRC's; Rear Admiral Moore discusses possibility of needing more presence in the future if vessel traffic grow after harbor expansion. Bryan talks about the fleets mooring out of state because no moorage in Alaska, keep business and money here by adding moorage. USCG is an anchor tenant. Going to connect Homer with the civil engineers and real property staff to work with. Would like to work on better mooring for the Aspen as part of the harbor expansion.

Discussed navigational hazard of tide rip in Kachemak Bay during the China Poot personal use salmon fishery and mobilizing the local USCG auxiliary unit for safety watch during the dip net fishing season or using other USCG assets. Bryan asks for assignment of the USGC auxiliary unit to patrol in the summer and Rear Admiral Moore seems amenable.

3:45-4:30 p.m. DOT Commissioner, Ryan Andersen, Andy Mills, Legislative Liaison, John Binder, Deputy Commissioner, James Marks, Division Director

Notes: Requests a contact with DOT to keep informed about the process of the Homer port expansion. Commissioner thinks they need a person in charge of waterways, like a waterway's planner and they may be making a new position soon. Discussion of getting the port project into the state STIP, statewide transportation plan. Commissioner: DOT supports the roads to the harbors, but right now only non-road connected harbor projects are eligible for the STIP. Other harbors usually only end up in STIP when they are determined to be projects of significance or federal agencies request it.

PROTECT grant could be a good fit for the spit erosion project. Not sure how much money will be left because of recent storm erosion due to typhoon Merbok and the money may be needed as an emergency fix. Most grants will go through AML who will work with DOT. Update on the status of the City's TAP and CTP notices of intent.

FAA terminal upgrade. Homer is moving forward with Central Region Planning to hopefully submit an FAA Airport Terminal Program grant in October, or later as we work out eligibility. The City and State DOT need a new co-sponsor agreement and getting the project in the Airport Layout Plan. DOT is working on getting a new agreement to Homer for signature. Working on parking issues, can put in a rate structure to help pay for the costs. Jennifer stated that the City wants to be involved in the update of the Airport Master Plan to work on the parking issue, set aside land for future increases in traffic. The City wants more engagement in the master plan as relates to the terminal and parking and how terminal fits in with airport that DOT manages. DOT agrees. Request to include planning for the airport terminal/parking in the State's update of the Airport Master Plan scheduled for 2024.

4:30 p.m. Rep. Tilton, Speaker of the House

7:00 p.m. Dinner with Rep. Vance, staff members Jake Almeida and Elesheva Tinerat at TK McGuires *Notes: Pleasant conversation and a great way to get to know Representative Vance and staff better.*

February 1, 2023 (Wednesday)

8:00 a.m. Sen. Kiehl staff, Transportation, Education, and Finance Committees 9:00 -9:45 a.m. Department of Environmental Conservation, Commissioner Jason Brune, Deputy Commissioner, Emma Pulon, and Randy Bates, Division of Water, Director, Carrie Bohan, Willoughby Office, Third Floor

Notes: Quick overview of the port expansion project. DEC will work with Army Corp on any dredging on the spit and a 404 permit will be needed. Will work with the community if increased utilities needed with harbor expansion. Overview of slope stability and stormwater mitigation project, storm water management plan and use of cold climate green infrastructure prinicples. There is a new grant program for storm water overflow which may fit this project! Yearly funding for the project will be available. Discuss Homer's \$6 million request for clean water and sewer in bundled water projects and the sources of funding. Ask whether the funding will be a grant or loan? Mr. Bates will research and get back with Jenny. The \$6 million requires a 20% match but that amount can be loaned at about 2%. Later some of the state loan may be forgiven. Federal regulations require that part of the funding goes to green projects. Carrie will work with Homer on possible water grants and how to pair up funding sources.

DEC regulation package coming out addressing PFAS. Regulations will lower acceptable PFAS levels in drinking water. Homer Airport has some PFAS. Commissioner urges communities to pay attention. Jenny talks about the possible airport terminal project with DOT and FAA and whether a PFAS containment/reuse system might be part of it.

Alaska has 175 million acres of wetlands and only 1% developed. DEC is looking for state support to take primacy over the wetlands. Right now the Army Corps has primacy over wetlands. DEC has a proposal to the legislature called 404 primacy, which will require 28 new DEC staff. DEC is very excited about this possibility and asks for support with local state representatives. DEC Commissioner and staff is willing to present to Homer City Council about this proposal.

10:00 – 11:30 a.m. Alaska Marine Exchange, Steve White, CEO. John Hollinsworth, and Chris Coutu Notes: Discuss port expansion. Discuss collection of aggregate data that might be helpful in supporting the positive economic impact and connections the Homer harbor has statewide. Mr. White shared some available data they collect with the group e.g.; vessel traffic over time, types of vessels, flag of vessel. AME is working with GCI on a vessel and cargo tracking project. Problem with Homer is many boats are not on AIS so aren't tracked and also how to connect port activity to land economy and where the product/commodity ends up in the state. They can put together data and also sale data for other people to use. Tour of facility.



Bryan Hawkins and Randy Bates, DEC Division of Water, discuss the port expansion project.

Bills of Interest:

HB 18 (Stutes) – The state would help create nonprofit regional fishing cooperatives intended to develop new fisheries in the state. These would be funded by fees paid by fishermen in the area.

HB 19 (Stutes) – A boat registered with the Coast Guard and registered as a commercial fishing vessel wouldn't have to also register with the DMV.

HB 20 (Stutes) – Members of the Board of Fish or the Board of Game wouldn't be automatically excluded from debating or voting on issues because of conflicts of interest.

Old Town Neighborhood Conversation on Future Road Improvements - Part 2

The City of Homer and the Bunnell Street Arts Center invite you to continue the conversation about road improvements in Old Town on *Tuesday, February 7*.

In July 2022, Nelson Engineering presented design options for road improvements, including sidewalks in the Old Town area. This presentation continues the conversation about improving Ohlson and Bunnell Avenues.

Your input is important to the development of this project. We hope to see you there!

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For more information contact Bella Vaz, Associate Planner 907-235-3106 <u>planning@ci.homer.ak.us</u>





OLD TOWN Neighborhood Conversation on Future Road Improvements PART 2

BUNNELL ARTS CENTER

106 W. Bunnell Avenue



Tuesday, February 7 Open House 5 - 7 p.m. Presentation starts at 5:15 p.m.



Refreshments provided

City of Homer 491 E. Pioneer Avenue Homer, AK 99603



106 west Bunnell, Suite A Homer, AK 99603 <u>www.bunnellarts.org</u> Asia Freeman, Artistic Director <u>asia@bunnellarts.org</u>

"sparking artistic inquiry, innovation and equity to strengthen the physical, social and economic fabric of Alaska"

February 1, 2023

Dear City Council Members and Mayor,

On behalf of Bunnell Street Arts Center, I would to thank the City of Homer and the Homer Foundation for working together, supporting annual operating grants to strengthen Homer's non-profit sector. Each year, dozens of organizations and local citizens are positively impacted.

Bunnell Street Arts Center leverages support from the City of Homer Grants Program through the Homer Foundation in marketing materials that express Bunnell's mission to spark artistic inquiry, innovation and equity to strengthen the physical, social and economic fiber of Homer through the arts.

Bunnell invested this grant of \$1500 to achieve our mission and benefit our community, approximately 5000 people, from elementary-school kids to Seniors. We created a new Bunnell brochure, led the creation and distribution of the the Homer Map and printed a comprehensive Annual Report which helped Bunnell connect with our audience and share our programs.

Bunnell Street Arts Center applied the grant to marketing materials which communicate and attract audience to Homer, and to Bunnell. Our audience include Homerites, Alaska travelers, statewide and international visitors, tourists, artists, collectors, students and teachers. These people attended exhibitions and artist talks in person and online, Bunnell Arts by Arts Concerts in person and broadcast on KBBI, performances and screenings, artist residencies, and Artist in Schools programs.

Every year we learn something new. Adaptation and innovation keep Bunnell relevant and sustainable, through pandemic and increasingly complex socio-environmental and economic challenges. Our strategy is to seek local, statewide, national and international partnerships, especially cross-sector partnerships, to leverage the arts for Homer's social, economic and physical health.

Some things worked better than anticipated. 2022 was a good year to turn our land acknowledgement learnings into actions. Over three years of workshops, discussion and planning, in partnership with the City of Homer, with support from Ninilchik Tribal Council, private foundations and community donors, we contributed a sculpture to the Municipal Art Collection acknowledging the long-term Indigenous presence and stewardship of lands now called Bishop's Beach Park. Tuyanitun : Tuggeht stands as a beacon at the shores of Kachemak Bay and invites all of us to celebrate this place and its people.

2022 was also a good year to launch a major national touring show. Protection: Adaptation & Resistance opened at the Pratt and traveled to the Anchorage Museum. Featuring Indigenous Alaska artists, Protection showcases how artists are guiding the next generation from surviving amidst complex challenges to thriving. The show continues to Portland, Tulsa and Santa Fe in 2023.

Artists continued to benefit from outreach innovations— both online, in person and over the airwaves. The MOTHER exhibition featured seven statewide artists who met frequently enough online to develop a groundbreaking group show which came to fruition in December. If you missed it, you can find this talk and many others on Bunnell's YouTube channel. Bunnell Arts by Air concerts broadcast live from Bunnell the third Friday of each month and are archived at KBBI.org. There are many ways to become involved and learn more. Visit us at bunnellarts.org, or stop by for our next First Friday opening reception and artist talk. Everyone is welcome!

Sincerely,

aria herem

Asia Freeman, Artistic Director

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January 18, 2023

City of Homer 491 E. Pioneer Ave Homer, AK 99603

Dear Mayor Castner, City Council, and City Staff,

This letter serves as our quarterly report for the period October 1 to December 31, 2022. The Homer Business Advisor, Robert Green, had a strong finish to the calendar year, even with his first vacation since joining the Alaska Small Business Development Center in 2020. Not only did Robert's advising result in the creation of 16 new businesses, he also achieved the second highest amount of non-COVID relief capital infusion for the Homer area in a calendar year, with \$2.5 million in loans and investments. Robert provided assistance to 115 business owners and entrepreneurs, which supported 342 jobs in the Homer area. SBDC assistance in the Homer area has been very well received, with Robert providing 392.7 more advising hours in 2022 than what was provided in 2019, the last year Homer did not have an SBDC advisor. Here is a summary of deliverables to the Homer community during the quarter (year):

Client Hours: 71.6 (556.8) Total Clients: 34 (115) New Businesses Started or Bought: 3 (16) Jobs Supported: 70 (342) Capital Infusion: \$2,040,000 (\$3,172,650) Client Surveys: 100% positive (92% positive)

The contract rate for a business advisor is \$55 per hour, which includes salary, benefits, fixed, and administrative expenses. In addition to local expertise, the Alaska SBDC provides IBISWorld industry reports, retailing for \$925 each, and ProfitCents financial analyses, valued at \$2,750 each, to clients free of charge. Here is a summary of value provided to the Homer community during the quarter (year):

Business Advisor: \$10,340 (\$51,755) IBISWorld Industry Reports: \$3,700 (\$36,075) ProfitCents Financial Analyses: \$2,750 (\$33,000) Total: \$16,790 (\$120,830)

We would like to thank the City of Homer for their support of the Homer Business Advisor position. Not only has Robert excelled in Homer, but he has become a valued part of the Alaska SBDC staff. We greatly appreciate the knowledge, experience, and consistency he brings to our team. Please do not hesitate to contact us if you have any questions.

Sincerely,

DocuSigned by:

Jon Billiur F3E1FE8A6ADF4BD... Jon Bittner Executive Director Alaska SBDC